Integration of survey data using the CIDOC-CRM

Athanasios Velios
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4 April 2019

National Museum Wales

ICON THE INSTITUTE OF CONSERVATION
ual: university of the arts london
LIGATUS

ΒΙΒΛΙΟΘΗΚΗ
ΤΗΣ ΑΓΙΑΣ
ΑΙΚΑΤΕΡΙΝΗΣ
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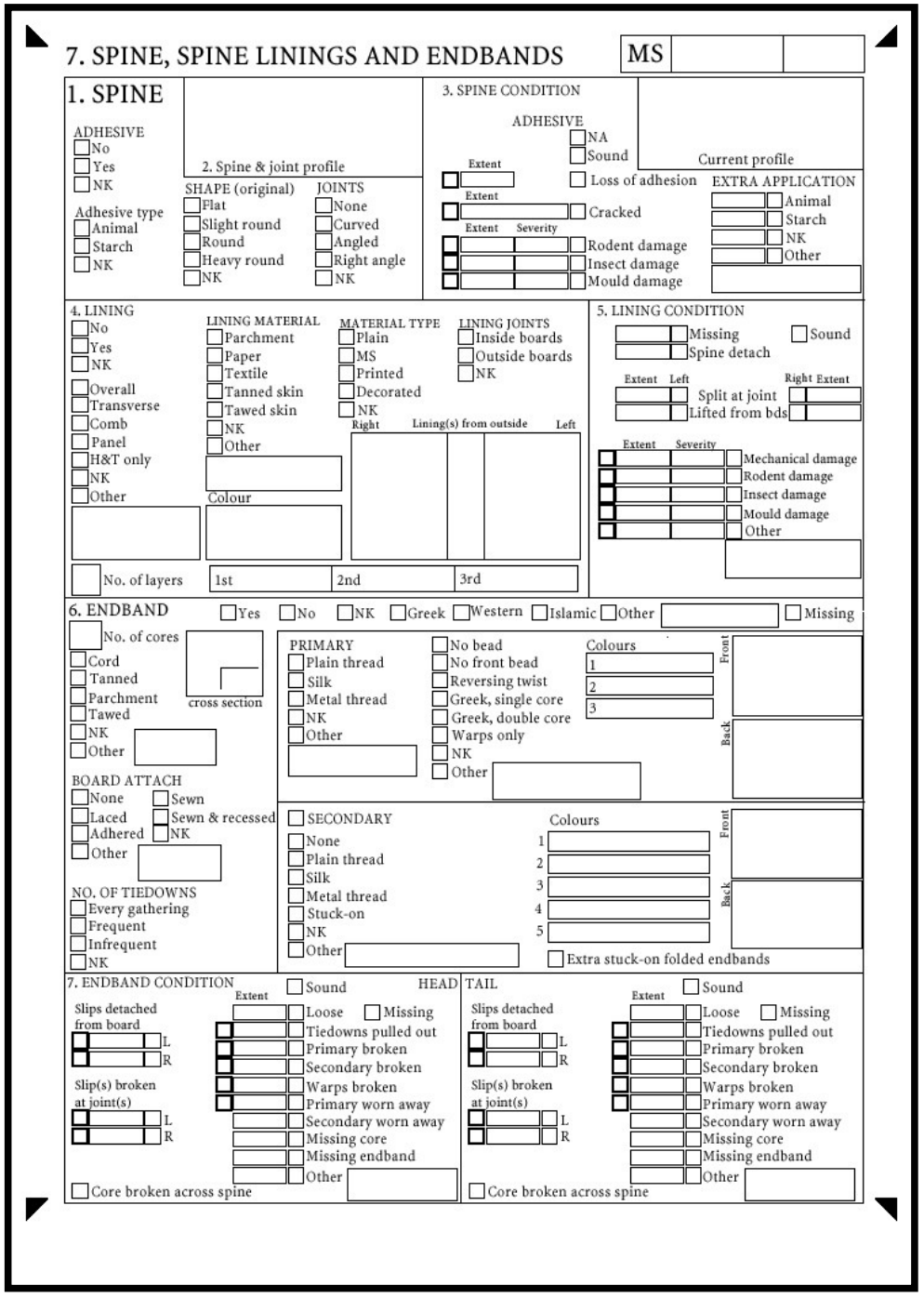

7. SPINE, SPINE LININGS AND ENDBANDS

MS

1. SPINE

ADHESIVE
- No
- Yes
- NK

Adhesive type
- Animal
- Starch
- NK

2. Spine & joint profile

SHAPE (original)
- Flat
- Slight round
- Round
- Heavy round
- NK

JOINTS
- None
- Curved
- Angled
- Right angle
- NK

3. SPINE CONDITION

ADHESIVE
- NA
- Sound
- Loss of adhesion
- Cracked
- Rodent damage
- Insect damage
- Mould damage

Extent / Severity

Current profile

EXTRA APPLICATION
- Animal
- Starch
- NK
- Other

4. LINING

- No
- Yes
- NK

- Overall
- Transverse
- Comb
- Panel
- H&T only
- NK
- Other

LINING MATERIAL
- Parchment
- Paper
- Textile
- Tanned skin
- Tawed skin
- NK
- Other

MATERIAL TYPE
- Plain
- MS
- Printed
- Decorated
- NK

LINING JOINTS
- Inside boards
- Outside boards
- NK

Colour

Right / Lining(s) from outside / Left

No. of layers: 1st | 2nd | 3rd

5. LINING CONDITION

- Missing
- Spine detach
- Sound
- Split at joint
- Lifted from bds

Extent / Left / Right Extent

Extent / Severity
- Mechanical damage
- Rodent damage
- Insect damage
- Mould damage
- Other

6. ENDBAND

Yes / No / NK / Greek / Western / Islamic / Other / Missing

No. of cores

- Cord
- Tanned
- Parchment
- Tawed
- NK
- Other

cross section

BOARD ATTACH
- None
- Laced
- Adhered
- Other
- Sewn
- Sewn & recessed
- NK

NO. OF TIEDOWNS
- Every gathering
- Frequent
- Infrequent
- NK

PRIMARY
- Plain thread
- Silk
- Metal thread
- NK
- Other

- No bead
- No front bead
- Reversing twist
- Greek, single core
- Greek, double core
- Warps only
- NK
- Other

Colours: 1 / 2 / 3

Front / Back

SECONDARY
- None
- Plain thread
- Silk
- Metal thread
- Stuck-on
- NK
- Other

Colours: 1 / 2 / 3 / 4 / 5

Front / Back

- Extra stuck-on folded endbands

7. ENDBAND CONDITION

HEAD — Sound

Extent

Slips detached from board: L / R

Slip(s) broken at joint(s): L / R

- Loose
- Missing
- Tiedowns pulled out
- Primary broken
- Secondary broken
- Warps broken
- Primary worn away
- Secondary worn away
- Missing core
- Missing endband
- Other

- Core broken across spine

TAIL — Sound

Extent

Slips detached from board: L / R

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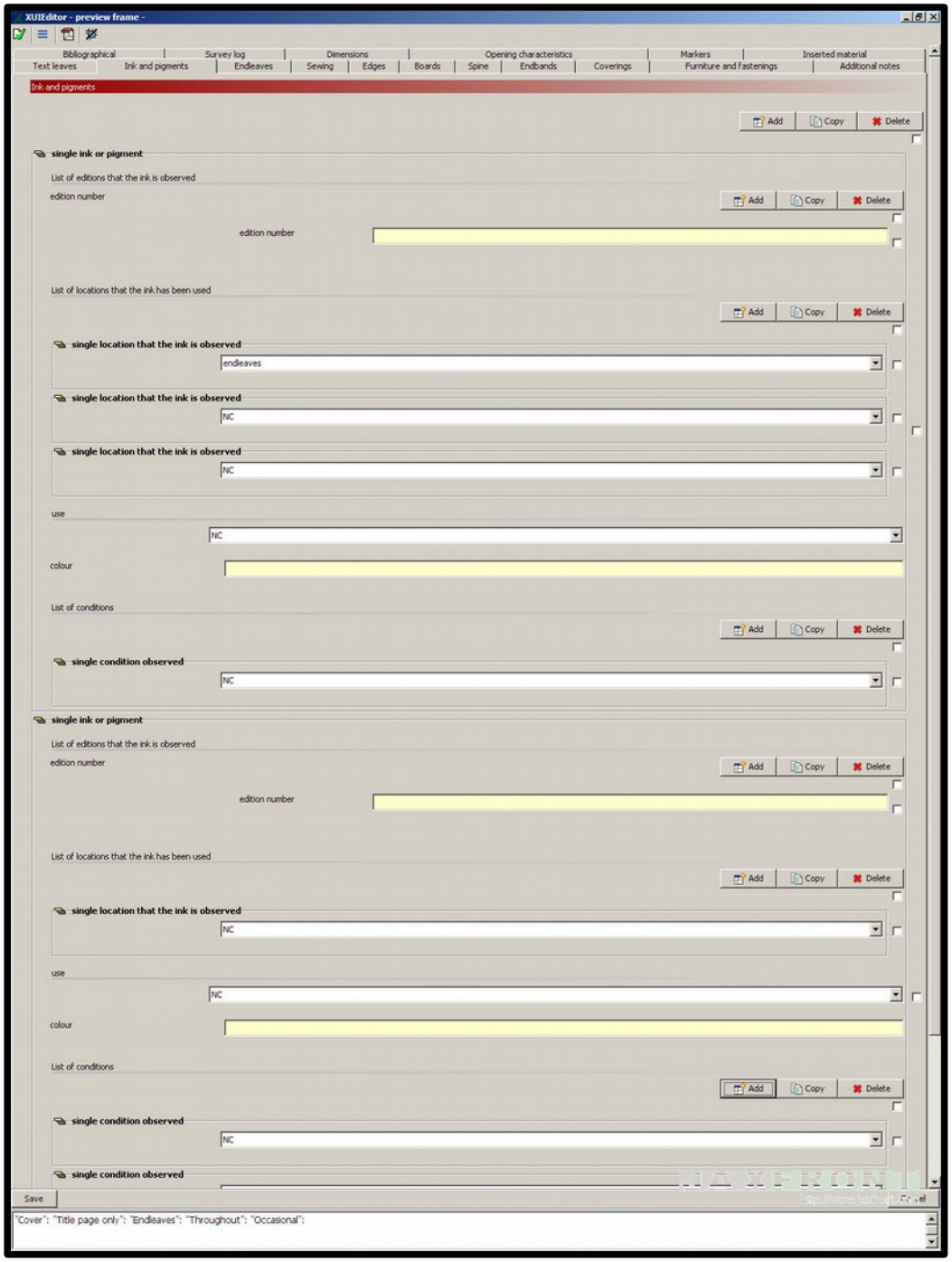


Sangreal. Arthur Rackham

Larger sample →
Better conclusions

For instance:

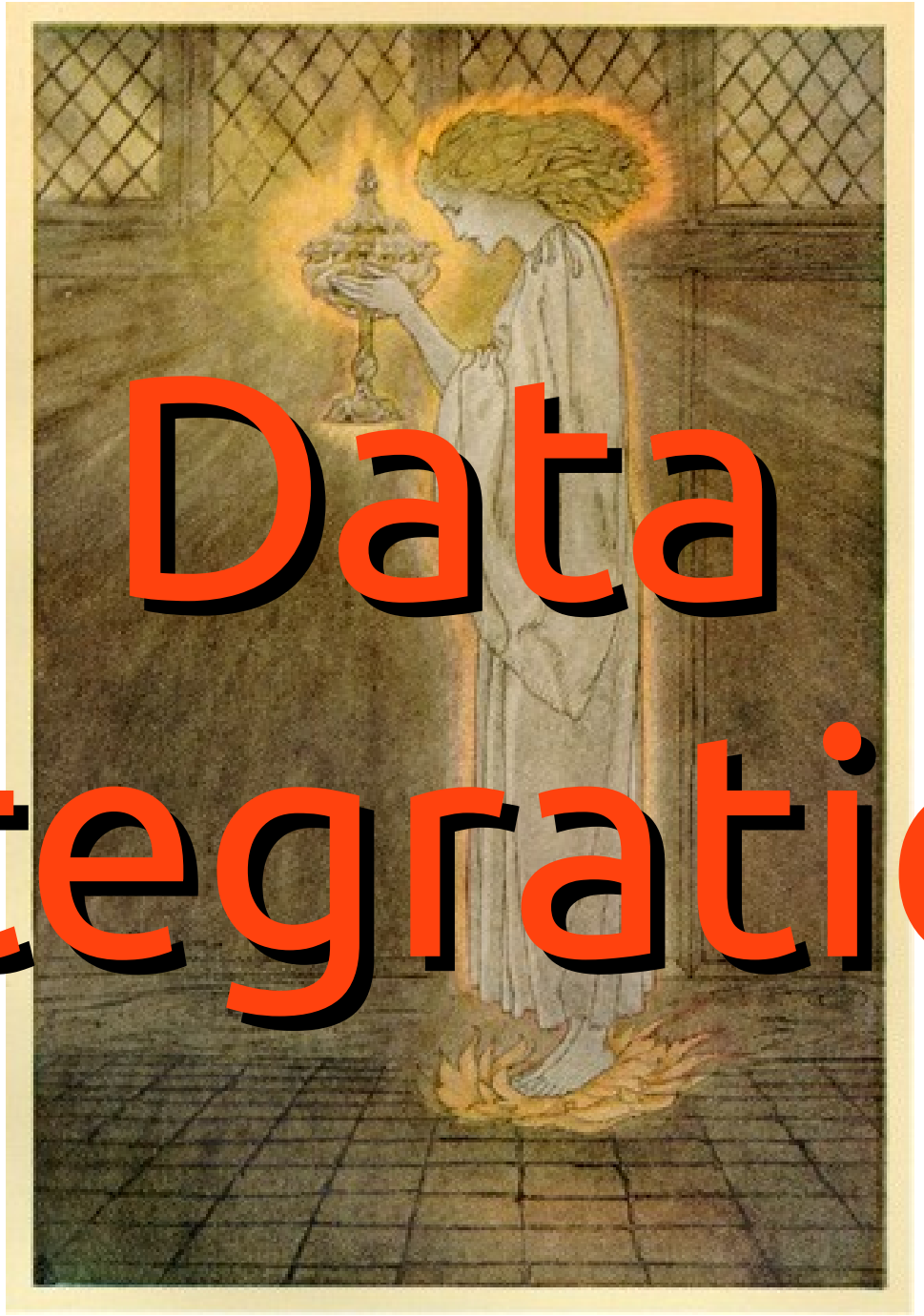
- After what century is paper used instead of parchment in books?

For instance:

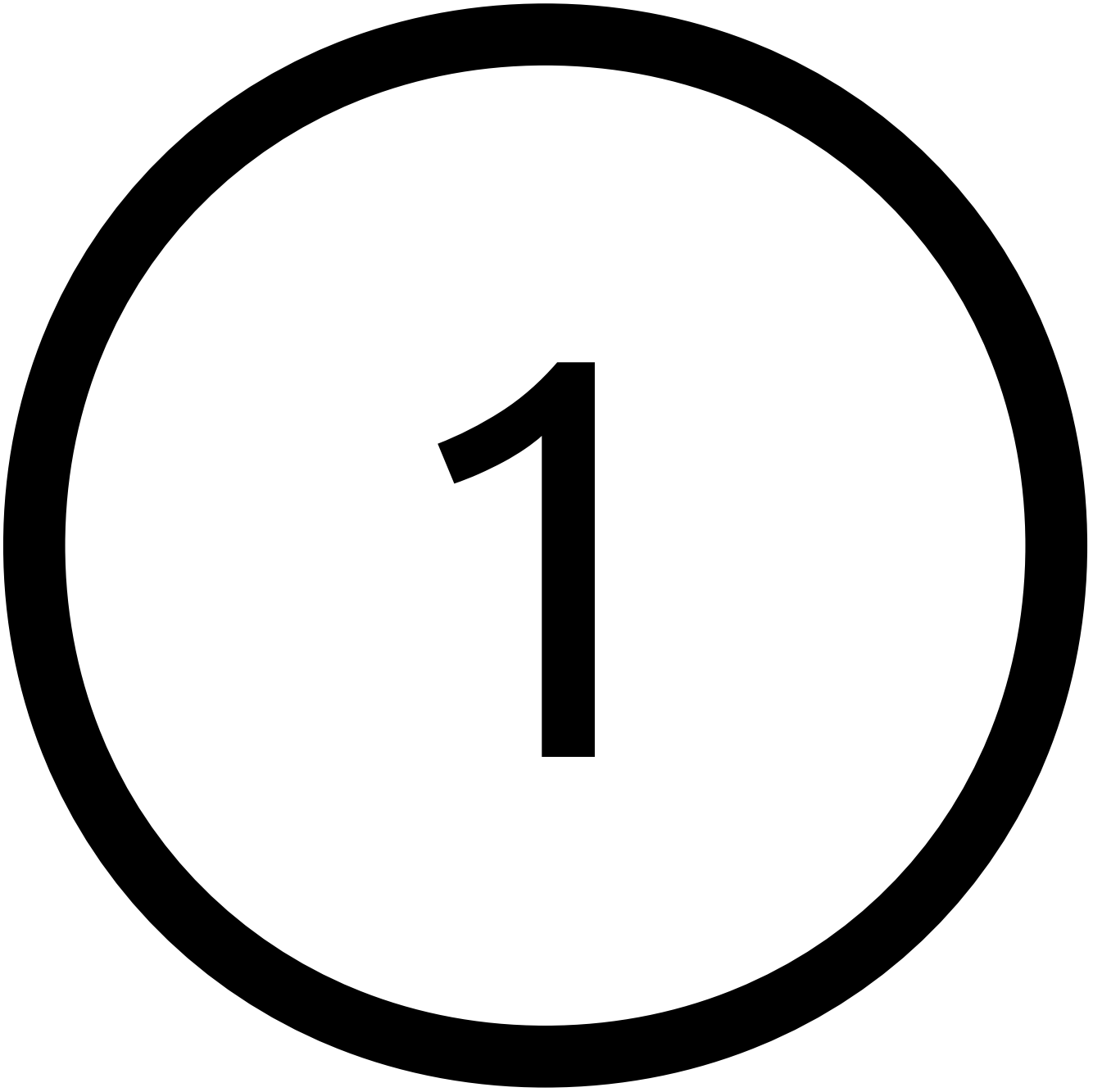
- After what century is paper used instead of parchment in books?
- After what [period] is [material A] used instead of [material B] in [objects/components of type A]?

Possible questions

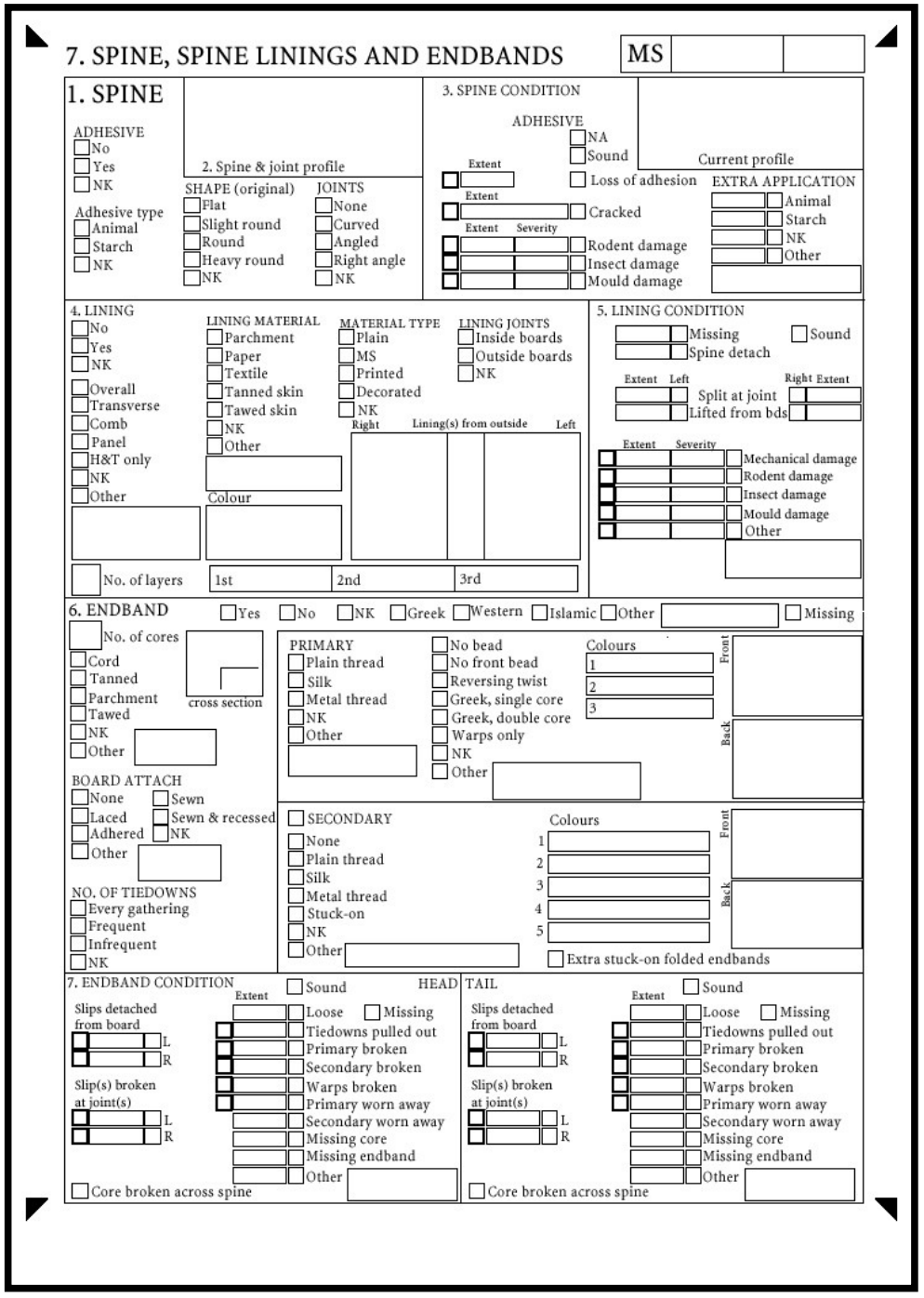
- History of the technology of objects (materials and techniques)
- Evaluating environment management based on condition surveys
- Assessing the use of new materials and techniques for treatment
- Identifying trends in the work of conservators
- Communicating conservation work to new audiences



Data integration



Field matching



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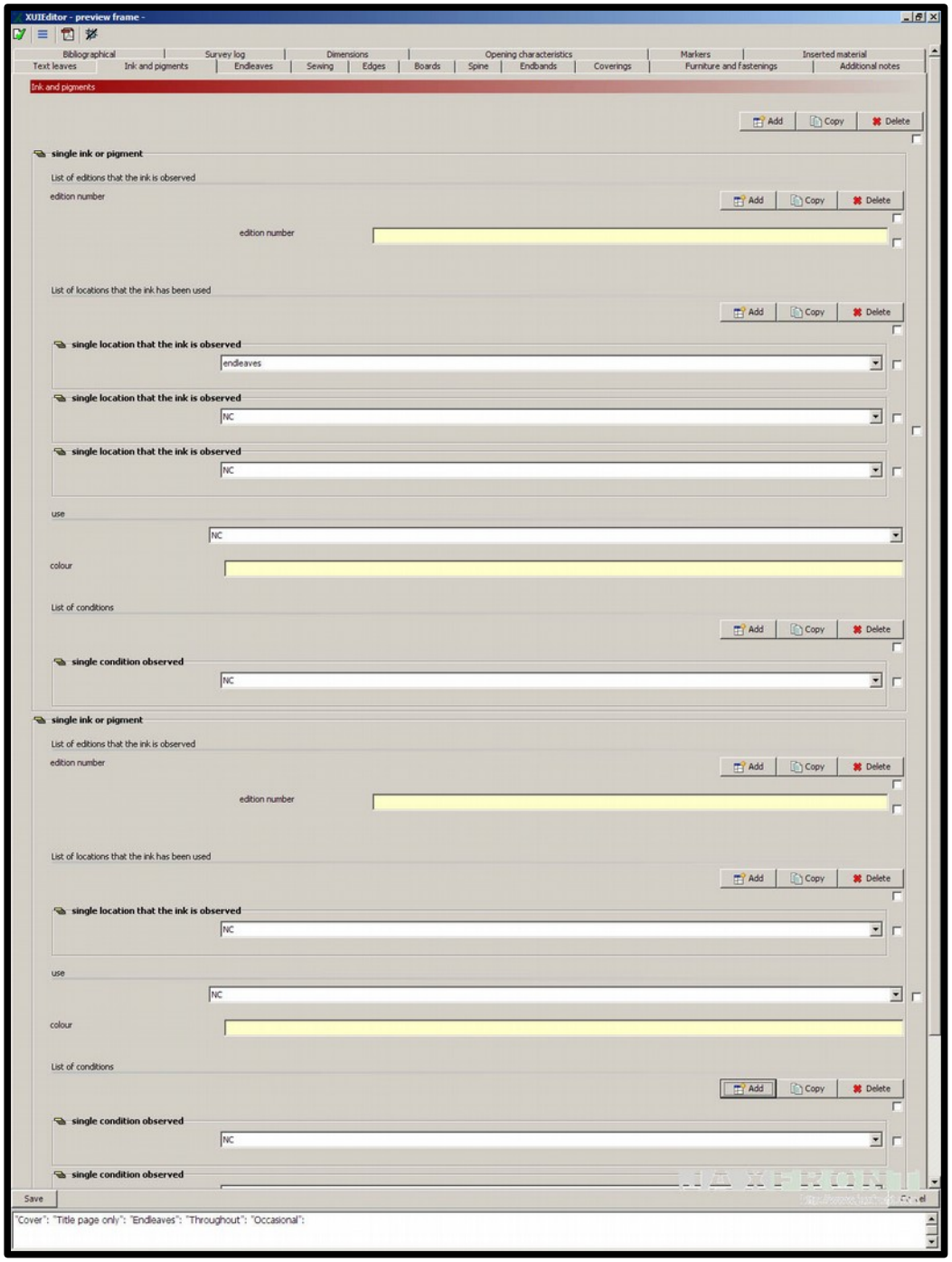

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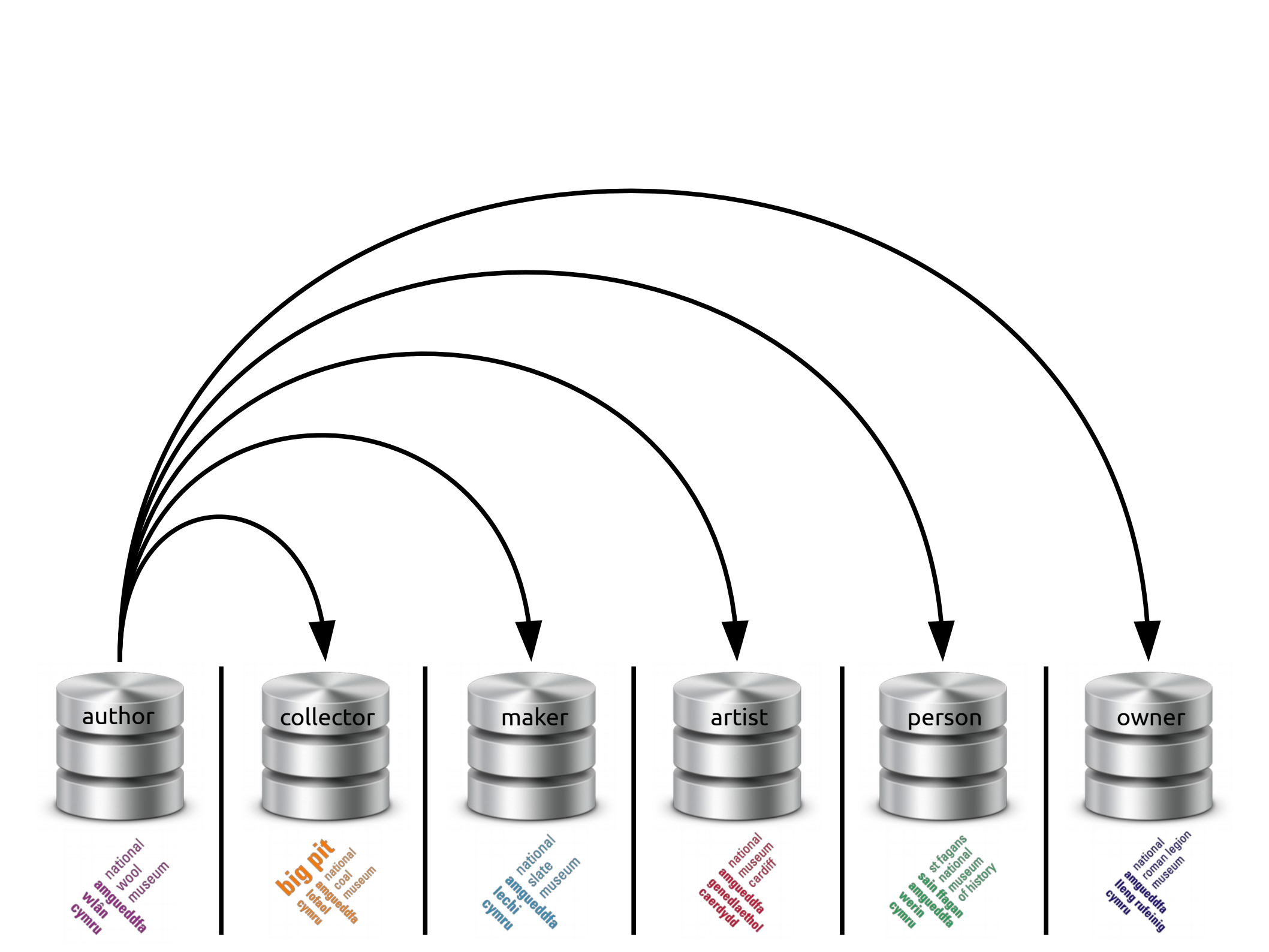
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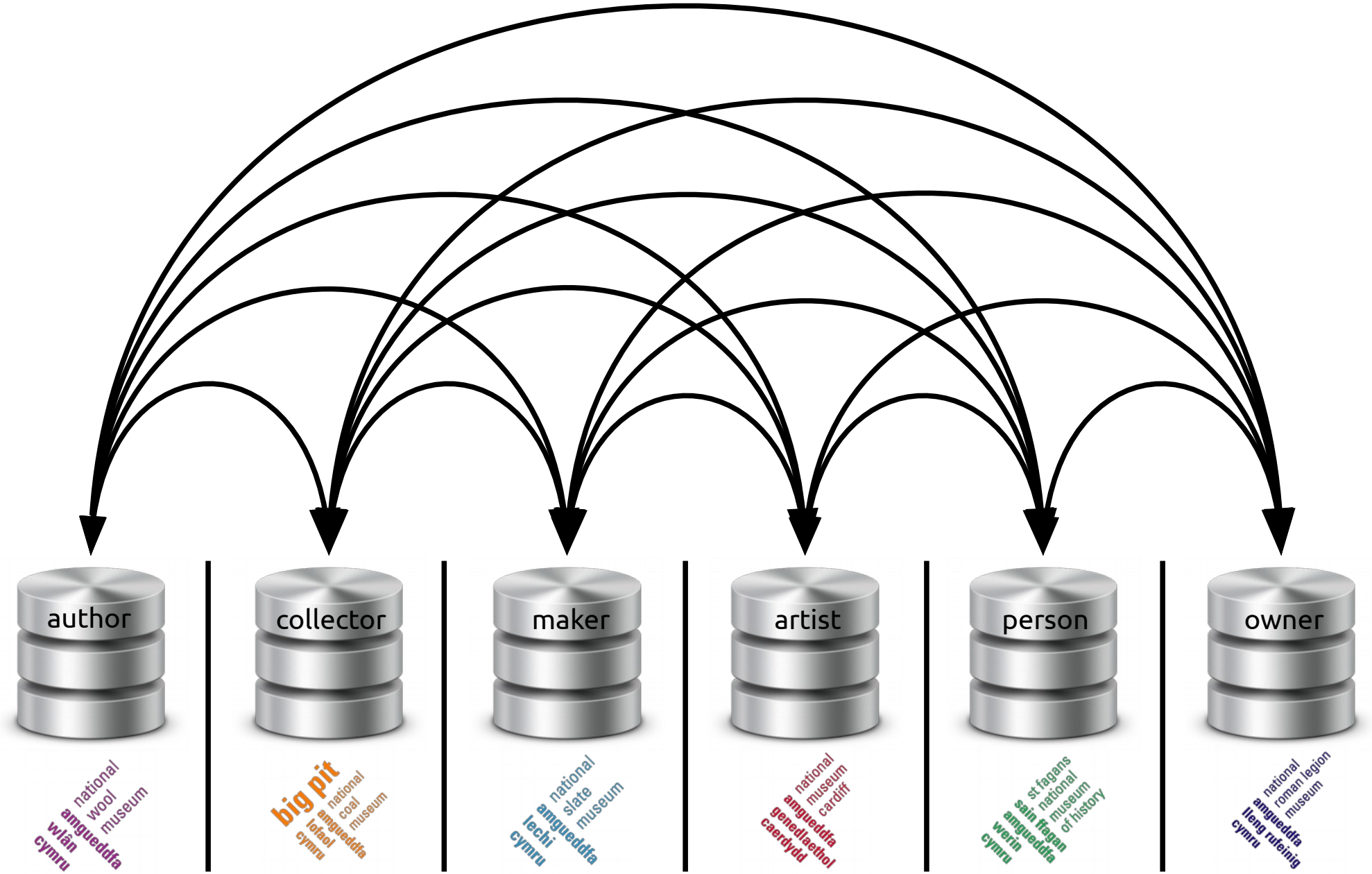
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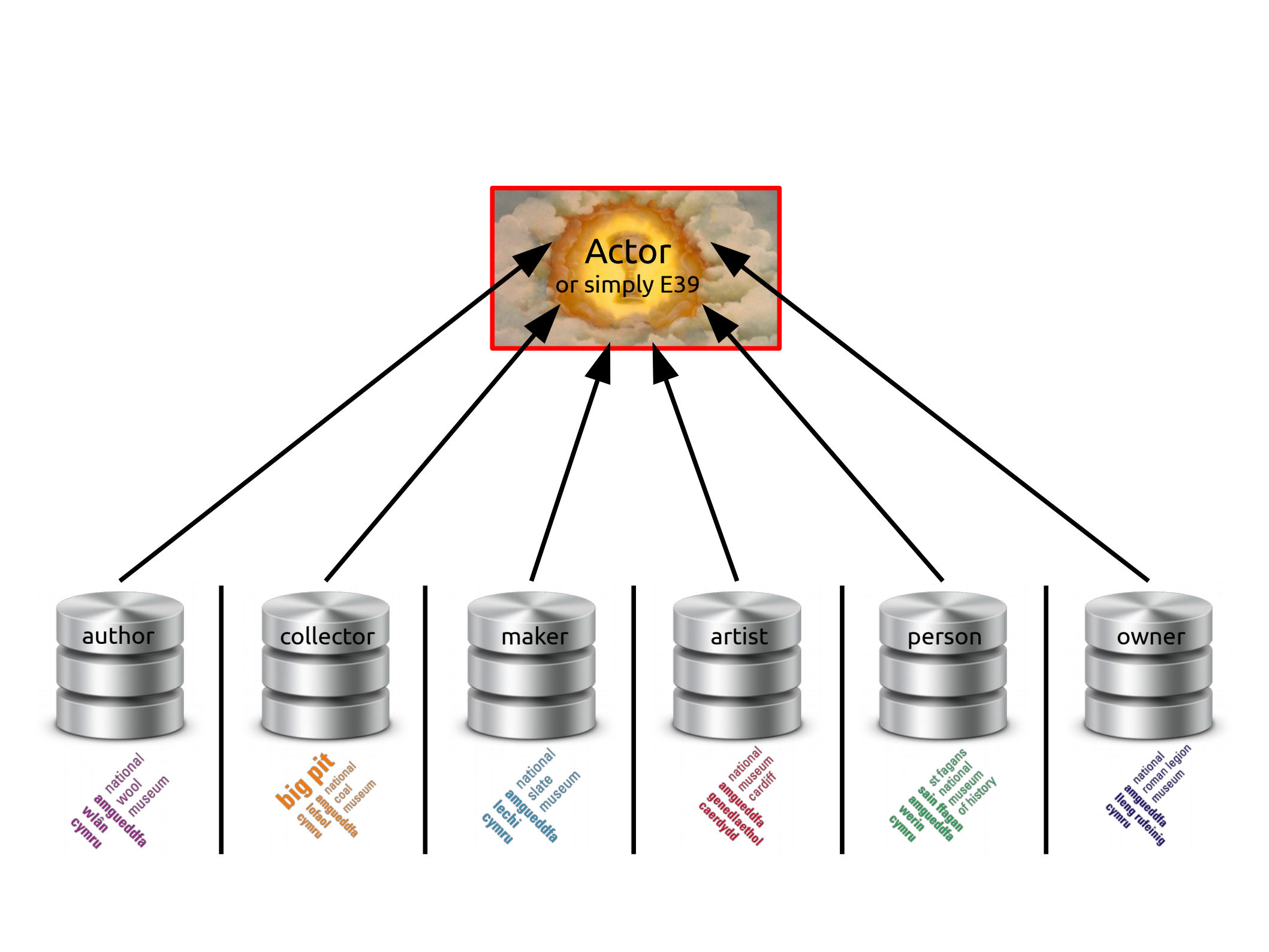
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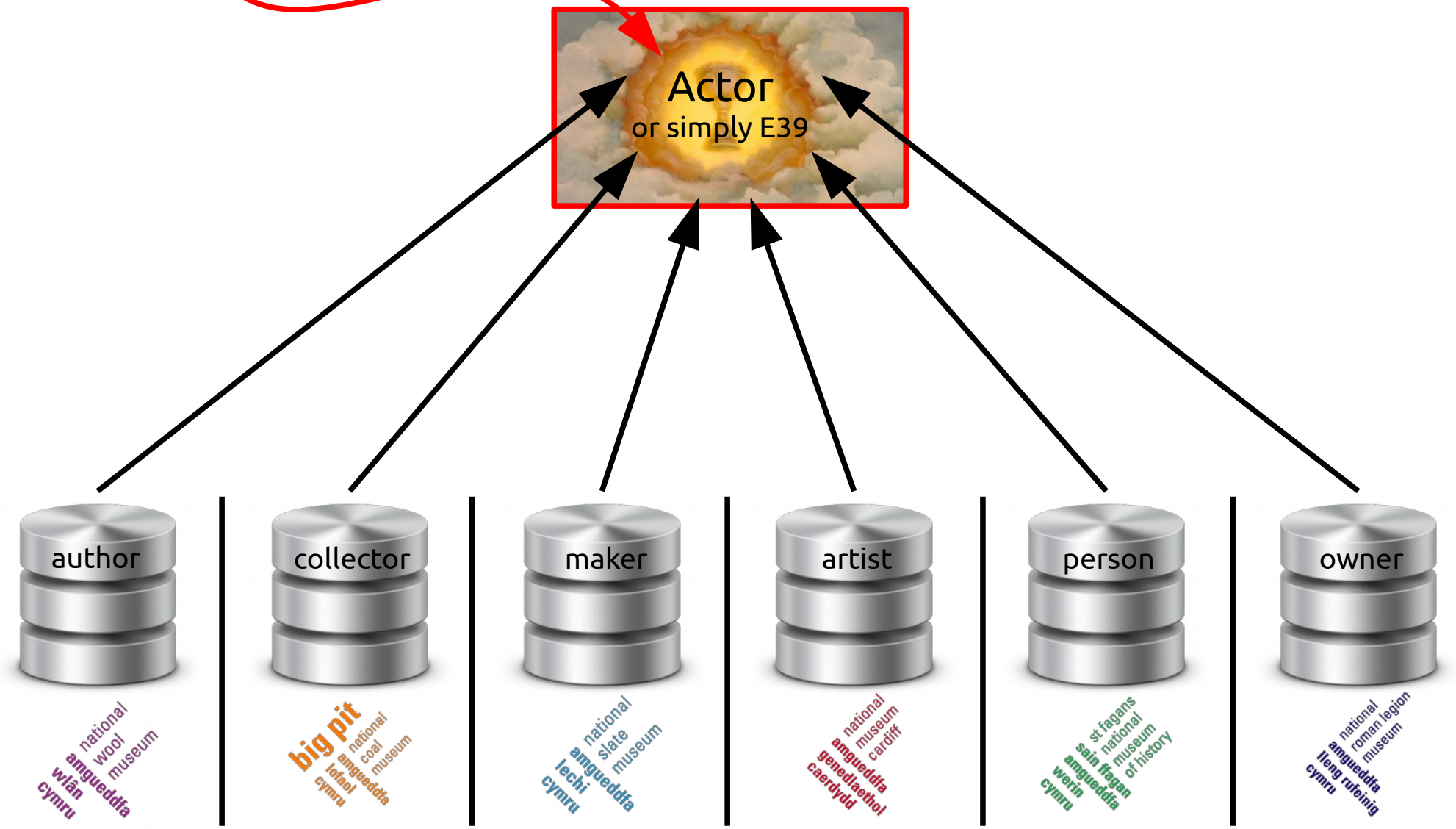
ontology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Ontology (information science)

From Wikipedia, the free encyclopedia

> *"Knowledge graph" redirects here. For the Google knowledge base, see Knowledge Graph.*
> *For other uses, see Knowledge engine (disambiguation).*
> *This article is about ontology in information science. For the study of the nature of being, see Ontology.*

In computer science and information science, an **ontology** is a formal naming and definition of the types, properties, and interrelationships of the entities that really or fundamentally exist for a particular domain of discourse. It is thus a practical application of philosophical ontology, with a taxonomy.

An ontology compartmentalizes the variables needed for some set of computations and establishes the relationships between them.[1][2]

The fields of artificial intelligence, the Semantic Web, systems engineering, software engineering, biomedical informatics, library science, enterprise bookmarking, and information architecture all create ontologies to limit complexity and to organize information. The ontology can then be applied to problem solving.

Contents [hide]

Information science

General aspects
Information access · Information architecture
Information management
Information retrieval
Information seeking · Information society
Knowledge organization · **Ontology** · Taxonomy
Philosophy of information
Science, technology and society

Related fields and sub-fields
Bibliometrics · Categorization
Censorship · Classification
Computer data storage · Cultural studies
Data modeling · Informatics
Information technology
Intellectual freedom
Intellectual property · Memory
Library and information science

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"Knowledge graph" redirects here. For the Google knowledge base, see Knowledge Graph. For other uses, see Knowledge engine (disambiguation).
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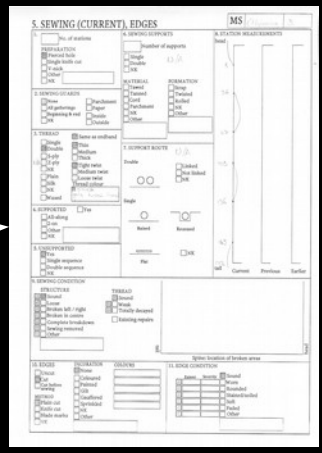
GREEK 515

GREEK 515

GREEN 515


5. SEWING (CURRENT), EDGES
MS

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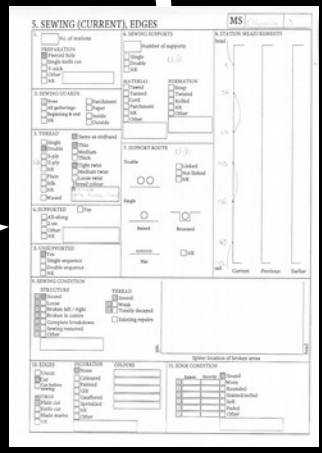
5. SEWING (CURRENT), EDGES
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What's New?

Meeting on 24 - 26 February, 2016

International Journal on Digital Librari...

New version of the CRMgeo (version 1.2)...

Choose a shortcut:

Last official release
Current version
CIDOC CRM Tutorial
CIDOC CRM Web site design related documents

Compatible models & Collaborations »

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Home

What is the CIDOC CRM?

The **CIDOC Conceptual Reference Model (CRM)** provides definitions and a formal structure for describing the implicit and explicit concepts and relationships used in cultural heritage documentation.

The **CIDOC CRM** is intended to promote a shared understanding of cultural heritage information by providing a common and extensible semantic framework that any cultural heritage information can be mapped to. It is intended to be a common language for domain experts and implementers to formulate requirements for information systems and to serve as a guide for good practice of conceptual modelling. In this way, it can provide the "semantic glue" needed to mediate between different sources of cultural heritage information, such as that published by museums, libraries and archives.

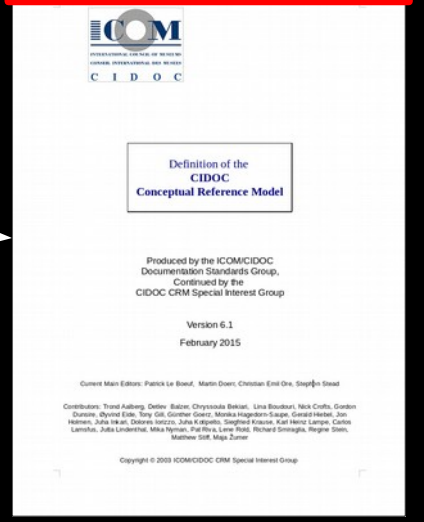
The **CIDOC CRM** is the culmination of over 10 years work by the **CIDOC Documentation Standards Working Group** and **CIDOC CRM SIG** which are working groups of **CIDOC**. Since 9/12/2006 it is official standard **ISO 21127:2006**.

Who we are

Over many years, **CIDOC** and the CIDOC Documentation Standards Working Group (DSWG)have engaged in the creation of a general data model for museums, with a particular focus on information interchange. Until 1994 the product of these activities had been the CIDOC Relational Data Model. In the interim meeting in March 1996 in Crete, the DSWG decided to engage in an object-oriented approach in order to benefit from its expressive power and extensibility for dealing with the necessary diversity and complexity of data structures in the domain. This effort resulted in 1999 in the first complete edition of the *"CIDOC Conceptual Reference Model" (CRM)*, a product of the intensive voluntary work of a variety of contributo RM as a means gration in the n ecided in Londo ization. ISO, in cc ority to create an ational recomme oted as working Since 9/12/2006 it is official standard **ISO 21127:2006**.

ontology

ICOM
CIDOC-CRM
SIG



C I D O C

Definition of the
CIDOC
Conceptual Reference Model

Produced by the ICOM/CIDOC
Documentation Standards Group,
Continued by the
CIDOC CRM Special Interest Group

Version 6.1

February 2015

Current Main Editors: Patrick Le Boeuf, Martin Doerr, Christian Emil Ore, Stephen Stead

Contributors: Trond Aalberg, Detlev Balzer, Chryssoula Bekiari, Lina Boudouri, Nick Crofts, Gordon Dunsire, Øyvind Eide, Tony Gill, Günther Goerz, Monika Hagedorn-Saupe, Gerald Hiebel, Jon Holmen, Juha Inkari, Dolores Iorizzo, Juha Kröpelin, Siegfried Krause, Karl Heinz Lampe, Carlos Lamsfus, Jutta Lindenthal, Mika Nyman, Pat Riva, Lene Rold, Richard Smiraglia, Regine Stein, Matthew Stiff, Maja Zumer

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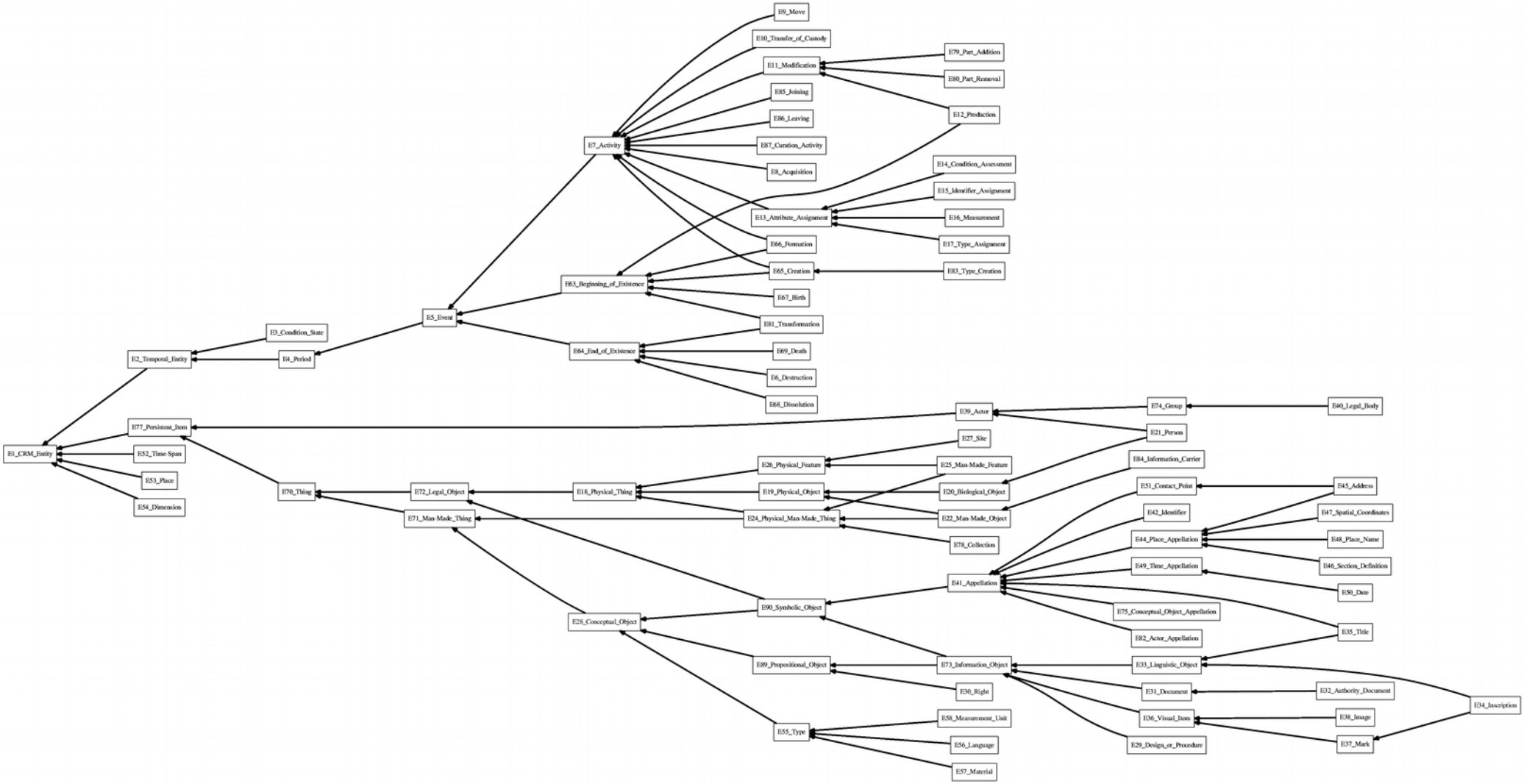
FRBRoo
Functional Requirements for Bibliographic Records
PRESSoo
Modeling of bibliographic information
CRMinf
Argumentation model
CRMarchaeo
Excavation model
CRMsci
Scientific observation model
CRMgeo
Spatiotemporal model
CRMdig
Model for provenance metadata
CRMba
Model for Archaeological Buildings
CRMtex
Model for the study of ancient texts
+CRMsoc

Choosing classes
and properties


E1_CRM_Entity
E2_Temporal_Entity
E3_Condition_State
E4_Period
E5_Event
E7_Activity
E9_Move
E10_Transfer_of_Custody
E11_Modification
E79_Part_Addition
E80_Part_Removal
E85_Joining
E86_Leaving
E87_Curation_Activity
E8_Acquisition
E12_Production
E13_Attribute_Assignment
E14_Condition_Assessment
E15_Identifier_Assignment
E16_Measurement
E17_Type_Assignment
E63_Beginning_of_Existence
E66_Formation
E65_Creation
E83_Type_Creation
E67_Birth
E81_Transformation
E64_End_of_Existence
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E6_Destruction
E68_Dissolution
E52_Time-Span
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E54_Dimension
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E39_Actor
E74_Group
E40_Legal_Body
E21_Person
E70_Thing
E72_Legal_Object
E71_Man-Made_Thing
E18_Physical_Thing
E26_Physical_Feature
E27_Site
E25_Man-Made_Feature
E19_Physical_Object
E20_Biological_Object
E24_Physical_Man-Made_Thing
E22_Man-Made_Object
E78_Collection
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E51_Contact_Point
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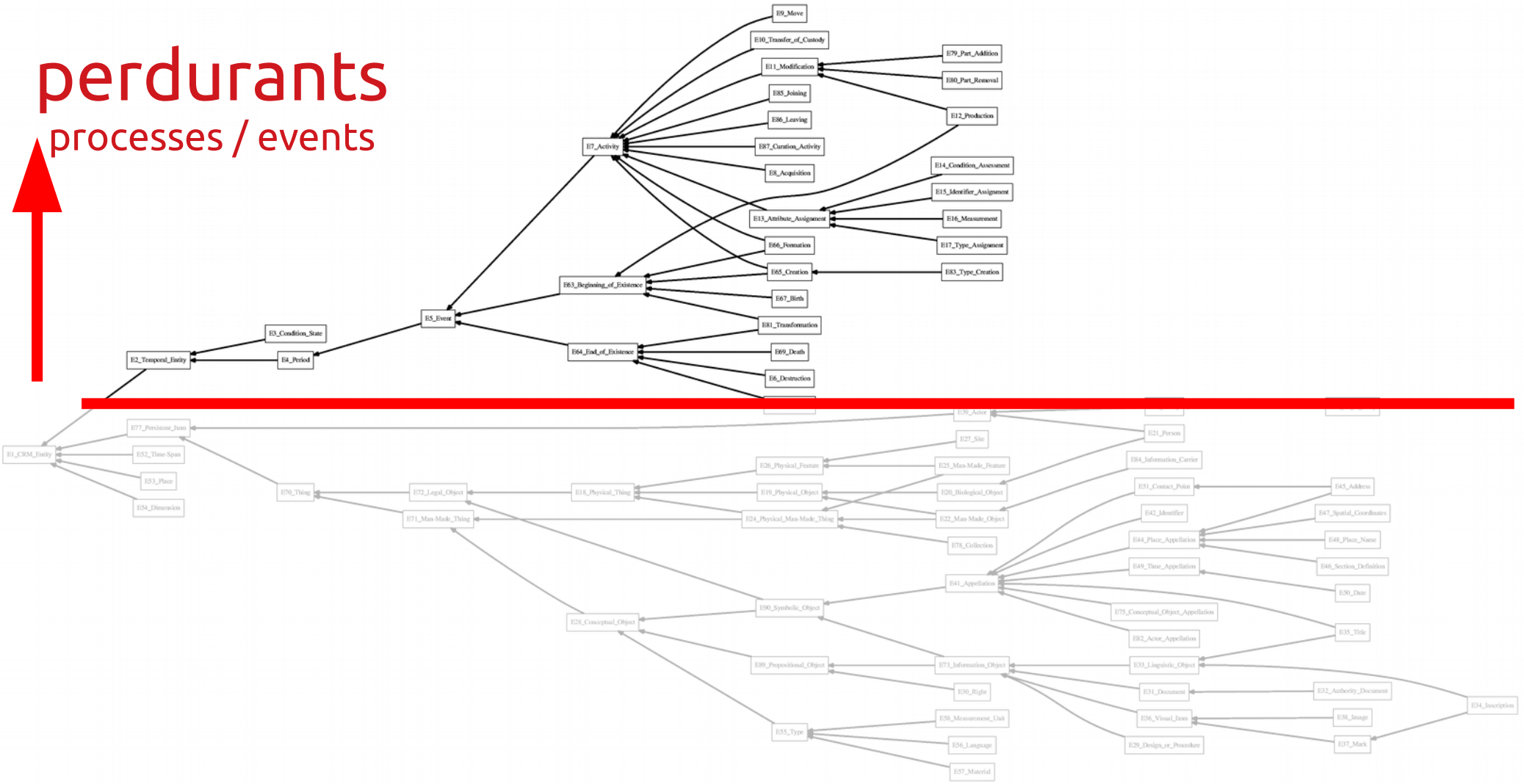
E30_Right
E31_Document
E32_Authority_Document
E34_Inscription
E55_Type
E58_Measurement_Unit
E36_Visual_Item
E38_Image
E56_Language
E29_Design_or_Procedure
E37_Mark
E57_Material

perdurants

processes / events



endurants

substance / things

E2_Temporal_Entity

E77_Persistent_Item

E52_Time-Span

E53_Place

E54_Dimension

E9_Move
E10_Transfer_of_Custody
E11_Modification
E79_Part_Addition
E80_Part_Removal
E12_Production
E85_Joining
E86_Leaving
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E16_Measurement
E17_Type_Assignment
E66_Formation
E65_Creation
E83_Type_Creation
E63_Beginning_of_Existence
E67_Birth
E5_Event
E81_Transformation
E64_End_of_Existence
E69_Death
E6_Destruction
E68_Dissolution

E39_Actor
E74_Group
E40_Legal_Body
E21_Person
E27_Site
E84_Information_Carrier
E26_Physical_Feature
E25_Man-Made_Feature
E51_Contact_Point
E45_Address
E72_Legal_Object
E18_Physical_Thing
E19_Physical_Object
E20_Biological_Object
E42_Identifier
E47_Spatial_Coordinates
E71_Man-Made_Thing
E24_Physical_Man-Made_Thing
E22_Man-Made_Object
E44_Place_Appellation
E48_Place_Name
E78_Collection
E49_Time_Appellation
E46_Section_Definition
E41_Appellation
E50_Date
E75_Conceptual_Object_Appellation
E90_Symbolic_Object
E35_Title
E28_Conceptual_Object
E82_Actor_Appellation
E89_Propositional_Object
E73_Information_Object
E33_Linguistic_Object
E30_Right
E31_Document
E32_Authority_Document
E34_Inscription
E58_Measurement_Unit
E36_Visual_Item
E38_Image
E55_Type
E56_Language
E29_Design_or_Procedure
E37_Mark
E57_Material

E9_Move
E10_Transfer_of_Custody
E11_Modification
E79_Part_Addition
E80_Part_Removal
E12_Production
E85_Joining
E86_Leaving
E87_Curation_Activity
E7_Activity
E8_Acquisition
E14_Condition_Assessment
E15_Identifier_Assignment
E13_Attribute_Assignment
E16_Measurement
E66_Formation
E65_Creation
E63_Beginning_of_Existence
E67_Birth
E5_Event
E81_Transform
E64_End_of_Existence
E69_D
E6_D
E68_D
E2_Temporal_Entity
E1_CRM_Entity
E70_Thing
E39_Actor
E27_Site
E25_Man-Made_Feature
E20_Biological_Object
E40_Legal_Body
E26_Phys
E19_Physical
E18_Physical_Thing
E24_Physical_Man-Ma
Carrier
Point
E45_Address
E47_Spatial_Coordinates
Identifier
Place_Appellation
E48_Place_Name
E46_Section_Definition
E49_Time_Appellation
E50_Date
E75_Conceptual_Object_Appellation
E35_Title
E82_Actor_Appellation
E28_Conceptual_Object
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E73_Information_Object
E33_Linguistic_Object
E30_Right
E31_Document
E32_Authority_Document
E34_Inscription
E36_Visual_Item
E38_Image
E58_Measurement_Unit
E55_Type
E56_Language
E29_Design_or_Procedure
E37_Mark
E57_Material

E1_CRM_Entity
E2_Temporal_Entity
E3_Condition_State
E4_Period
E5_Event
E7_Activity
E9_Move
E10_Transfer_of_Custody
E11_Modification
E79_Part_Addition
E80_Part_Removal
E85_Joining
E86_Leaving
E87_Curation_Activity
E8_Acquisition
E12_Production
E13_Attribute_Assignment
E14_Condition_Assessment
E15_Identifier_Assignment
E16_Measurement
E17_Type_Assignment
E63_Beginning_of_Existence
E66_Formation
E65_Creation
E83_Type_Creation
E67_Birth
E81_Transformation
E64_End_of_Existence
E69_Death
E6_Destruction
E68_Dissolution
E52_Time-Span
E53_Place
E54_Dimension
E77_Persistent_Item
E70_Thing
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E39_Actor
E74_Group
E40_Legal_Body
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E27_Site
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E25_Man-Made_Feature
E84_Information_Carrier
E19_Physical_Object
E20_Biological_Object
E51_Contact_Point
E45_Address
E24_Physical_Man-Made_Thing
E22_Man-Made_Object
E42_Identifier
E47_Spatial_Coordinates
E78_Collection
E44_Place_Appellation
E48_Place_Name
E49_Time_Appellation
E46_Section_Definition
E41_Appellation
E50_Date
E90_Symbolic_Object
E75_Conceptual_Object_Appellation
E35_Title
E82_Actor_Appellation
E89_Propositional_Object
E73_Information_Object
E33_Linguistic_Object
E30_Right
E31_Document
E32_Authority_Document
E55_Type
E58_Measurement_Unit
E36_Visual_Item
E38_Image
E34_Inscription
E56_Language
E29_Design_or_Procedure
E37_Mark
E57_Material

E1_CRM_Entity
E2_Temporal_Entity
E3_Condition_State
E4_Period
E5_Event
E7_Activity
E9_Move
E10_Transfer_of_Custody
E11_Modification
E79_Part_Addition
E80_Part_Removal
E85_Joining
E86_Leaving
E87_Curation_Activity
E8_Acquisition
E12_Production
E14_Condition_Assessment
E15_Identifier_Assignment
E13_Attribute_Assignment
E16_Measurement
E17_Type_Assignment
E66_Formation
E65_Creation
E83_Type_Creation
E63_Beginning_of_Existence
E67_Birth
E81_Transformation
E64_End_of_Existence
E69_Death
E6_Destruction
E52_Time-Span
E53_Place
E54_Dimension
E77_Persistent_Item
E70_Thing
E72_Legal_Object
E71_Man-Made_Thing
E18_Physical_Thing
E28_Conceptual_Object
E39_Actor
E74_Group
E40_Legal_Body
E21_Person
E27_Site
E25_Man-Made_Feature
E20_Biological_Object
E22_Man-Made_Object
E78_Collection
E84_Information_Carrier
E51_Contact_Point
E45_Address
E42_Identifier
E47_Spatial_Coordinates
E44_Place_Appellation
E48_Place_Name
E49_Time_Appellation
E46_Section_Definition
E41_Appellation
E50_Date
E75_Conceptual_Object_Appellation
E35_Title
E82_Actor_Appellation
E73_Information_Object
E33_Linguistic_Object
E30_Right
E31_Document
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E36_Visual_Item
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E9_Move
E10_Transfer_of_Custody
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E79_Part_Addition
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E85_Joining
E86_Leaving
E12_Production
E7_Activity
E87_Curation_Activity
E8_Acquisition
E14_Condition_Assessment
E15_Identifier_Assignment
E13_Attribute_Assignment
E16_Measurement
E17_Type_Assignment
E66_Formation
E65_Creation
E83_Type_Creation
E63_Beginning_of_Existence
E67_Birth
E5_Event
E81_Transformation
E3_Condition_State
E64_End_of_Existence
E2_Temporal_Entity
E4_Period
E39_Actor
E74_Group
E40_Legal_Body
E77_Persistent_Item
E21_Person
E1_CRM_Entity
E52_Time-Span
E84_Information_Carrier
E53_Place
E70_Thing
E72_Legal_Object
E51_Contact_Point
E45_Address
E54_Dimension
E71_Man-Made_Thing
E42_Identifier
E47_Spatial_Coordinates
E44_Place_Appellation
E48_Place_Name
E49_Time_Appellation
E46_Section_Definition
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E35_Title
E82_Actor_Appellation
E73_Information_Object
E33_Linguistic_Object
E30_Right
E31_Document
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E58_Measurement_Unit
E36_Visual_Item
E38_Image
E55_Type
E56_Language
E29_Design_or_Procedure
E37_Mark
E57_Material
E26_Physical_Feature
E19_Physical_Object
E24_Physical_Man-Made_Thing

E9_Move
E10_Transfer_of_Custody
E11_Modification
E79_Part_Addition
E80_Part_Removal
E12_Production
E85_Joining
E86_Leaving
E7_Activity
E87_Curation_Activity
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E15_Identifier_Assignment
E13_Attribute_Assignment
E16_Measurement
E17_Type_Assignment
E66_Formation
E65_Creation
E83_Type_Creation
E63_Beginning_of_Existence
E67_Birth
E81_Transformation
E5_Event
E3_Condition_State
E64_End_of_Existence
E69_Death
E2_Temporal_Entity
E4_Period
E6_Destruction
E68_Dissolution
E77_Persistent_Item
E1_CRM_Entity
E52_Time-Span
E53_Place
E54_Dimension
E70_Thing
E72_Legal_Object
E18_Physical_Thing
E71_Man-Made_Thing
E28_Conceptual_Object
E90_Symbol
E89_Propositional
E56_Language
E57_Material
E27_Site
E25_Man-Made_Feature
E20_Biological_Object
E22_Man-Made_Object
E78_Collection
E74_Group
E40_Legal_Body
E45_Address
E47_Spatial_Coordinates
E48_Place_Name
E46_Section_Definition
E50_Date
E35_Title
E33_Linguistic_Object
E31_Document
E32_Authority_Document
E34_Inscription
E36_Visual_Item
E38_Image
E37_Mark
E29_Design_or_Procedure

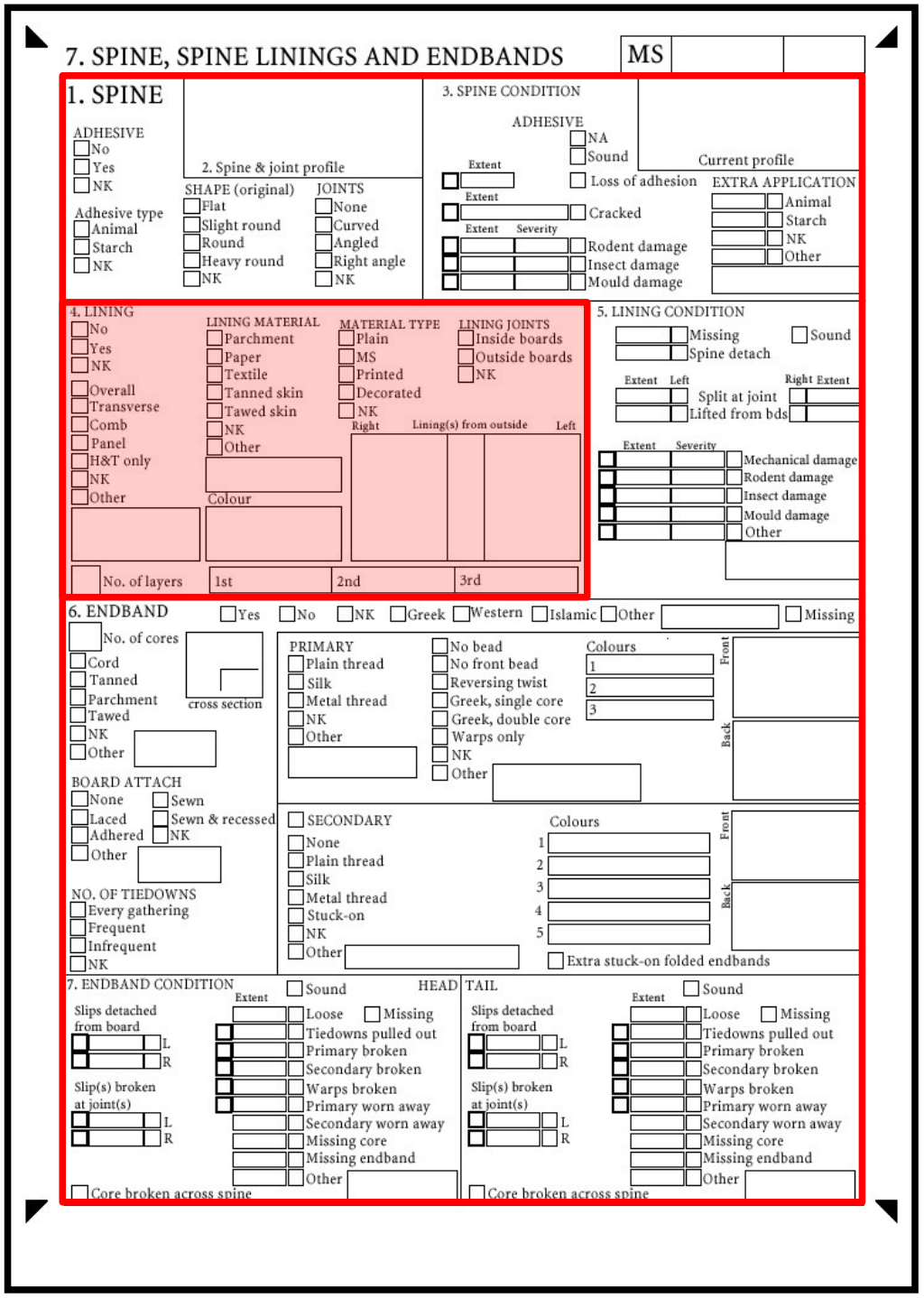
CIDOC-CRM

Scope note:
This class comprises physical objects purposely created by human activity.

No assumptions are made as to the extent of modification required to justify regarding an object as man-made. For example, an inscribed piece of rock or a preserved butterfly are both regarded as instances of E22 Man-Made Object.

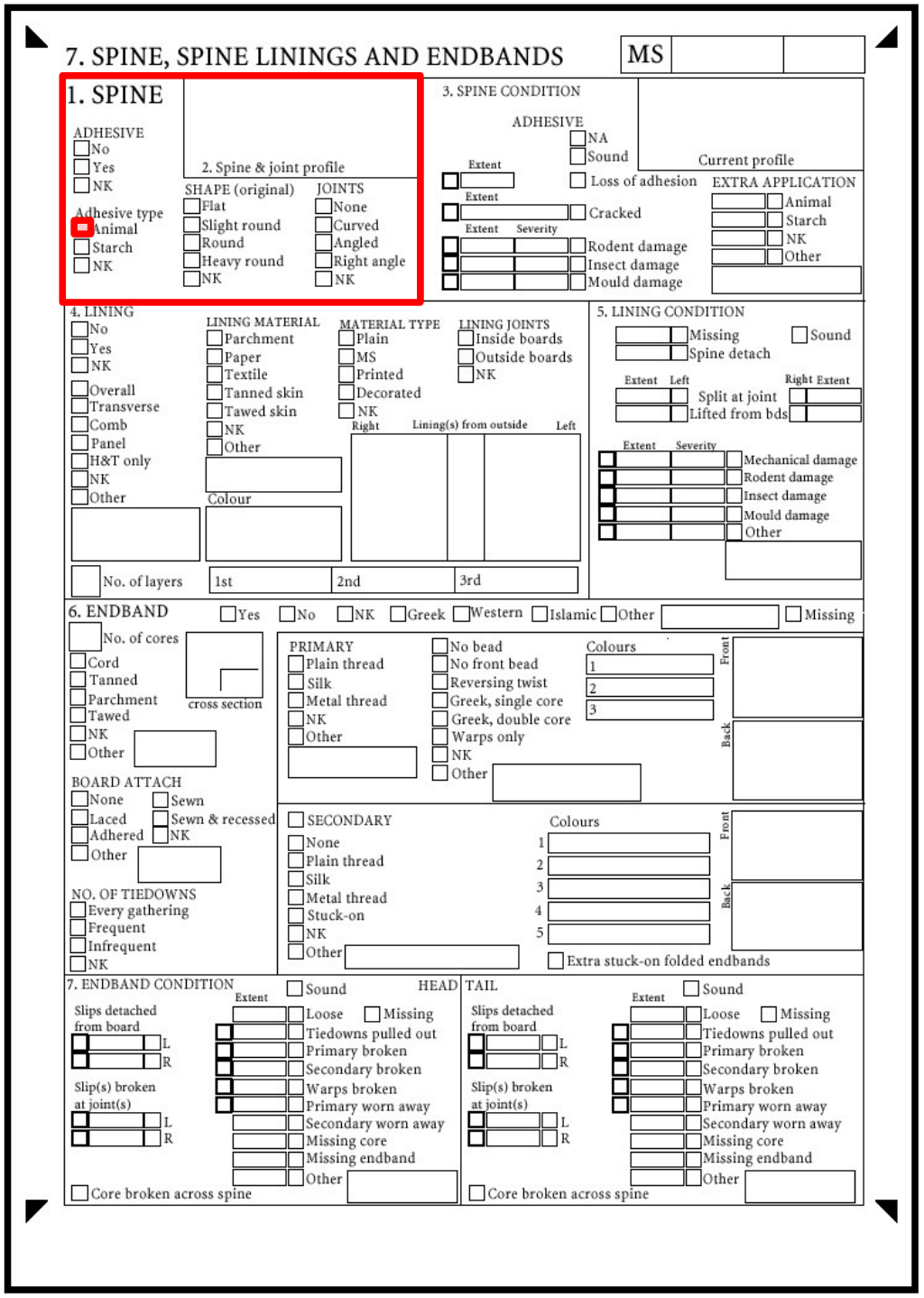
Examples:
Mallard (the World's fastest steam engine)
the Portland Vase
the Coliseum

E22 Man-Made Object



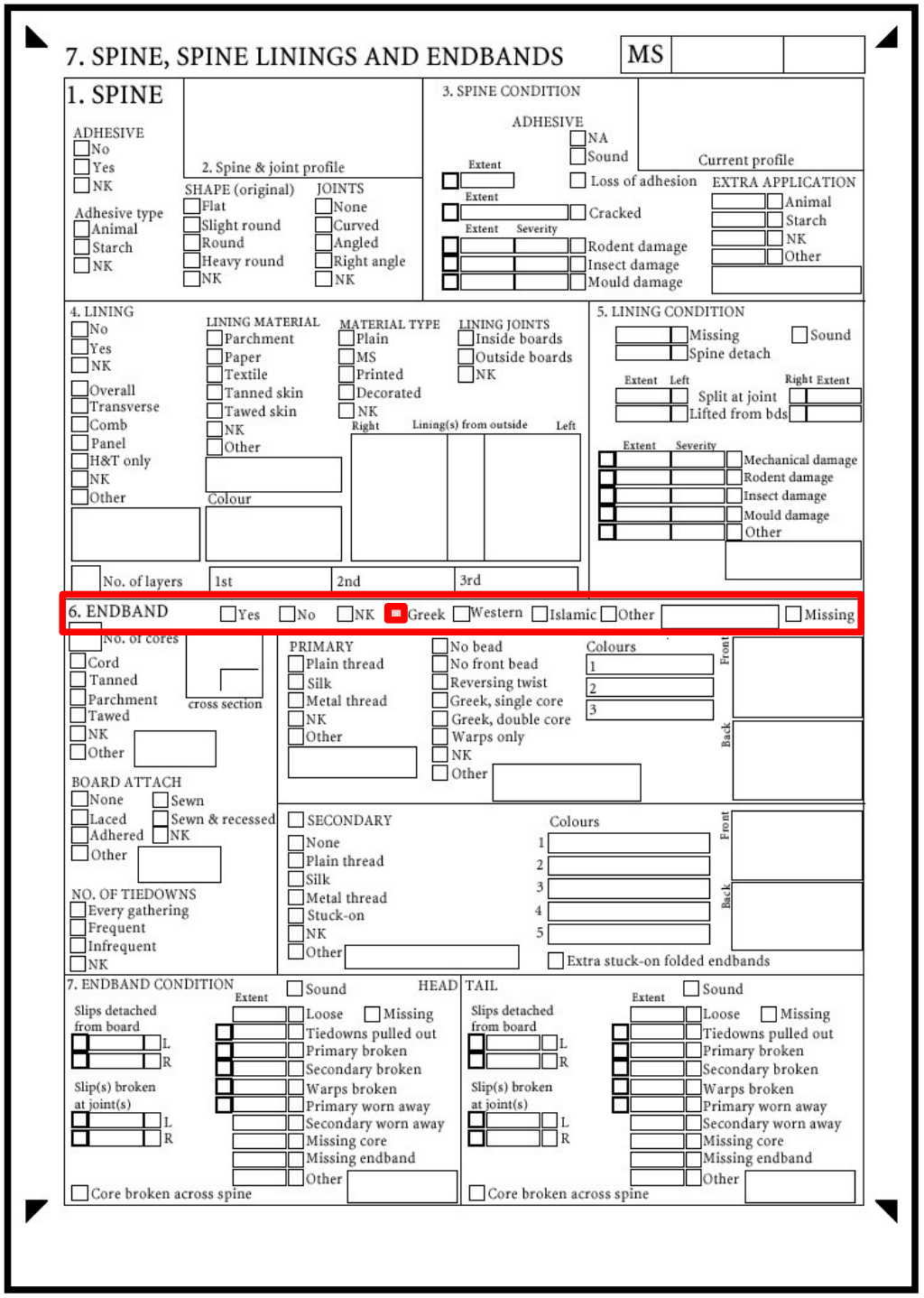
Implied relationships

- lining **part of** spine



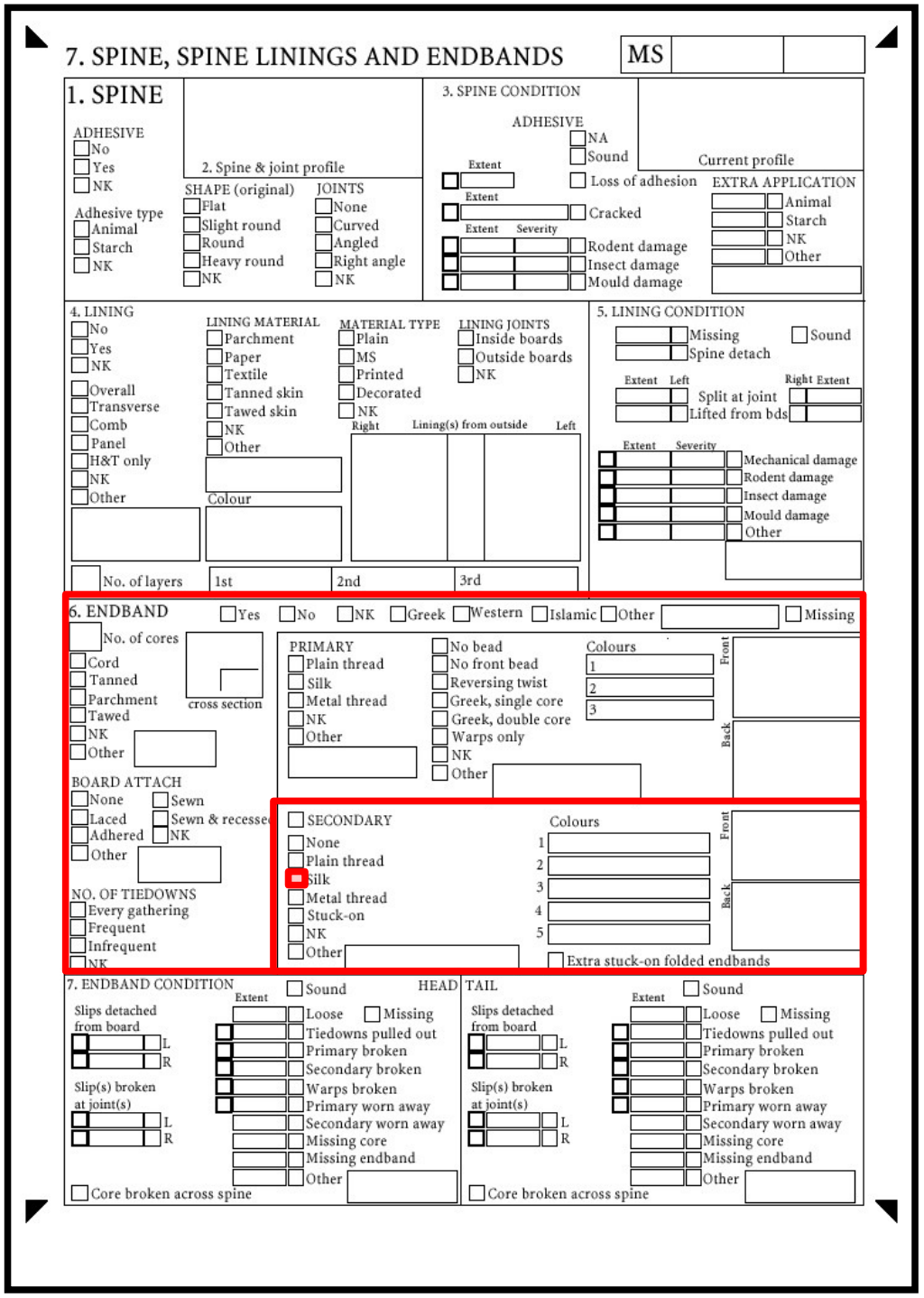
Implied relationships

- lining **part of** spine
- spine adhesive **has type** animal



Implied relationships

- lining **part of** spine
- spine adhesive **has type** animal
- endband **has technique** Greek

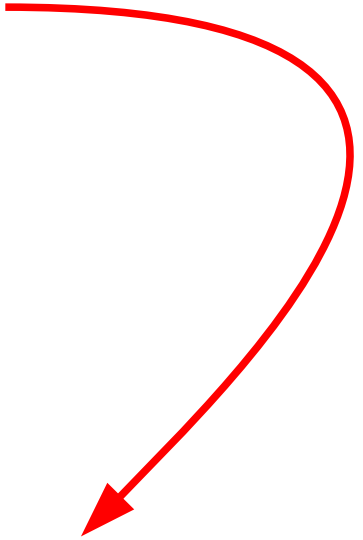


Implied relationships

- lining **part of** spine
- spine adhesive **has type** animal
- endband **has technique** Greek
- secondary thread **has material** silk

Implied relationships → CRM properties

- lining **part of** spine
- spine adhesive **has type** animal
- endband **has technique** Greek
- secondary thread **has material** silk



- lining **crm:P46_forms_part_of** spine
- spine adhesive **crm:P2_has_type** animal
- making of endband **crm:P32_used_general_technique** Greek
- secondary thread **crm:P45_consists_of** silk

CIDOC-CRM

Scope note:
This class comprises physical objects purposely created by human activity.

No assumptions are made as to the extent of modification required to justify regarding an object as man-made. For example, an inscribed piece of rock or a preserved butterfly are both regarded as instances of E22 Man-Made Object.

Examples:
Mallard (the World's fastest steam engine)
the Portland Vase
the Coliseum

E22 Man-Made Object

CIDOC-CRM

Scope Note:
This class comprises all persistent physical items that are purposely created by human activity.
This class comprises man-made objects, such as a swords, and man-made features, such as rock art. No assumptions are made as to the extent of modification required to justify regarding an object as man-made. For example, a “cup and ring” carving on bedrock is regarded as instance of E24 Physical Man-Made Thing.

Examples:
the Forth Railway Bridge (E22)
the Channel Tunnel (E25)
the Historical Collection of the Museum Benaki in Athens (E78)

E24 Physical Man-Made Thing

P62 depicts: E1 CRM Entity
P65 shows visual item: E36 Visual Item

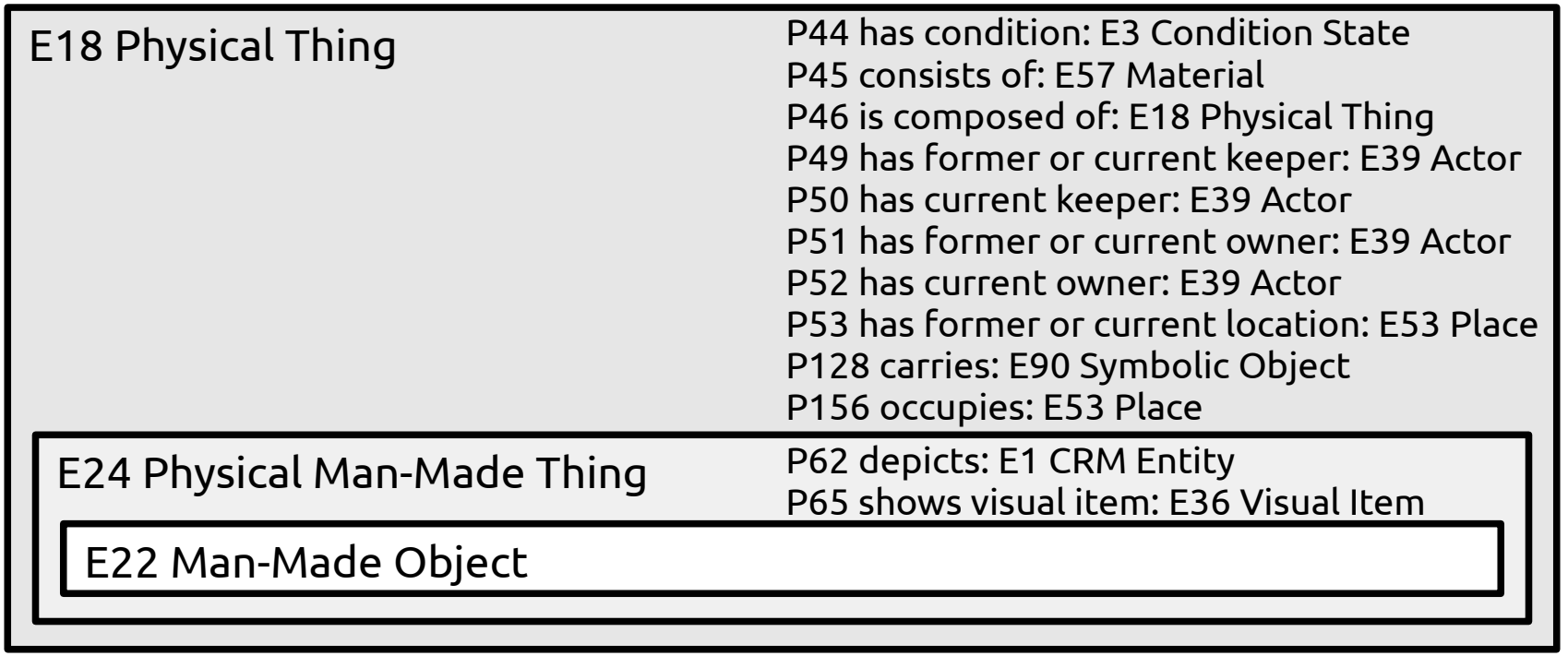
E22 Man-Made Object

CIDOC-CRM

P62 depicts: E1 CRM Entity
P65 shows visual item: E36 Visual Item

E22 Man-Made Object

CIDOC-CRM


E18 Physical Thing
P44 has condition: E3 Condition State
P45 consists of: E57 Material
P46 is composed of: E18 Physical Thing
P49 has former or current keeper: E39 Actor
P50 has current keeper: E39 Actor
P51 has former or current owner: E39 Actor
P52 has current owner: E39 Actor
P53 has former or current location: E53 Place
P128 carries: E90 Symbolic Object
P156 occupies: E53 Place
E24 Physical Man-Made Thing
P62 depicts: E1 CRM Entity
P65 shows visual item: E36 Visual Item
E22 Man-Made Object

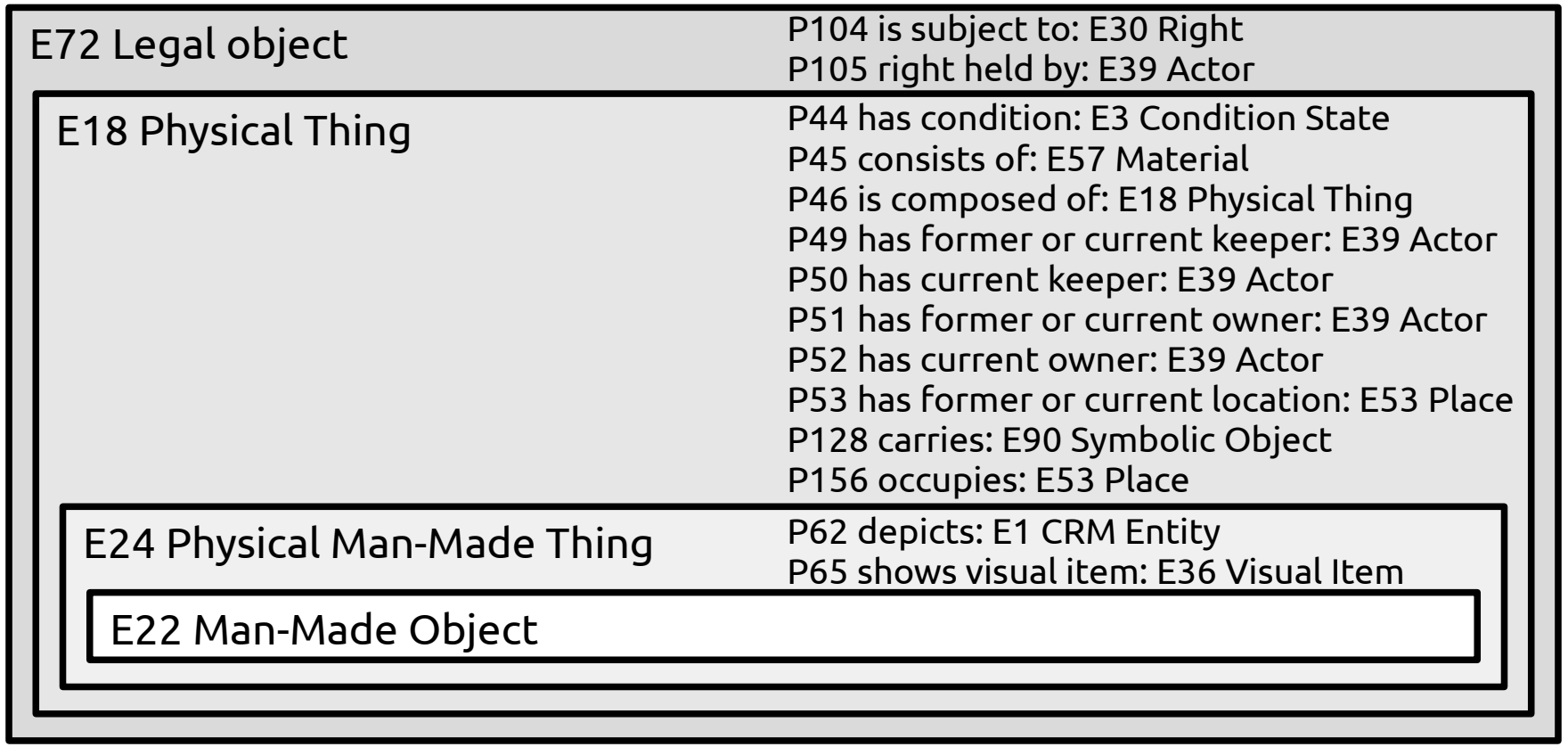
CIDOC-CRM

P44 has condition: E3 Condition State
P45 consists of: E57 Material
P46 is composed of: E18 Physical Thing
P49 has former or current keeper: E39 Actor
P50 has current keeper: E39 Actor
P51 has former or current owner: E39 Actor
P52 has current owner: E39 Actor
P53 has former or current location: E53 Place
P128 carries: E90 Symbolic Object
P156 occupies: E53 Place

P62 depicts: E1 CRM Entity
P65 shows visual item: E36 Visual Item

E22 Man-Made Object

CIDOC-CRM


E72 Legal object
P104 is subject to: E30 Right
P105 right held by: E39 Actor
E18 Physical Thing
P44 has condition: E3 Condition State
P45 consists of: E57 Material
P46 is composed of: E18 Physical Thing
P49 has former or current keeper: E39 Actor
P50 has current keeper: E39 Actor
P51 has former or current owner: E39 Actor
P52 has current owner: E39 Actor
P53 has former or current location: E53 Place
P128 carries: E90 Symbolic Object
P156 occupies: E53 Place
E24 Physical Man-Made Thing
P62 depicts: E1 CRM Entity
P65 shows visual item: E36 Visual Item
E22 Man-Made Object

CIDOC-CRM

P104 is subject to: E30 Right
P105 right held by: E39 Actor

P44 has condition: E3 Condition State
P45 consists of: E57 Material
P46 is composed of: E18 Physical Thing
P49 has former or current keeper: E39 Actor
P50 has current keeper: E39 Actor
P51 has former or current owner: E39 Actor
P52 has current owner: E39 Actor
P53 has former or current location: E53 Place
P128 carries: E90 Symbolic Object
P156 occupies: E53 Place

P62 depicts: E1 CRM Entity
P65 shows visual item: E36 Visual Item

E22 Man-Made Object

CIDOC-CRM

E1 CRM Entity

P1 is identified by: E41 Appellation
P2 has type: E55 Type
P3 has note: E62 String
P48 has preferred identifier: E42 Identifier
P137 exemplifies: E55 Type

E77 Persistent Item

E70 Thing

P43 has dimension: E54 Dimension
P101 had as general use: E55 Type
P130 shows features of: E70 Thing

E72 Legal object

P104 is subject to: E30 Right
P105 right held by: E39 Actor

E18 Physical Thing

P44 has condition: E3 Condition State
P45 consists of: E57 Material
P46 is composed of: E18 Physical Thing
P49 has former or current keeper: E39 Actor
P50 has current keeper: E39 Actor
P51 has former or current owner: E39 Actor
P52 has current owner: E39 Actor
P53 has former or current location: E53 Place
P128 carries: E90 Symbolic Object
P156 occupies: E53 Place

E24 Physical Man-Made Thing

P62 depicts: E1 CRM Entity
P65 shows visual item: E36 Visual Item

E22 Man-Made Object

CIDOC-CRM

E1 CRM Entity

P1 is identified by: E41 Appellation
P2 has type: E55 Type
P3 has note: E62 String
P48 has preferred identifier: E42 Identifier
P137 exemplifies: E55 Type

E77 Persistent Item

E70 Thing

P43 has dimension: E54 Dimension
P101 had as general use: E55 Type
P130 shows features of: E70 Thing

E72 Legal object

P104 is subject to: E30 Right
P105 right held by: E39 Actor

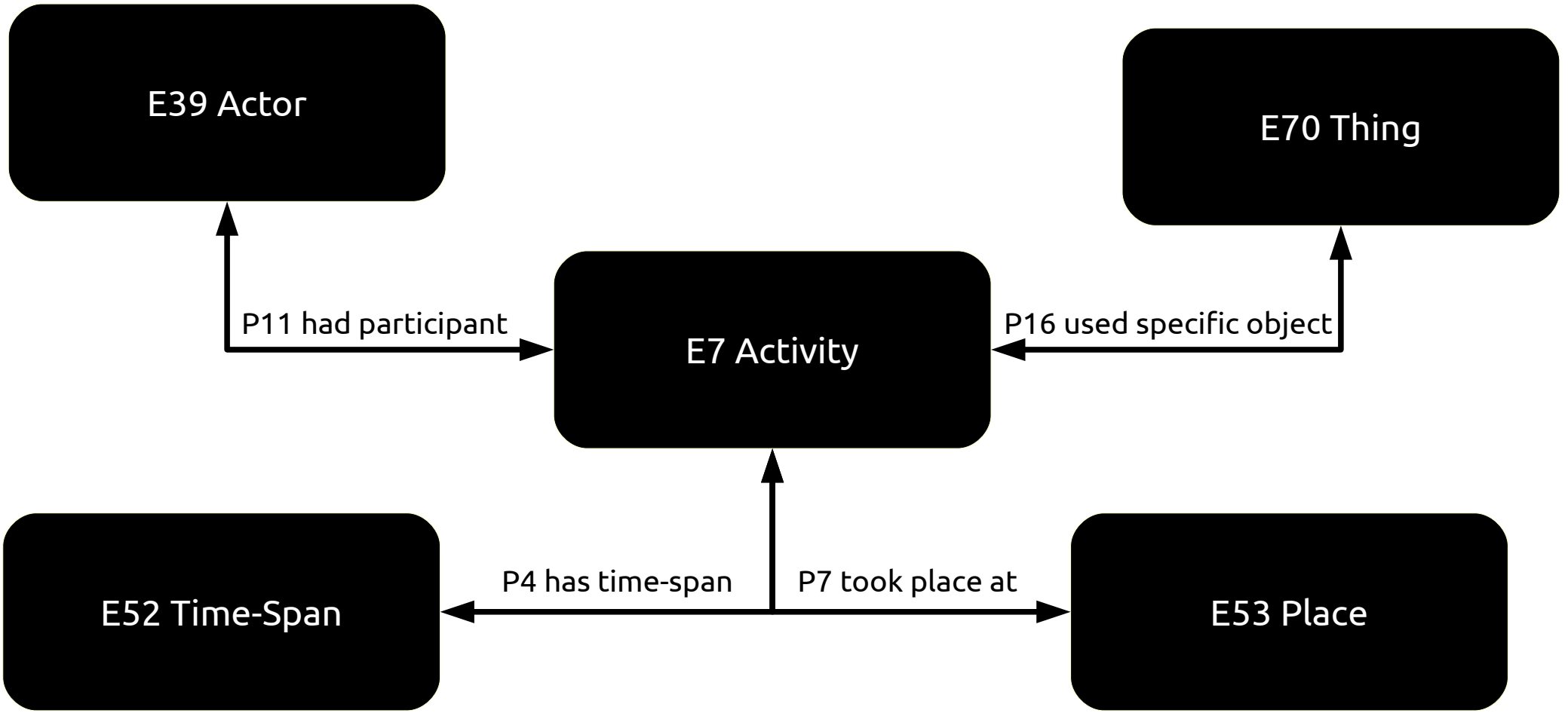
E18 Physical Thing

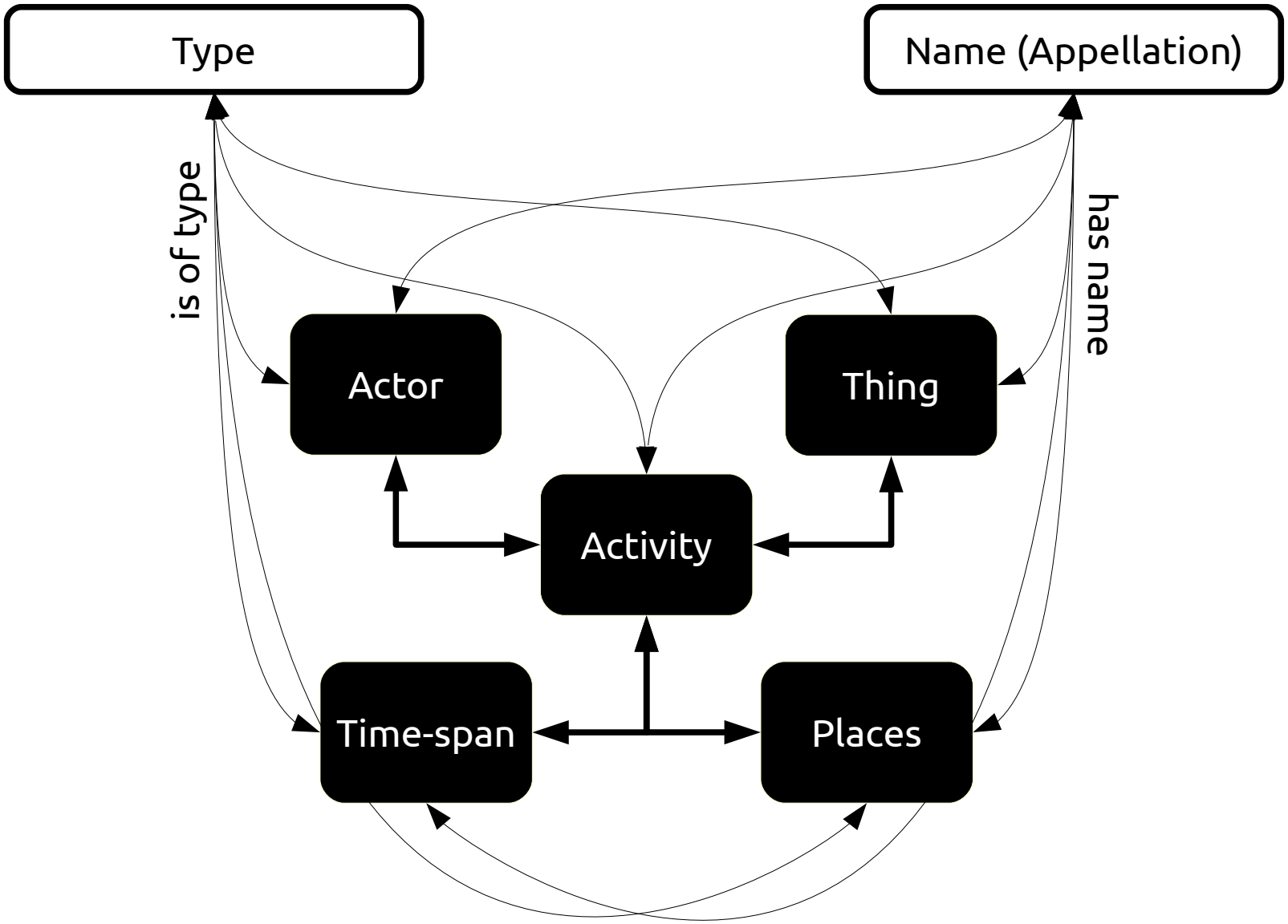
P44 has condition: E3 Condition State
P45 consists of: E57 Material
P46 is composed of: E18 Physical Thing
P49 has former or current keeper: E39 Actor
P50 has current keeper: E39 Actor
P51 has former or current owner: E39 Actor
P52 has current owner: E39 Actor
P53 has former or current location: E53 Place
P128 carries: E90 Symbolic Object
P156 occupies: E53 Place

E24 Physical Man-Made Thing

P62 depicts: E1 CRM Entity
P65 shows visual item: E36 Visual Item

E22 Man-Made Object


E39 Actor
E70 Thing
P11 had participant
E7 Activity
P16 used specific object
E52 Time-Span
P4 has time-span
P7 took place at
E53 Place


Type
Name (Appellation)
is of type
has name
Actor
Thing
Activity
Time-span
Places

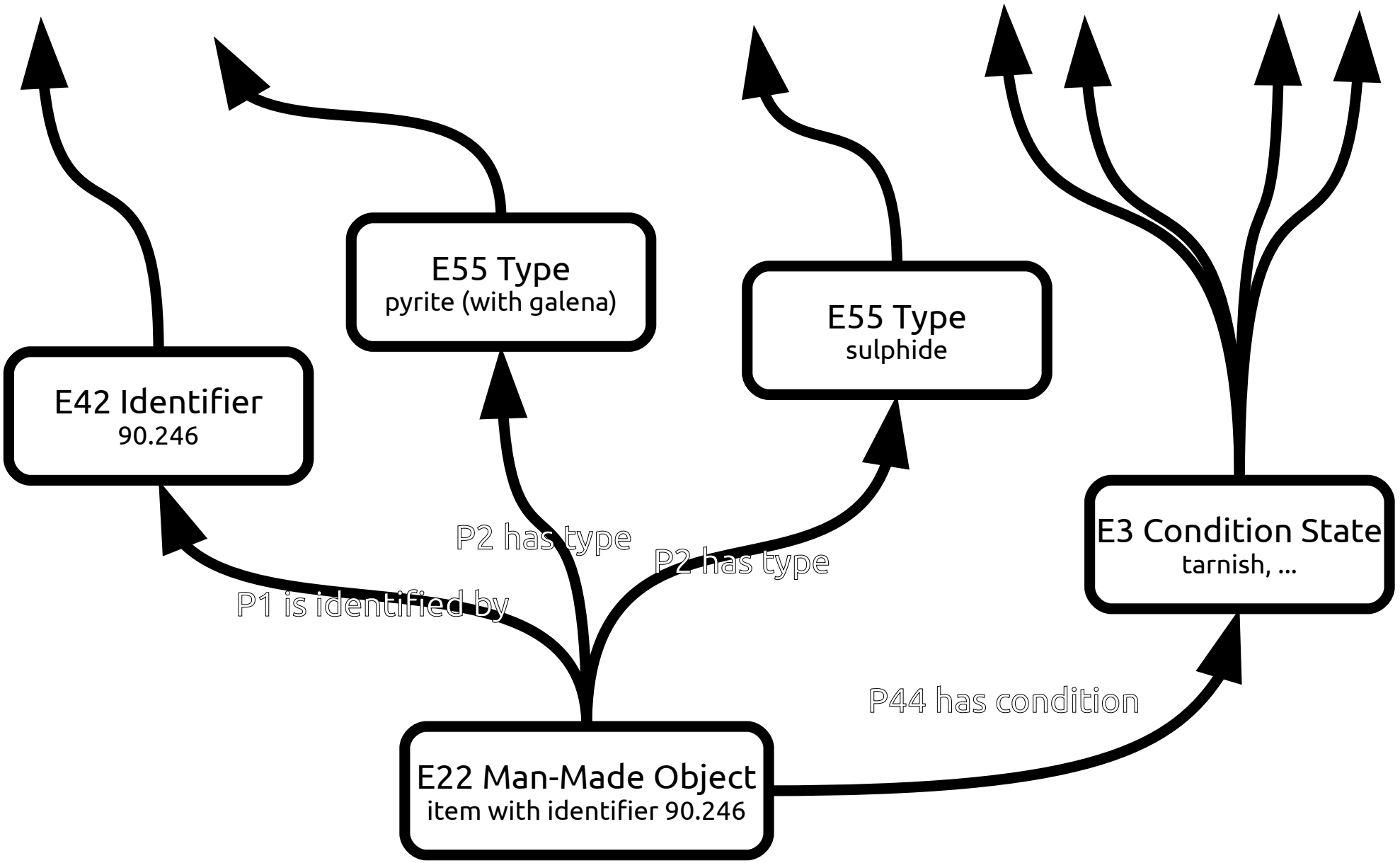
NMW example

condition of mineral specimens

Accession number	Mineral species	associated minerals	chemical group	1=yes, 0=no	1=no, 0=yes	tarnish	cracking	efflorescence	crumbling	smell	damage to label
90.246	pyrite	with galena	sulphide	1	0	1	1	0	0	0	0
90.247	pyrite	0	sulphide	1	0	0	1	0	0	0	0
10.34.GR.10	pyrite	with sphalerite	sulphide	0	1	0	0	0	0	0	0
10.34.GR.11	pyrite	0	sulphide	1	0	1	1	0	0	0	0
13.45.GR.1.2	pyrite	with quartz, sphalerite, galena	sulphide	1	0	1	1	0	0	0	0
13.45.GR.1.3	pyrite	with quartz, sphalerite, galena	sulphide	1	0	1	1	0	0	0	0
13.62.GR.3	pyrite	quartz, chalcopyrite, galena, arsenopyrite, sphalerite	sulphide	1	0	1	0	1	1	0	0
14.311.GR.218	pyrite	with calcite	sulphide	0	1	0	0	0	0	0	0
15.156.GR.51	pyrite	0	sulphide	1	0	1	1	0	0	0	1
15.277.GR.37	pyrite	with chalcopyrite, quartz	sulphide	0	1	0	0	0	0	0	0
15.277.GR.38	pyrite	with quartz	sulphide	1	0	1	0	1	0	0	0
15.277.GR.39	pyrite	0	sulphide	0	1	0	0	0	0	0	0
18.172.GR.12	pyrite	0	sulphide	1	0	1	1	0	0	0	0
18.95.GR.184	pyrite	0	sulphide	0	1	0	0	0	0	0	0
19.305.GR.20	pyrite	0	sulphide	1	0	1	1	0	0	0	0
20.122.GR.3	pyrite	0	sulphide	0	1	0	0	0	0	0	0
20.271.GR.1	pyrite	0	sulphide	1	0	1	1	0	0	1	0
20.271.GR.8	pyrite	0	sulphide	1	0	1	0	0	0	1	0
20.348.GR.28	pyrite	0	sulphide	1	0	1	1	1	1	0	
20.381.GR.2	pyrite	0	sulphide	1	0	1	0	0	0	0	
20.381.GR.3	pyrite	0	sulphide	1	0	1	0	0	0	1	
20.399.GR.15	pyrite	0	sulphide	1	0	1	1	0	0	1	
20.399.GR.18	pyrite	0	sulphide	1	0	1	0	1	0	1	
20.78.GR.48.5	pyrite	0	sulphide	0	1	0	0	0	0	0	
20.89G.R.105	pyrite	replaced by goethite	sulphide	1	0	0	1	0	0	0	
2002.21G.M.26	pyrite	0	sulphide	0	1	0	0	0	0	0	
2002.21G.M.27	pyrite	0	sulphide	0	1	0	0	0	0	0	
2002.48G.M.89a,b	pyrite	0	sulphide	1	0	1	0	0	0	0	0
2003.1G.M.143	pyrite	weathered sphalerite	sulphide	1	0	1	1	0	0	0	0
2003.1G.M.484	pyrite	calcite	sulphide	0	1	0	0	0	0	0	0
2005.44G.M.110b.c	pyrite	0	sulphide	1	0	1	1	1	0	0	
2005.44G.M.118b,c	pyrite	0	sulphide	1	0	1	0	0	0	0	
2005.44G.M.124b	pyrite	0	sulphide	1	0	0	1	0	0	0	0
2005.44G.M.180b	pyrite	0	sulphide	1	0	1	1	1	1	0	0

Christian Baars

Accession number	Mineral species	associated minerals	chemical group	1=yes, 0=no	1=no, 0=yes	tarnish	cracking	efflorescence	crumbling	smell	damage to label
90.246	pyrite	with galena	sulphide	1	0	1	1	0	0	0	0
90.247	pyrite	0	sulphide	1	0	0	1	0	0	0	0
10.34.GR.10	pyrite	with sphalerite	sulphide	0	1	0	0	0	0	0	0

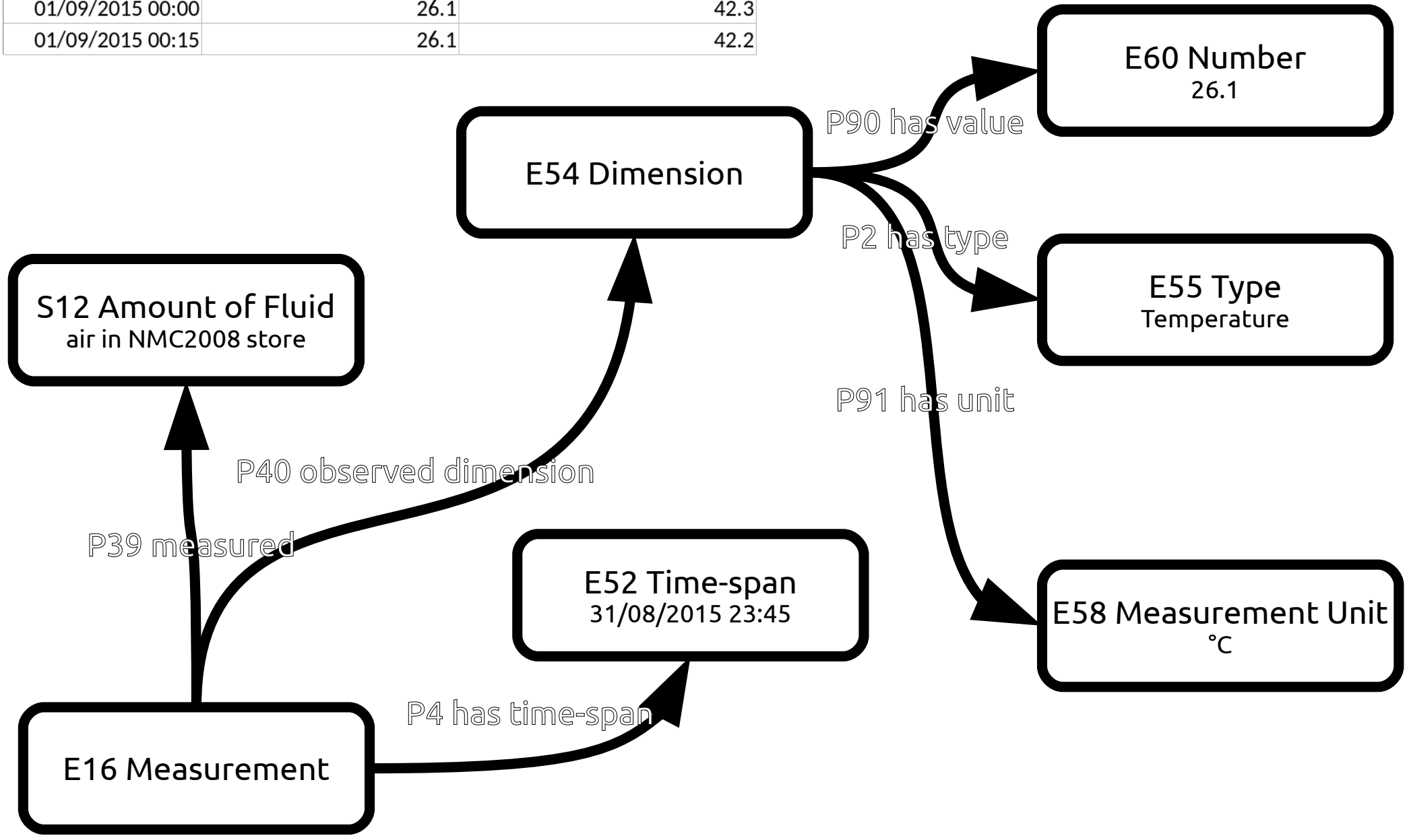


NMW example

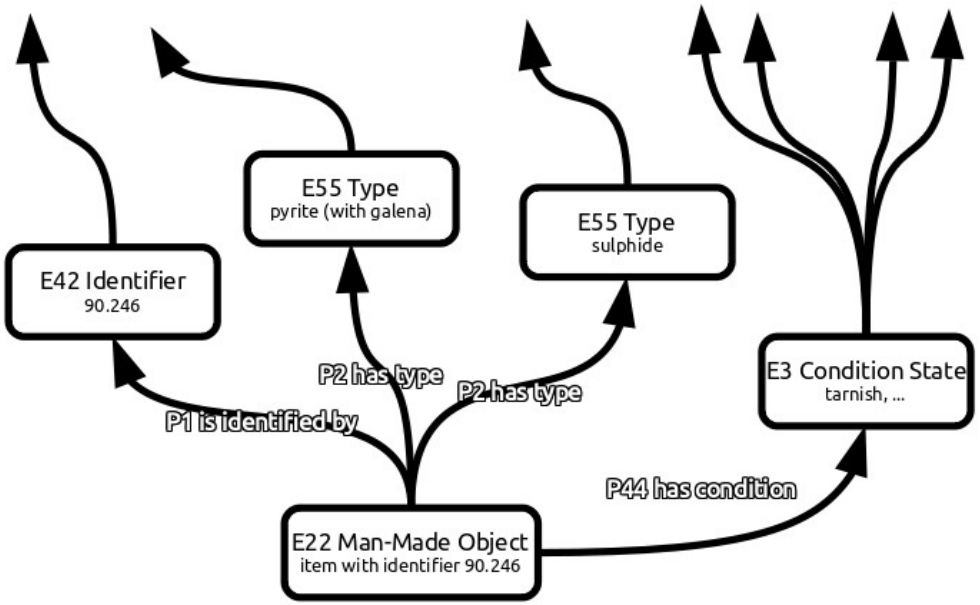
environmental monitoring

Timestamp	NMC2008 - Geology Store - Mineral - E.01.22 - Temperature - Reading	NMC2008 - Geology Store - Mineral - E.01.22 - Relative Humidity - Reading
31/08/2015 23:45	26.1	42.2
01/09/2015 00:00	26.1	42.3
01/09/2015 00:15	26.1	42.2
01/09/2015 00:30	26.1	42.2
01/09/2015 00:45	26.1	42.2
01/09/2015 01:00	26.1	42.2
01/09/2015 01:15	26.1	42.1
01/09/2015 01:45	26.1	42.1
01/09/2015 02:00	26.1	42.1
01/09/2015 02:15	26.1	42.1
01/09/2015 02:30	26.1	42.1
01/09/2015 02:45	26.1	42
01/09/2015 03:00	26.1	42.1
01/09/2015 03:15	26.1	42
01/09/2015 03:30	26.1	42
01/09/2015 03:45	26.1	42
01/09/2015 04:00	26.1	42
01/09/2015 04:15	26.1	42
01/09/2015 04:30	26.1	41.9
01/09/2015 04:45	26.1	41.9
01/09/2015 05:00	26.1	41.9
01/09/2015 05:15	26.1	
01/09/2015 05:30	26.1	41.9
01/09/2015 05:45	26.1	41.9
01/09/2015 06:00	26.1	41.9
01/09/2015 06:15	26.1	41.9
01/09/2015 06:30	26.1	41.9
01/09/2015 06:45	26.1	41.9
01/09/2015 07:00	26.1	41.9
01/09/2015 07:15	26.1	42
01/09/2015 07:30	26.1	41.9

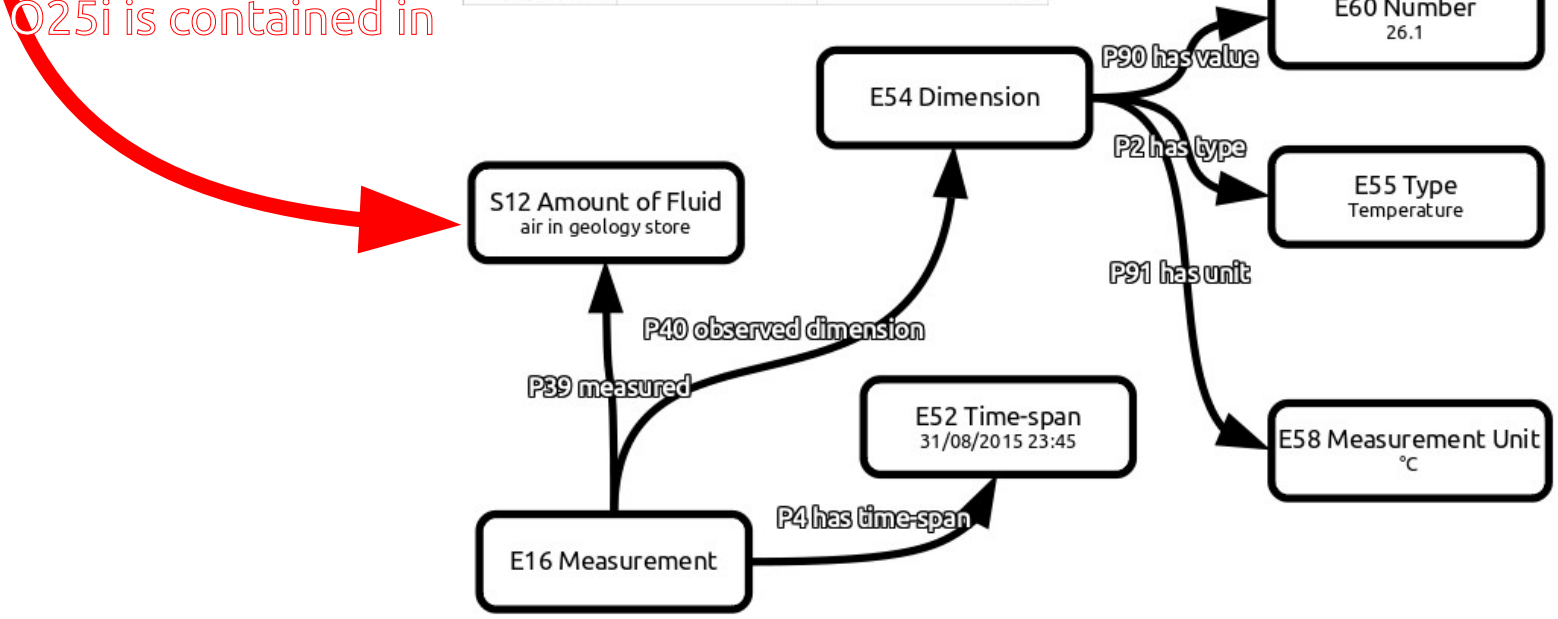
Timestamp	NMC2008 - Geology Store - Mineral - E.01.22 - Temperature - Reading	NMC2008 - Geology Store - Mineral - E.01.22 - Relative Humidity - Reading
31/08/2015 23:45	26.1	42.2
01/09/2015 00:00	26.1	42.3
01/09/2015 00:15	26.1	42.2



Accession number	Mineral species	associated minerals	chemical group	1=yes, 0=no	1=no, 0=yes	tarnish	cracking	efflorescence	crumbling	smell	damage to label
90.246	pyrite	with galena	sulphide	1	0	1	1	0	0	0	0
90.247	pyrite	0	sulphide	1	0	0	1	0	0	0	0
10.34.GR.10	pyrite	with sphalerite	sulphide	0	1	0	0	0	0	0	0



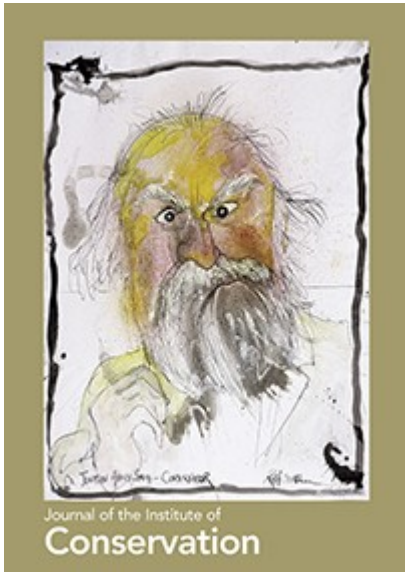
Timestamp	NMC2008 - Geology Store - Mineral - E.01.22 - Temperature - Reading	NMC2008 - Geology Store - Mineral - E.01.22 - Relative Humidity - Reading
31/08/2015 23:45	26.1	42.2
01/09/2015 00:00	26.1	42.3
01/09/2015 00:15	26.1	42.2



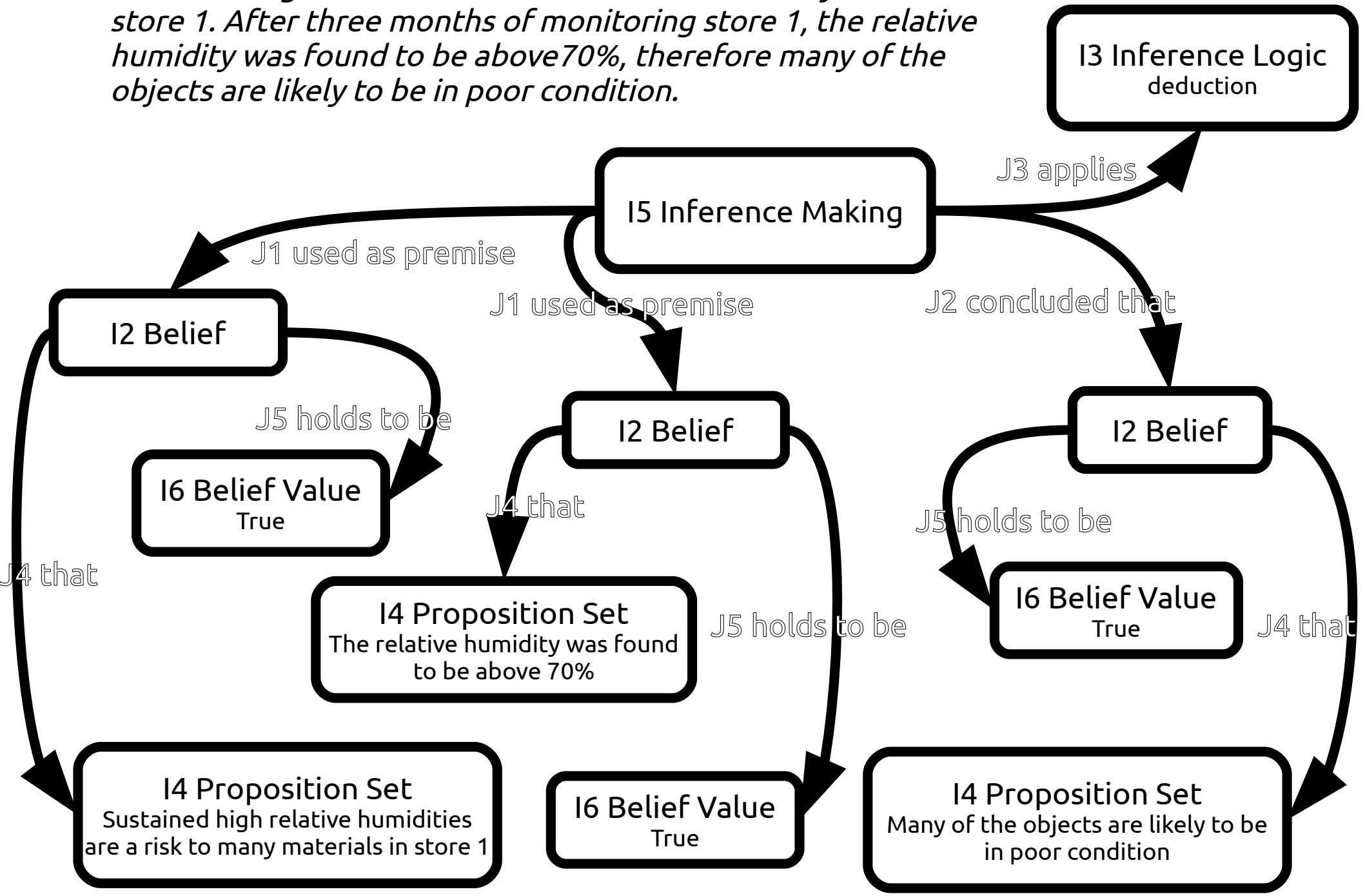
Example from reasoning

> *Sustained high relative humidities are a risk to many materials in store 1. After three months of monitoring store 1, the relative humidity was found to be above70%, therefore many of the objects are likely to be in poor condition.*

Joel Taylor (2018) In the quest for certainty: tensions from cause-and-effect deductions in preventive conservation, Journal of the Institute of Conservation, 41:1, 16-31, DOI:10.1080/19455224.2017.1416649



Sustained high relative humidities are a risk to many materials in store 1. After three months of monitoring store 1, the relative humidity was found to be above70%, therefore many of the objects are likely to be in poor condition.



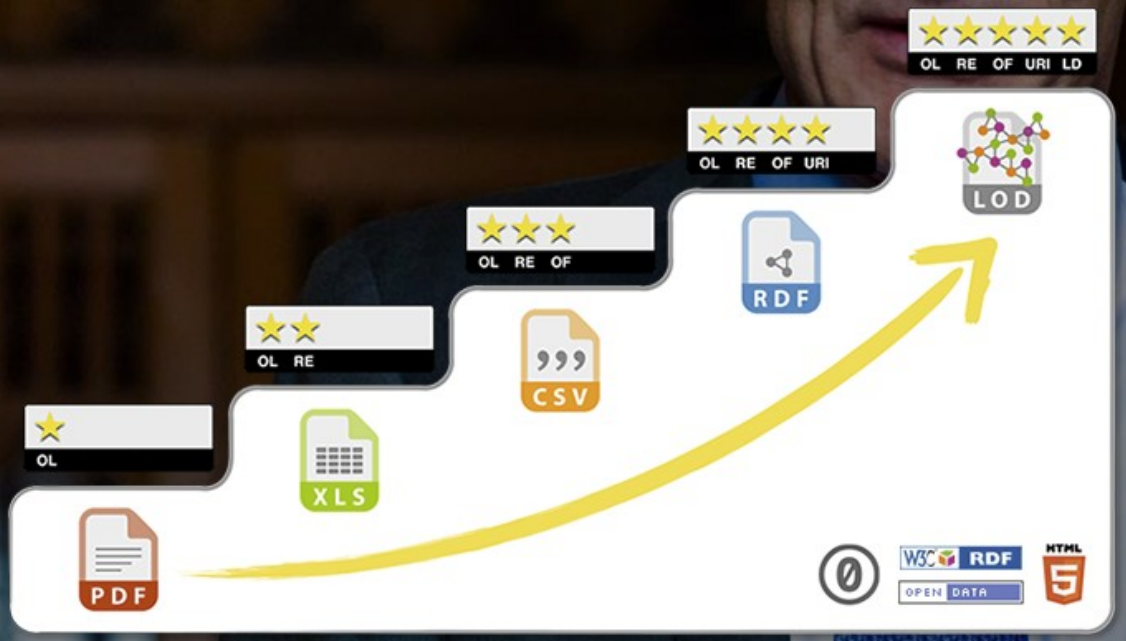
Implementation – Semantic Web

Linked data

- World Wide Web Consortium
  - Tim Berners-Lee five star open data
  - http://5stardata.info/en/
- Resource Description Framework (RDF)

5 ★ OPEN DATA

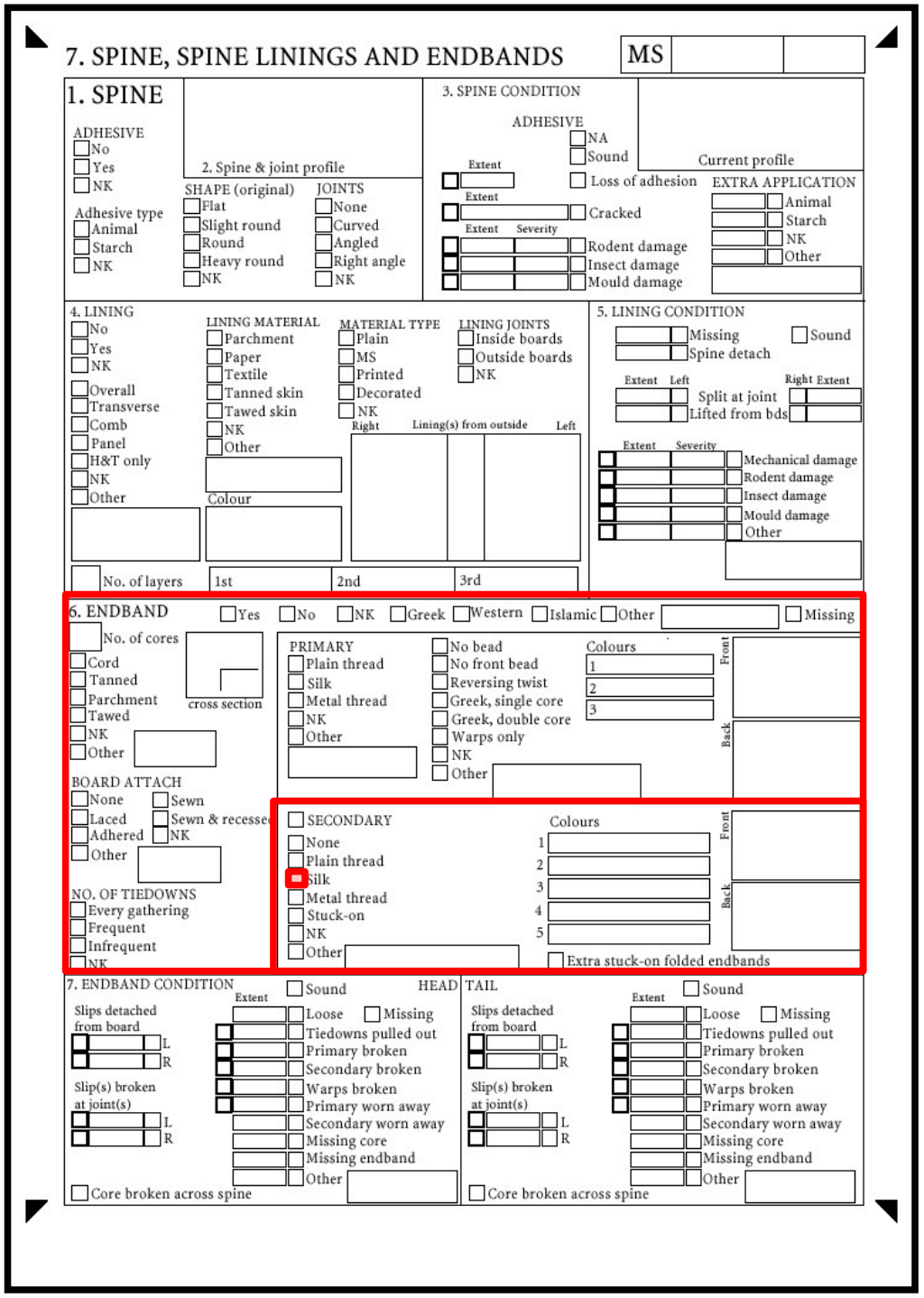
Tim Berners-Lee, the inventor of the Web and Linked Data initiator, suggested a 5-star deployment scheme for Open Data. Here, we give examples for each step of the stars and explain costs and benefits that come along with it.



BY EXAMPLE ...

Below, we provide examples for each level of Tim's 5-star Open Data plan. The example data used throughout is '*the temperature forecast for Galway, Ireland for the next 3 days*':

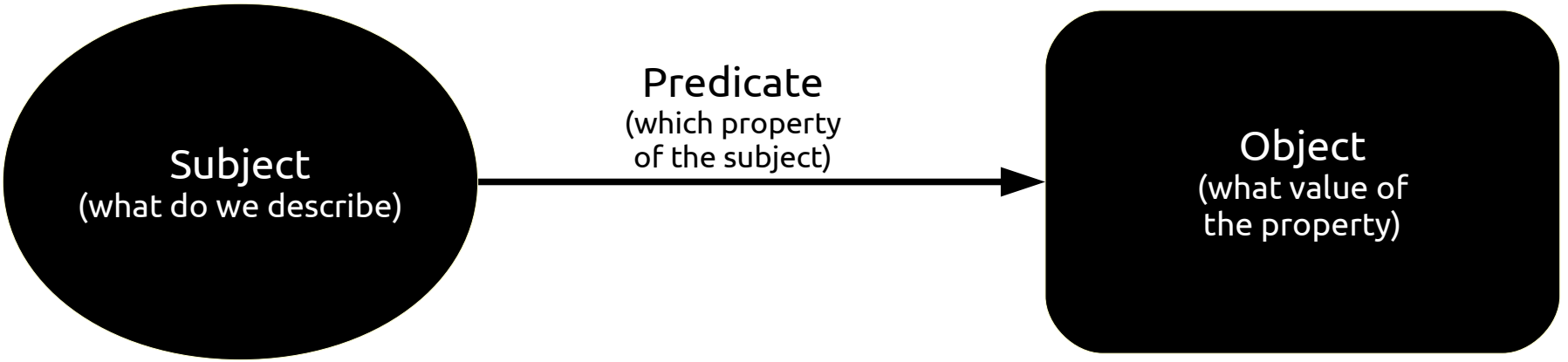
★	make your stuff available on the Web (whatever format) under an open license[1]	example ...
★★	make it available as structured data (e.g., Excel instead of image scan of a table)[2]	example ...
★★★	make it available in a non-proprietary open format (e.g., CSV instead of Excel)[3]	example ...



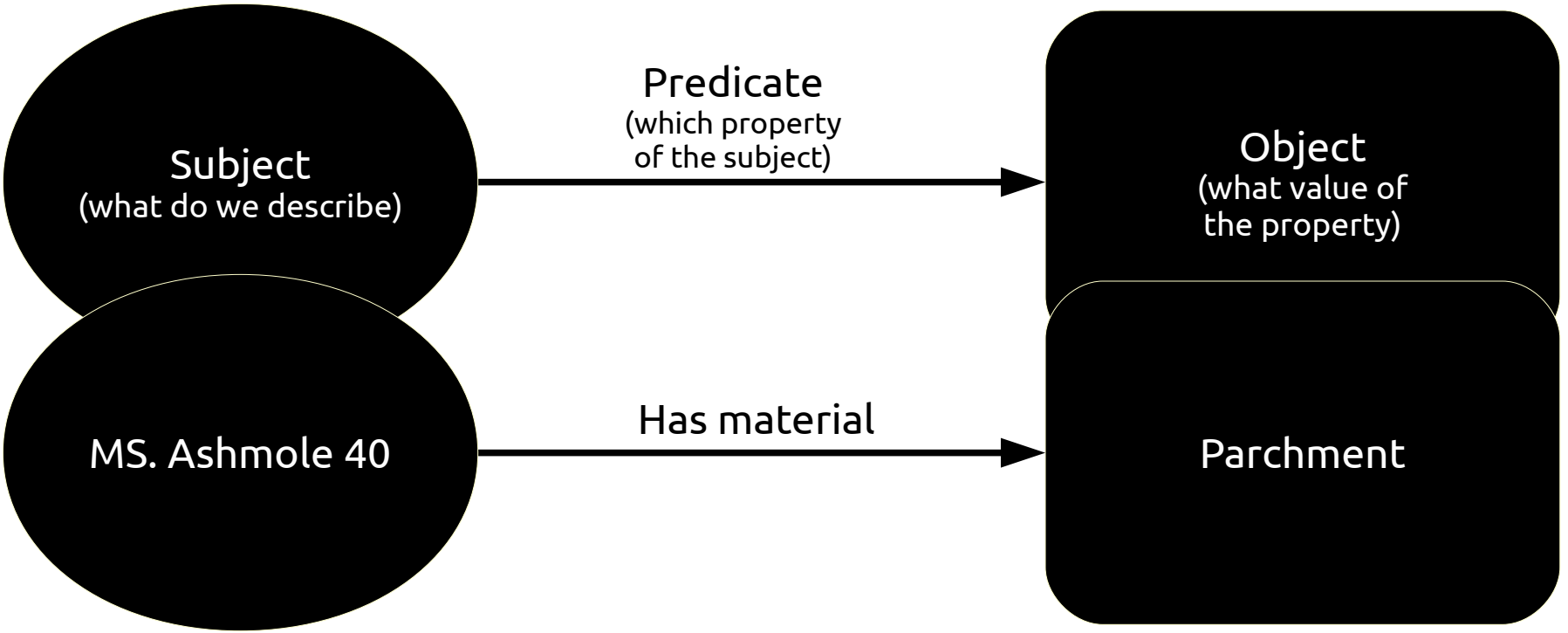
Implied relationships

- lining **part of** spine
- spine adhesive **has type** animal
- endband **has technique** Greek
- secondary thread **has material** silk

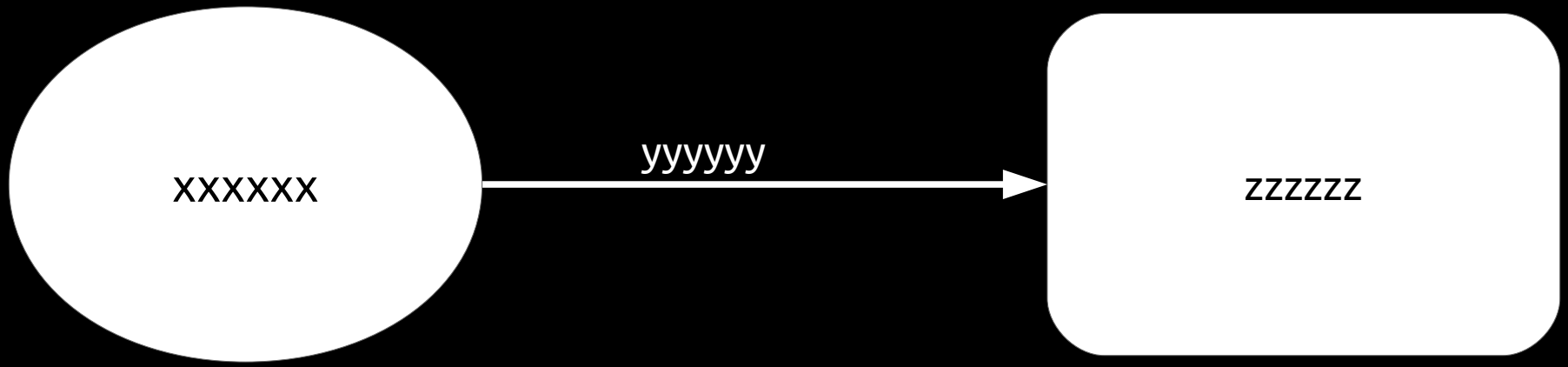
Resource Description Framework



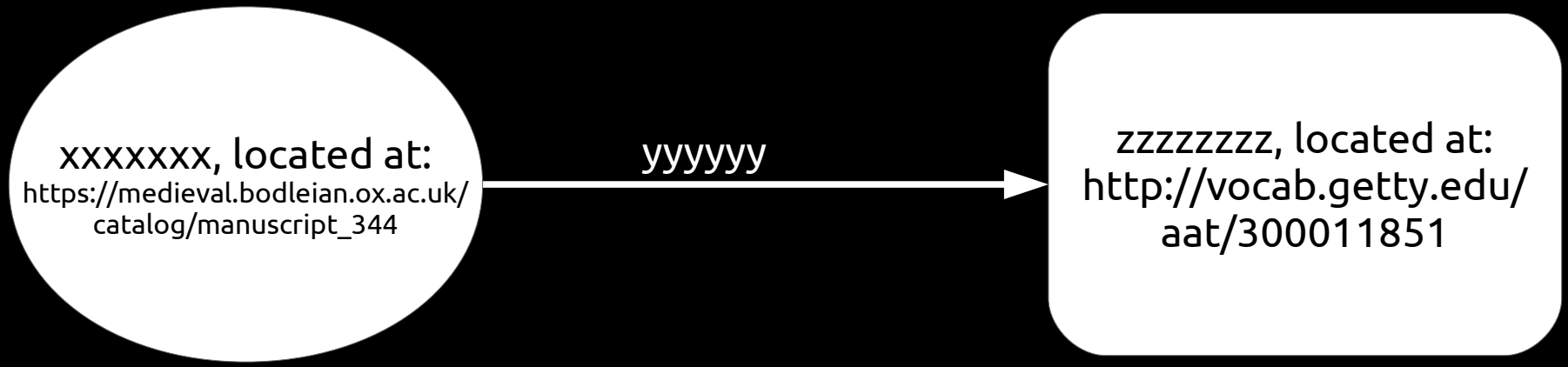
Resource Description Framework



Resource Description Framework



Resource Description Framework



- Primo Search
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- Collection Inventories & Finding Aids
- Photo Archive
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Updated 7 March 2017

Have a Question?

Contact the Vocabulary Program

parchment (animal material)

Source:http://vocab.getty.edu/aat/300011851

Statements in which the resource exists as a subject.

Predicate	Object
rdf:type	gvp:Concept
rdfs:seeAlso	http://www.getty.edu/vow/AATFullDisplay?find=&logic=AND&note=&subjectid=300011851
dcterms:created	1988-01-01T00:00:00
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skos:changeNote	aat_rev:5000025616, aat_rev:5000025617, aat_rev:5000025618, aat_rev:5000025619, aat_rev:5000025620, aat_rev:5001083690, aat_rev:5001083691, aat_rev:5001170746, aat_rev:5001602374, aat_rev:5001616195, aat_rev:5001616250, aat_rev:5001616426, aat_rev:5001654804, aat_rev:5002059696, aat_rev:5002073339, aat_rev:5002073340, aat_rev:5002073341, aat_rev:5002073342, aat_rev:5002073343, aat_rev:5002073344, aat_rev:5002073353, aat_rev:5002073361, aat_rev:5002073976, aat_rev:5002073977, aat_rev:5002226841, aat_rev:5002538711, aat_rev:5002935869, aat_rev:5002985788, aat_rev:5002985789, aat_rev:5003175791, aat_rev:5003662848, aat_rev:5003662849, aat_rev:5003662850, aat_rev:5003662851, aat_rev:5003662852, aat_rev:5003662871
gvp:parentString	processed animal material, animal material, biological material, <materials by origin>, materials (substances), Materials (hierarchy name), Materials Facet
gvp:parentStringAbbrev	processed animal material, animal material, ... Materials Facet
gvp:displayOrder	4
xl:prefLabel	aat_term:1000011851-en, aat_term:1000405639-de, aat_term:1000407634-nl, aat_term:1000407635-fr, aat_term:1000407636-sv, aat_term:1000407637-it, aat_term:1000407638-es, aat_term:1000589570-zh-Hant, aat_term:1000589572-zh-Latn-pinyin-x-notone, aat_term:1000589573-zh-Latn-pinyin-x-hanyu, aat_term:1000589574-zh-Latn-wadegile
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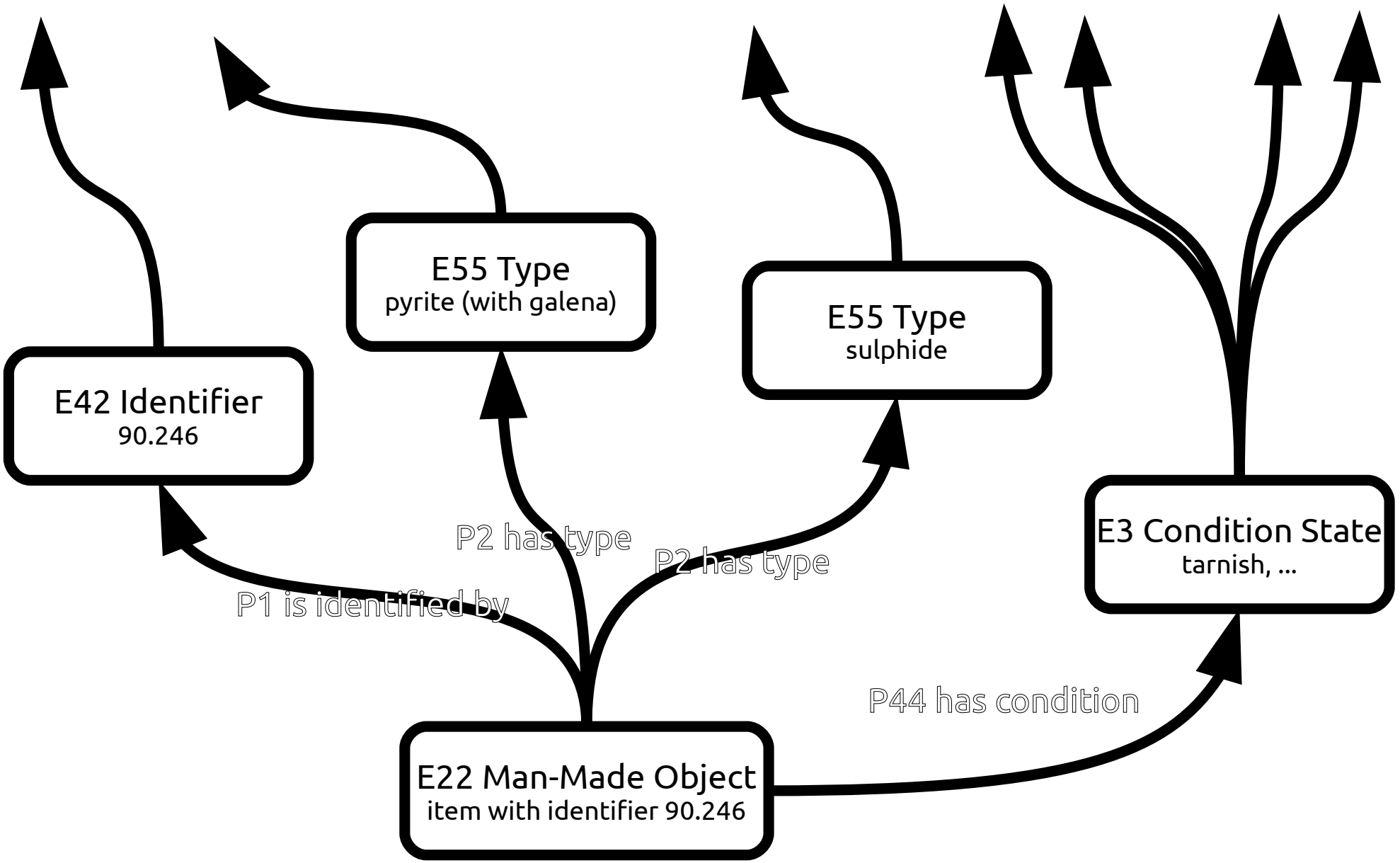
gvp:broaderGeneric	aat:300193287
gvp:broaderPreferred	aat:300193287
gvp:prefLabelGVP	aat_term:1000011851-en

Accession number	Mineral species	associated minerals	chemical group	1=yes, 0=no	1=no, 0=yes	tarnish	cracking	efflorescence	crumbling	smell	damage to label
90.246	pyrite	with galena	sulphide	1	0	1	1	0	0	0	0
90.247	pyrite	0	sulphide	1	0	0	1	0	0	0	0
10.34.GR.10	pyrite	with sphalerite	sulphide	0	1	0	0	0	0	0	0



pyrite

Source:http://vocab.getty.edu/aat/300011112

Subject (111) | Predicate | Object | All

Website | Hierarchy | Download in: JSON | JSONLD | RDF | N3/Turtle | N-Triples

Inference: Explicit only

Statements in which the resource exists as a subject.

Predicate	Object
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rdfs:seeAlso	http://www.getty.edu/vow/AATFullDisplay?find=&logic=AND&note=&subjectid=300011112
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skos:changeNote	aat_rev:5000024914, aat_rev:5000024915, aat_rev:5000024916, aat_rev:5000024917, aat_rev:5001082853, aat_rev:5001082854, aat_rev:5001082855, aat_rev:5001082856, aat_rev:5001082857, aat_rev:5001082858, aat_rev:5001170629, aat_rev:5001653948, aat_rev:5001654051, aat_rev:5001706851, aat_rev:5001706852, aat_rev:5001706853, aat_rev:5001706857, aat_rev:5001706860, aat_rev:5001706861, aat_rev:5001706862, aat_rev:5001706866, aat_rev:5001706867, aat_rev:5001706868, aat_rev:5001706869, aat_rev:5001706884, aat_rev:5001706885, aat_rev:5001920054, aat_rev:5001920056, aat_rev:5001920057, aat_rev:5001920058, aat_rev:5001920059, aat_rev:5001920060, aat_rev:5001920061, aat_rev:5001937639, aat_rev:5002222703, aat_rev:5002919067, aat_rev:5003120452, aat_rev:5003120453, aat_rev:5003120454, aat_rev:5003120455, aat_rev:5003120456, aat_rev:5003120475, aat_rev:5003247040, aat_rev:5003976161, aat_rev:5003976162, aat_rev:5003976163
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gvp:parentStringAbbrev	mineral, inorganic material, ... Materials Facet
gvp:displayOrder	97
xl:prefLabel	aat_term:1000011112-en, aat_term:1000011112-fr, aat_term:1000394626-de, aat_term:1000394627-nl, aat_term:1000394628-pl, aat_term:1000394629-es, aat_term:1000394629-pt, aat_term:1000522409-zh-Hant, aat_term:1000522411-zh-Latn-pinyin-x-notone, aat_term:1000522412-zh-Latn-pinyin-x-hanyu, aat_term:1000522413-zh-Latn-wadegile
xl:altLabel	aat_term:1000011113-en, aat_term:1000011114-en, aat_term:1000036231-en, aat_term:1000522410-zh-Hant
gvp:broaderGeneric	aat:300011068, aat:300266401
gvp:broaderPreferred	aat:300011068
gvp:broaderNonPreferred	aat:300266401

sulfide (material)

Source:http://vocab.getty.edu/aat/300156332

Statements in which the resource exists as a subject.

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dcterms:modified	1992-03-11T00:00:00, 1992-04-01T00:00:00, 2001-07-26T22:00:42, 2006-01-23T13:30:37, 2006-01-23T13:30:58, 2009-03-17T13:34:18, 2010-04-23T05:59:39, 2010-04-23T05:59:40, 2011-01-07T17:50:27, 2012-03-16T14:10:41, 2014-06-10T14:59:40, 2014-06-10T15:04:23, 2014-06-10T15:22:45, 2014-06-10T15:33:33, 2016-01-28T11:26:45
skos:changeNote	aat_rev:5000025009, aat_rev:5000025010, aat_rev:5000025011, aat_rev:5001082954, aat_rev:5001082955, aat_rev:5001082956, aat_rev:5001082957, aat_rev:5001082958, aat_rev:5001557726, aat_rev:5001557727, aat_rev:5001557731, aat_rev:5001998295, aat_rev:5002484195, aat_rev:5002484202, aat_rev:5002786651, aat_rev:5003177865, aat_rev:5003639134, aat_rev:5003639135, aat_rev:5003639136, aat_rev:5003639152, aat_rev:5003639161, aat_rev:5003639162, aat_rev:5003639199, aat_rev:5003639200, aat_rev:5004039251, aat_rev:5004039252
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gvp:parentStringAbbrev	sulfur compounds, <sulphur and sulphur compounds>, ... Materials Facet
gvp:displayOrder	2
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xl:altLabel	aat_term:1000272183-en, aat_term:1000272184-en, aat_term:1000272185-en
gvp:broaderGeneric	aat:300210820
gvp:broaderPreferred	aat:300210820
gvp:prefLabelGVP	aat_term:1000156332-en
skos:inScheme	aat
skos:scopeNote	aat_scopeNote:44512, aat_scopeNote:75821, aat_scopeNote:92192

tarnish

Source:http://vocab.getty.edu/aat/300219955

Statements in which the resource exists as a subject.

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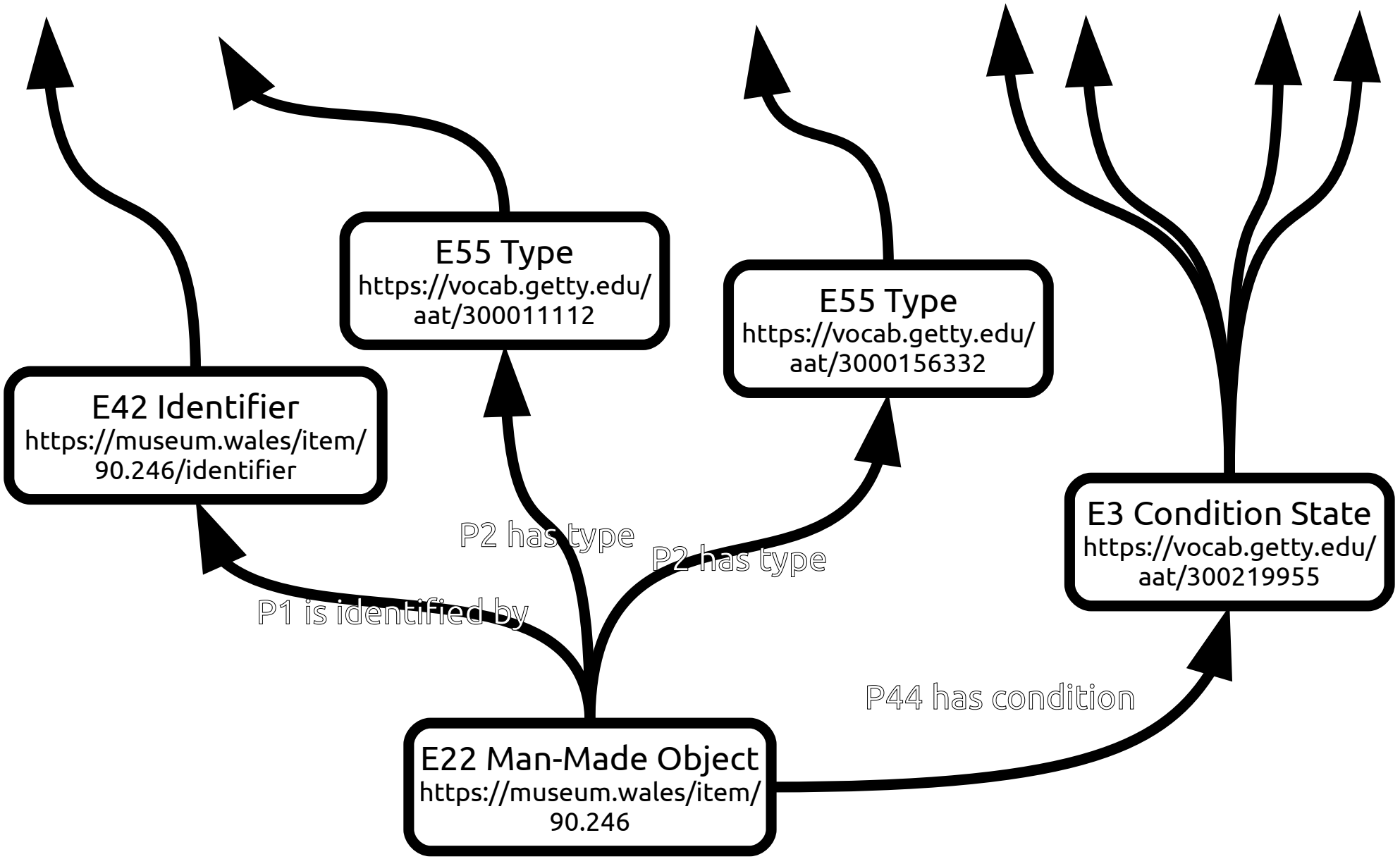
rdfs:seeAlso	http://www.getty.edu/vow/AATFullDisplay?find=&logic=AND&note=&subjectid=300219955
dcterms:created	1992-05-28T00:00:00
dcterms:modified	1992-12-30T00:00:00, 2001-07-26T21:59:09, 2010-04-23T07:00:27, 2010-04-23T07:00:28, 2011-01-07T14:40:04, 2011-01-07T14:40:06, 2012-04-13T12:09:00, 2013-03-29T10:05:47, 2013-03-29T10:05:48, 2014-01-07T10:36:59
skos:changeNote	aat_rev:5000004048, aat_rev:5000004049, aat_rev:5001049210, aat_rev:5002515640, aat_rev:5002515641, aat_rev:5002515642, aat_rev:5002515650, aat_rev:5002706727, aat_rev:5002706728, aat_rev:5002706729, aat_rev:5002706740, aat_rev:5003237417, aat_rev:5003438313, aat_rev:5003438314, aat_rev:5003438315, aat_rev:5003438316, aat_rev:5003438317, aat_rev:5003438335, aat_rev:5003547002, aat_rev:5003547003
gvp:parentString	<conditions and effects for metals>, <conditions and effects by specific type>, Conditions and Effects (hierarchy name), Physical Attributes Facet
gvp:parentStringAbbrev	<conditions and effects for metals>, <conditions and effects by specific type>, ... Physical Attributes Facet
gvp:displayOrder	4
xl:prefLabel	aat_term:1000219955-en, aat_term:1000449033-es, aat_term:1000503988-nl, aat_term:1000561912-zh-Hant, aat_term:1000561914-zh-Latn-pinyin-x-notone, aat_term:1000561915-zh-Latn-pinyin-x-hanyu, aat_term:1000561916-zh-Latn-wadegile
xl:altLabel	aat_term:1000449034-es, aat_term:1000449035-es, aat_term:1000503989-nl, aat_term:1000503990-nl, aat_term:1000561913-zh-Hant
gvp:broaderGeneric	aat:300229327
gvp:broaderPreferred	aat:300229327
gvp:prefLabelGVP	aat_term:1000219955-en
skos:inScheme	aat
skos:scopeNote	aat_scopeNote:112722, aat_scopeNote:52944, aat_scopeNote:77645, aat_scopeNote:87502
dcterms:contributor	aat_contrib:10000000, aat_contrib:10000088, aat_contrib:10000131, aat_contrib:10000178, aat_contrib:10000205

Accession number	Mineral species	associated minerals	chemical group	1=yes, 0=no	1=no, 0=yes	tarnish	cracking	efflorescence	crumbling	smell	damage to label
90.246	pyrite	with galena	sulphide	1	0	1	1	0	0	0	0
90.247	pyrite	0	sulphide	1	0	0	1	0	0	0	0
10.34.GR.10	pyrite	with sphalerite	sulphide	0	1	0	0	0	0	0	0



Thesauri & authority lists

- Getty AAT, TGN, ULAN
- VIAF
- Geonames
- Language of Bindings!

Linked Data

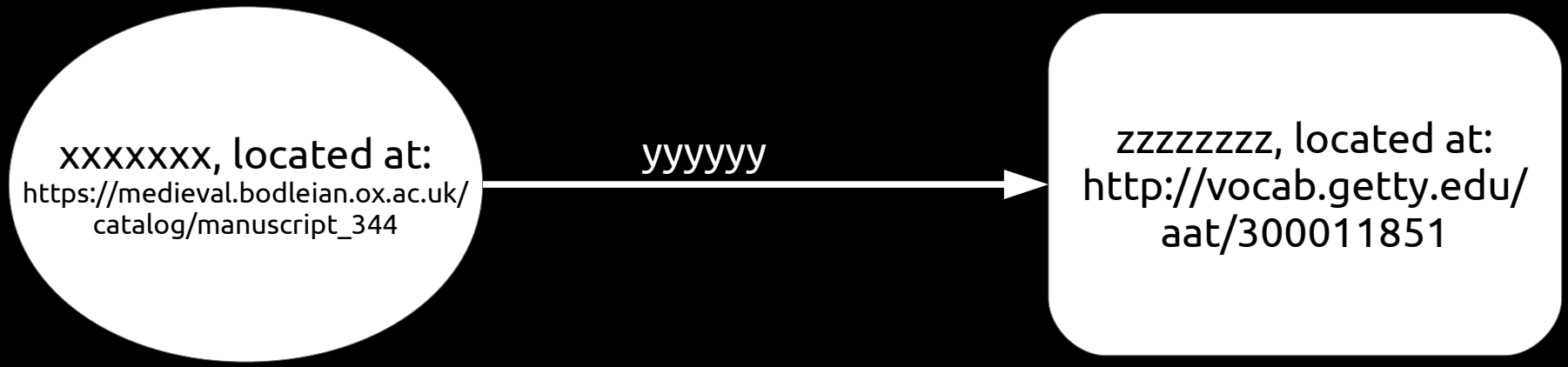
- World Wide Web Consortium
- Resource Description Framework (RDF)
- Universal Resource Identifiers (URI)
  - lots of them
  - preferable leading to an html page
  - permanent!

BY EXAMPLE ...

Below, we provide examples for each level of Tim's 5-star Open Data plan. The example data used throughout is '*the temperature forecast for Galway, Ireland for the next 3 days*':

★	make your stuff available on the Web (whatever format) under an open license[1]	example ...
★★	make it available as structured data (e.g., Excel instead of image scan of a table)[2]	example ...
★★★	make it available in a non-proprietary open format (e.g., CSV instead of Excel)[3]	example ...
★★★★	use URIs to denote things, so that people can point at your stuff[4]	example ...

Resource Description Framework



Resource Description Framework

yyyyyy, located at:
http://www.cidoc-crm.org/
P45_consists_of

xxxxxxx, located at:
https://medieval.bodleian.ox.ac.uk/
catalog/manuscript_344

zzzzzzzz, located at:
http://vocab.getty.edu/
aat/300011851

BY EXAMPLE ...

Below, we provide examples for each level of Tim's 5-star Open Data plan. The example data used throughout is '*the temperature forecast for Galway, Ireland for the next 3 days*':

★	make your stuff available on the Web (whatever format) under an open license[1]	example ...
★★	make it available as structured data (e.g., Excel instead of image scan of a table)[2]	example ...
★★★	make it available in a non-proprietary open format (e.g., CSV instead of Excel)[3]	example ...
★★★★	use URIs to denote things, so that people can point at your stuff[4]	example ...
★★★★★	link your data to other data to provide context[5]	example ...

Linked Data

- World Wide Web Consortium
- Resource Description Framework (RDF)
- Universal Resource Identifiers (URI)
- SPARQL

s	p	
<http://www.mhs.ox.ac.uk/authority/places/japan>	<http://slobr.linkedmusic.org/salt/in_saltset>	<http://www.mhs.ox.ac.uk/authority/places/>
<http://www.mhs.ox.ac.uk/authority/places/japan>	<http://www.cidoc-crm.org/cidoc-crm/P1_is_identified_by>	<http://www.mhs.ox.ac.uk/authority/places/japan/appellation>
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<http://www.mhs.ox.ac.uk/object/inv/11392>	<http://www.cidoc-crm.org/cidoc-crm/P3_has_note>	Dotchin; comprising of attached ivory beam and brass pan in w
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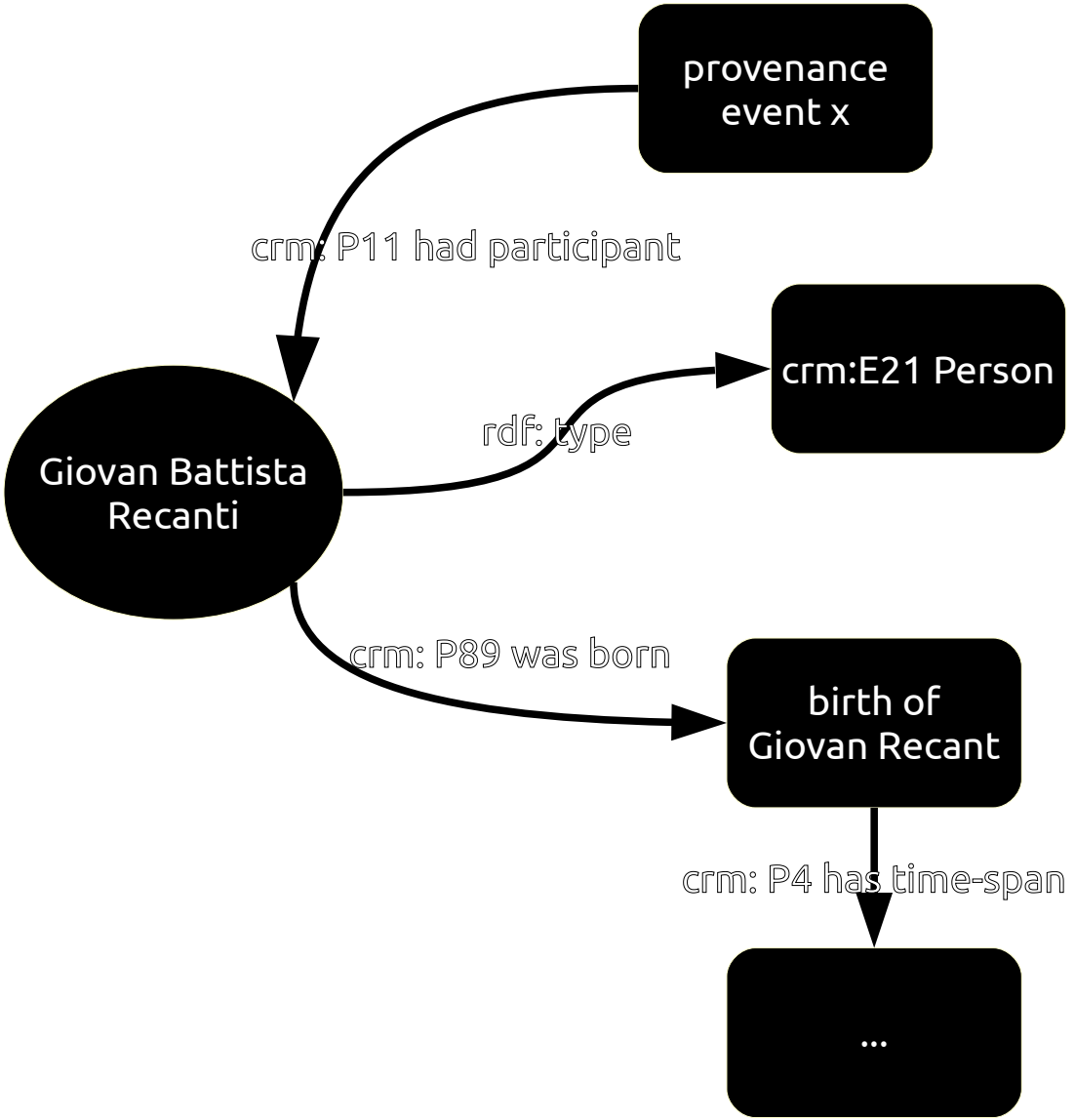
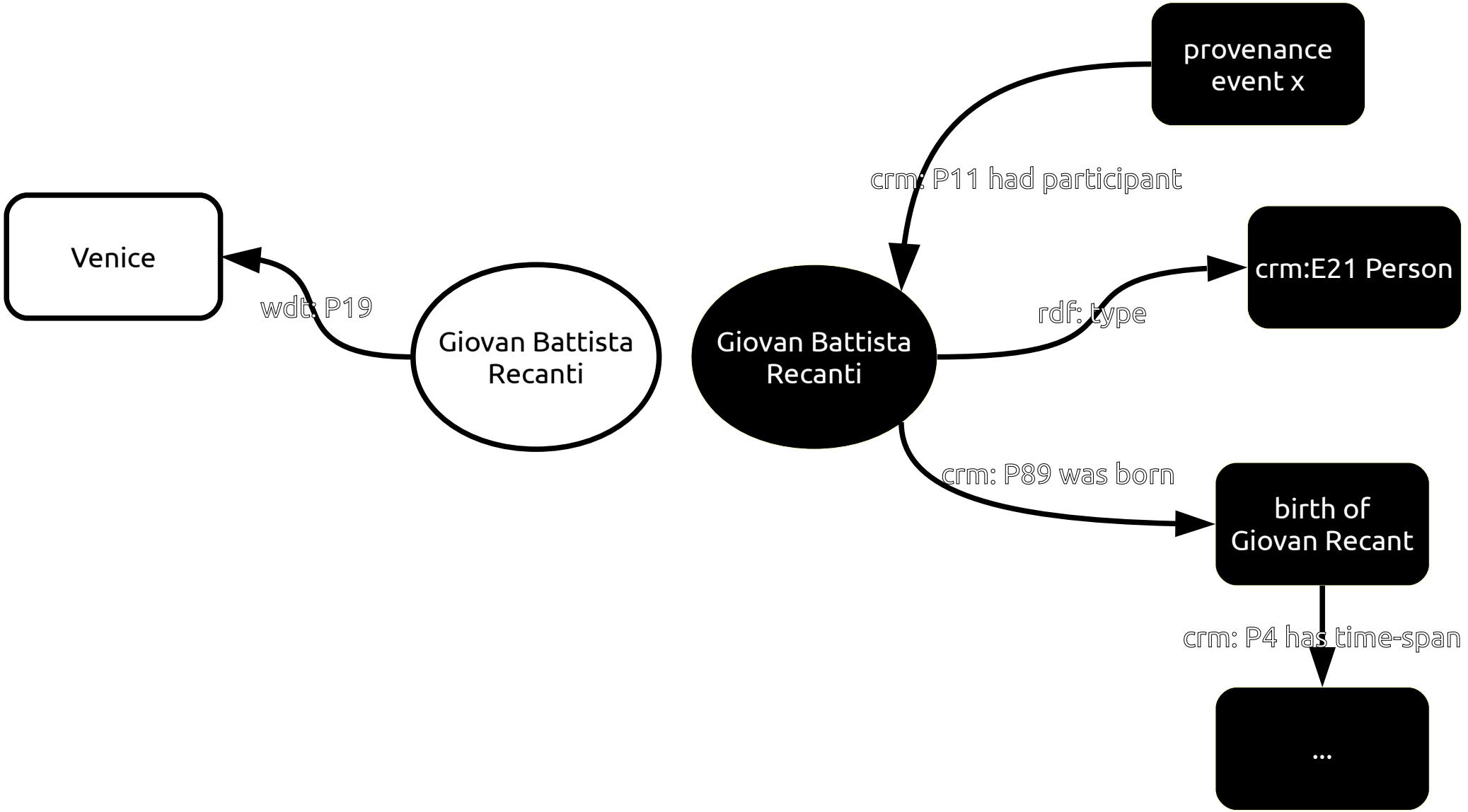
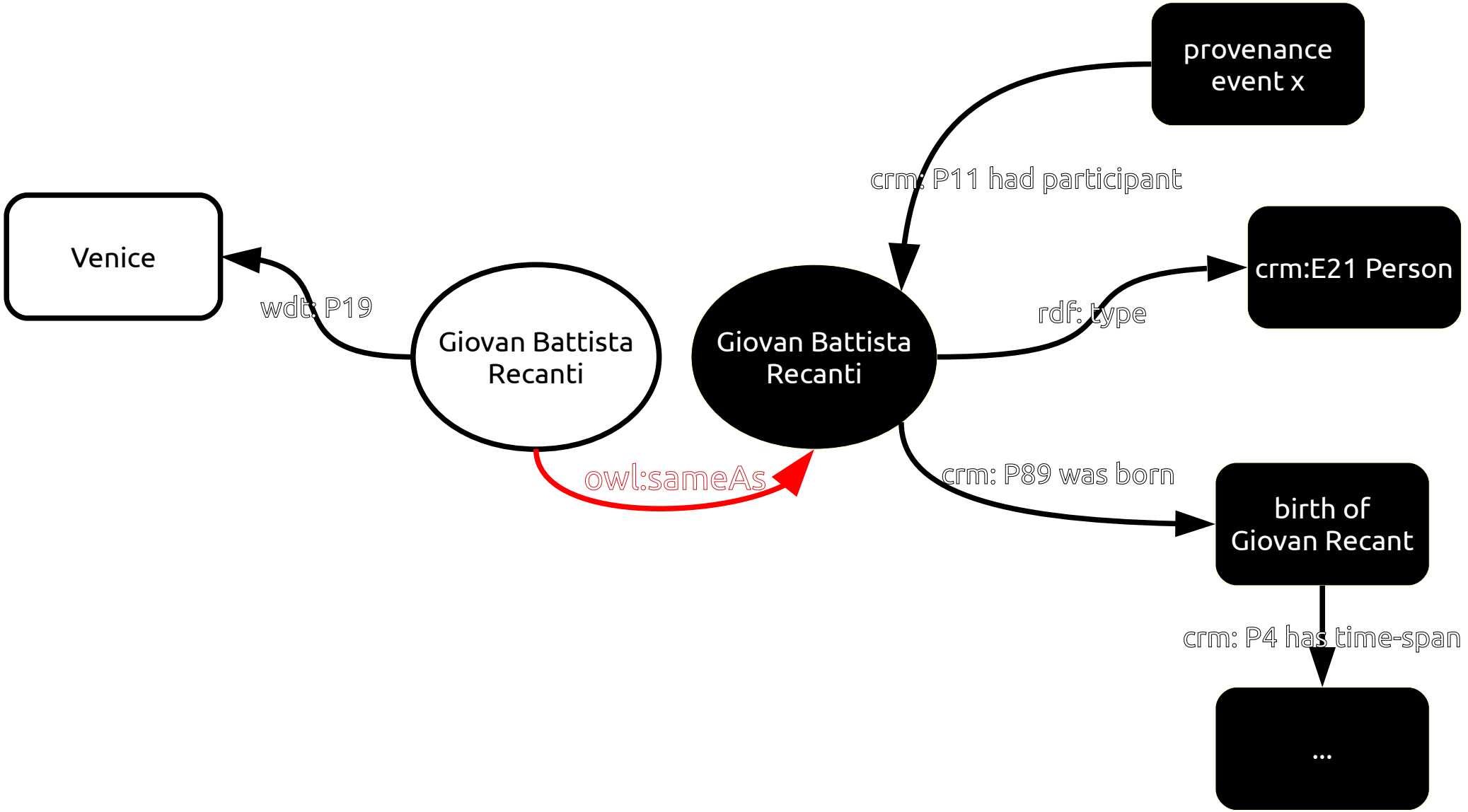
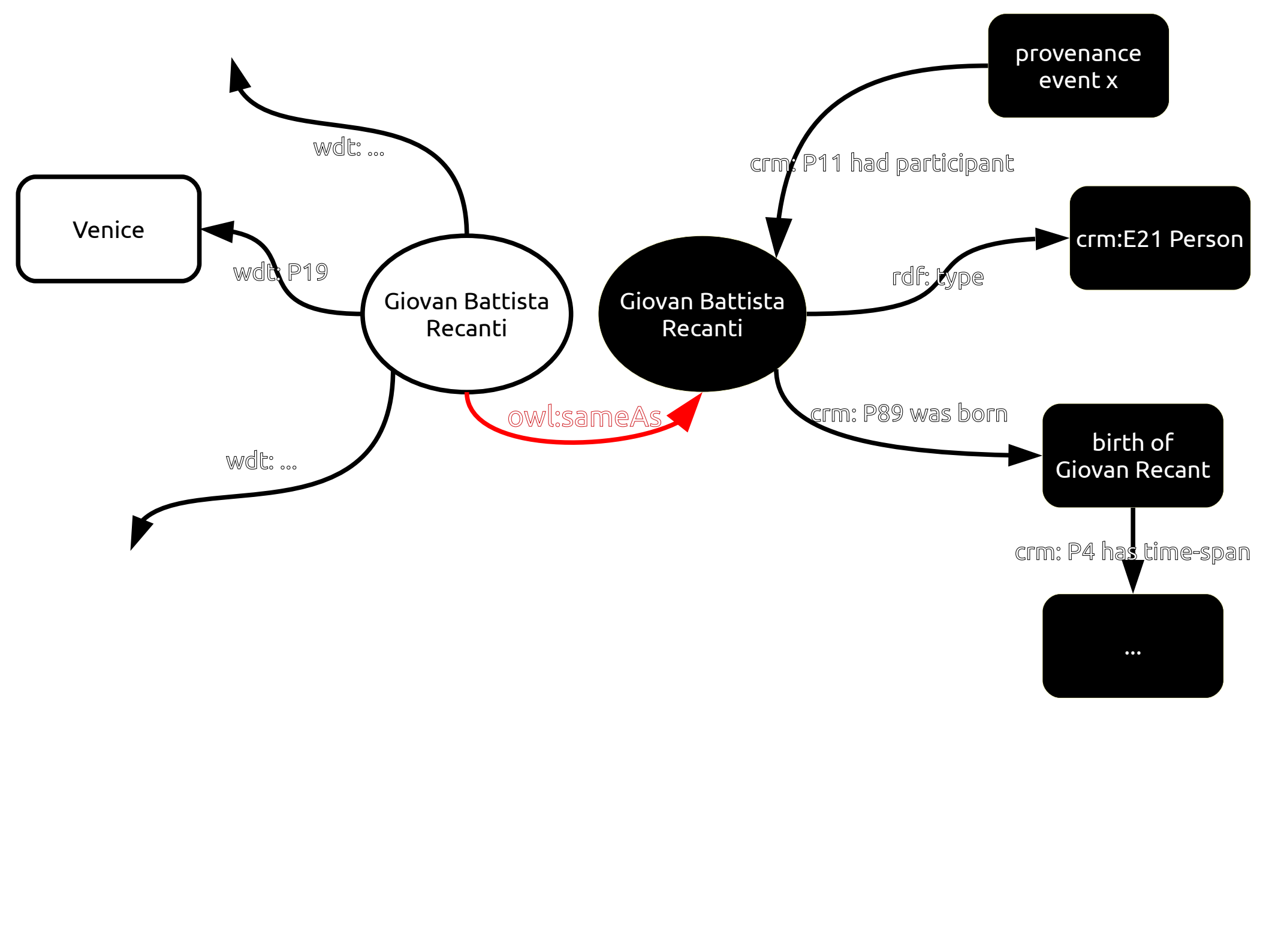
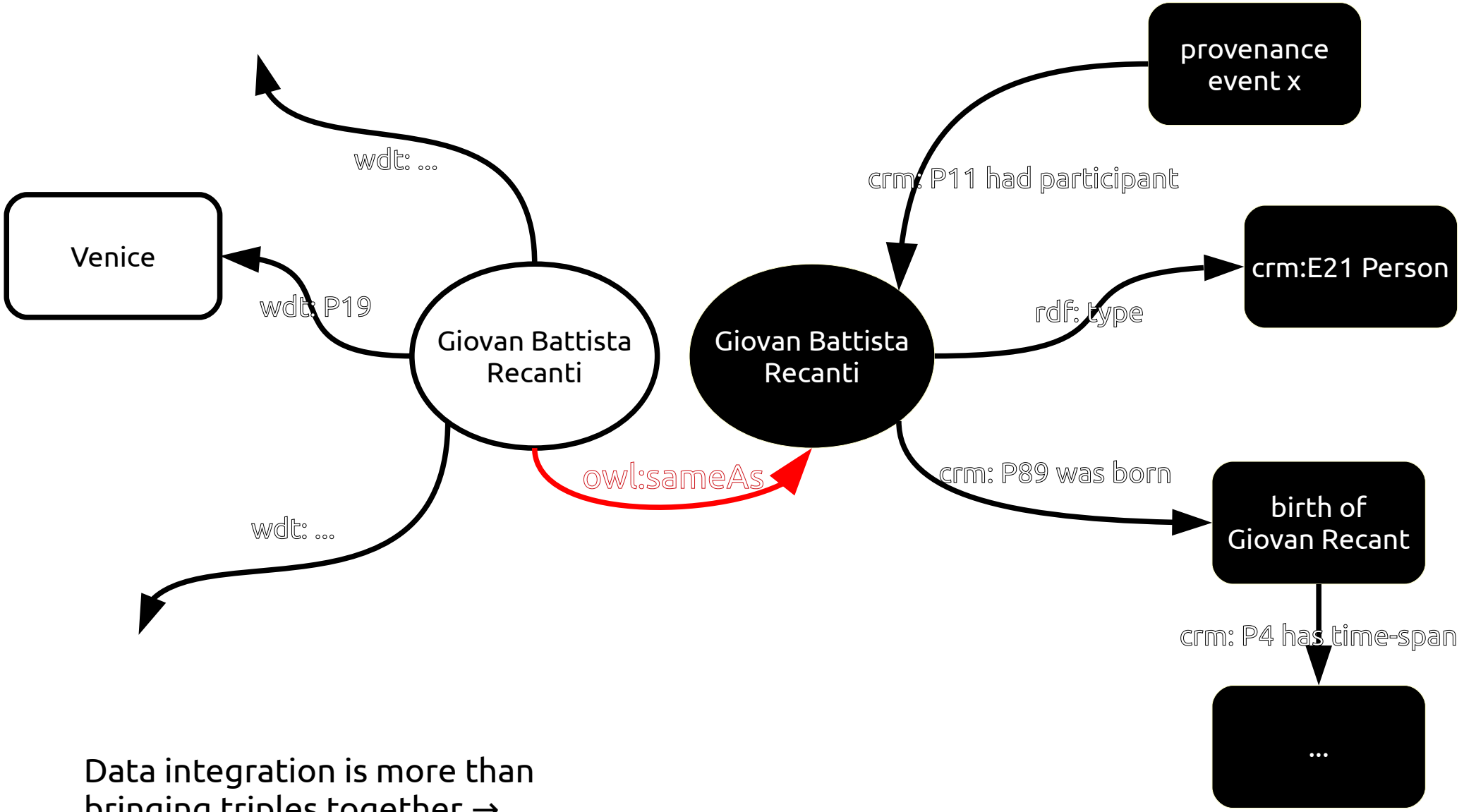
<http://www.mhs.ox.ac.uk/object/inv/11392>	rdf:type	<http://www.cidoc-crm.org/cidoc-crm/E22_Man-Made_Object>


provenance event x
crm: P11 had participant
crm:E21 Person
rdf: type
Giovan Battista Recanti
crm: P89 was born
birth of Giovan Recant
crm: P4 has time-span
...


provenance event x
crm: P11 had participant
Venice
wdt: P19
Giovan Battista Recanti
Giovan Battista Recanti
rdf: type
crm:E21 Person
crm: P89 was born
birth of Giovan Recant
crm: P4 has time-span
...


provenance event x
crm: P11 had participant
Venice
wdt: P19
Giovan Battista Recanti
Giovan Battista Recanti
rdf: type
crm:E21 Person
owl:sameAs
crm: P89 was born
birth of Giovan Recant
crm: P4 has time-span
...


wdt: ...
Venice
wdt: P19
Giovan Battista Recanti
wdt: ...
owl:sameAs
Giovan Battista Recanti
provenance event x
crm: P11 had participant
crm:E21 Person
rdf: type
crm: P89 was born
birth of Giovan Recant
crm: P4 has time-span
...

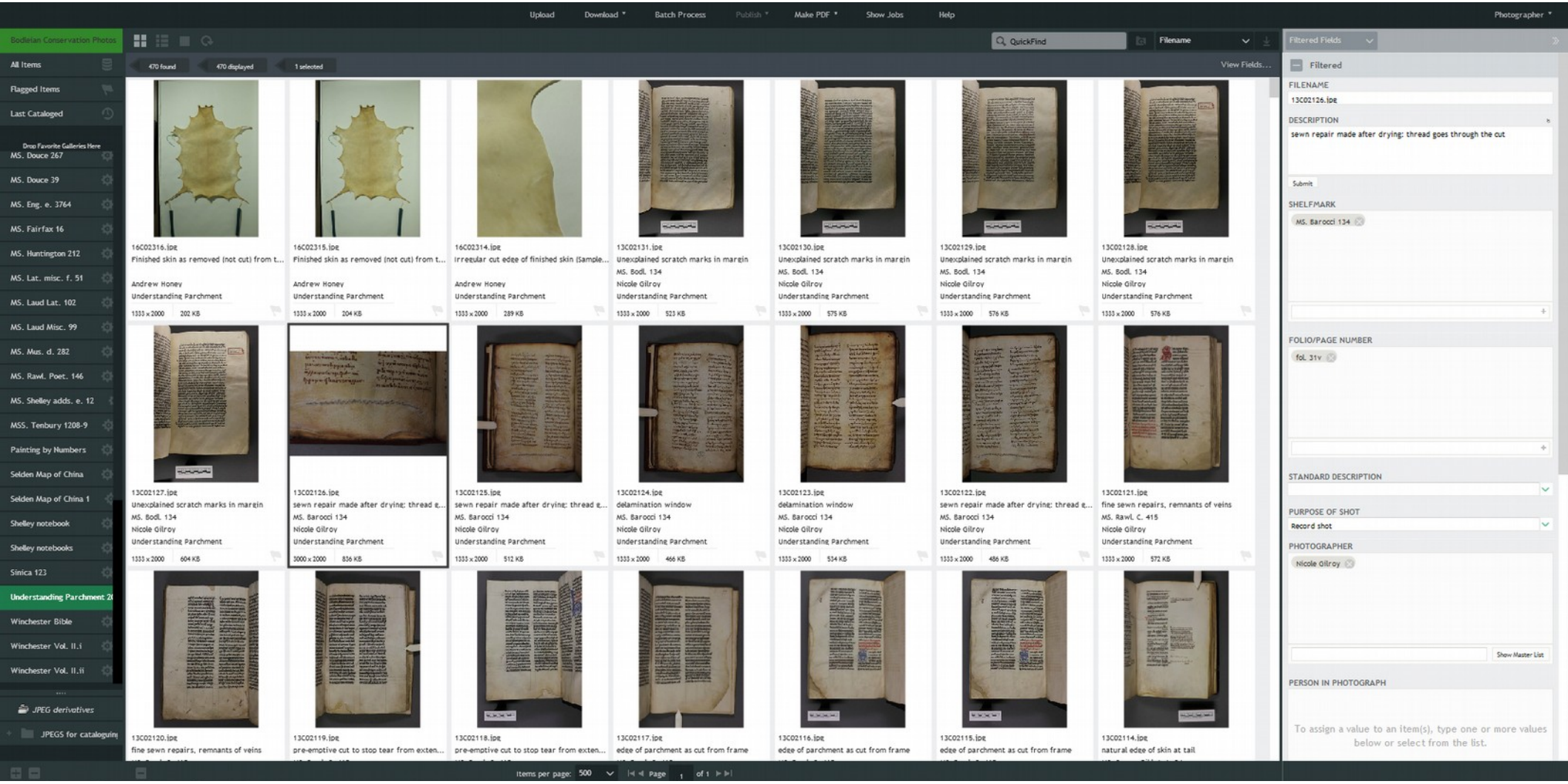


Data integration is more than bringing triples together → potential for new conclusions

Example

Bodleian library

Nicole Gilroy



A catalogue of Western manuscripts at the Bodleian Libraries and selected Oxford colleges

Search Medieval Manuscripts

ADVANCED SEARCH

OR BROWSE BY

MANUSCRIPTS | WORKS | PEOPLE | PLACES

Collections

Christ Church MSS.	Dep. (Deposited manuscripts)	Fragments in printed books	MSS. Add. (Additional) A	MSS. Add. (Additional) B
MSS. Add. (Additional) C	MSS. Add. (Additional) D	MSS. Add. (Additional) E	MSS. Arch. Selden. (Archivum Seldenianum)	MSS. Ash. (Ashmole) Rolls
MSS. Ashmole	MSS. Aubrey	MSS. Auct. B. (Auctarium B.)	MSS. Auct. D. (Auctarium D.)	MSS. Auct. E. (Auctarium E.)
MSS. Auct. F. (Auctarium F.)	MSS. Auct. T. (Auctarium T.)	MSS. Auct. V. (Auctarium V.)	MSS. Barlow	MSS. Barocci
MSS. Bodl. (Bodley)	MSS. Bodl. Rolls (Bodley Rolls)	MSS. Bowyer	MSS. Broxb. (Broxbourne)	MSS. Buchanan
MSS. Bywater	MSS. Bywater adds.	MSS. Canon. Bibl. Lat. (Canonici Latin Biblical)	MSS. Canon. Class. Lat. (Canonici Latin Classical)	MSS. Canon. Gr. (Canonici Greek)
MSS. Canon. Ital. (Canonici	MSS. Canon. Liturg.	MSS. Canon. Misc. (Canonici	MSS. Canon. Pat. Lat.	MSS. Carte

Item ID	Bit Depth	Camera Make	Camera Model	Cataloged	Cataloged By	Color Mode	Color Profile	Copyright	Created	Creator Application
19276		Canon	Canon EOS 70D	2017-01-11T12:32:17.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T12:55:58.000Z	Digital Photo Professional
19277		Canon	Canon EOS 70D	2017-01-11T12:49:29.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T15:03:39.000Z	Digital Photo Professional
19278		Canon	Canon EOS 70D	2017-01-11T15:54:28.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T15:54:23.000Z	Digital Photo Professional
19279		Canon	Canon EOS 70D	2017-01-11T15:54:31.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T15:54:28.000Z	Digital Photo Professional
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19281		Canon	Canon EOS 70D	2017-01-11T15:54:39.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T15:54:35.000Z	Digital Photo Professional
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19283		Canon	Canon EOS 70D	2017-01-11T15:54:48.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T15:54:46.000Z	Digital Photo Professional
19284		Canon	Canon EOS 70D	2017-01-11T15:54:56.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T15:54:52.000Z	Digital Photo Professional
19285		Canon	Canon EOS 70D	2017-01-11T15:55:00.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T15:54:56.000Z	Digital Photo Professional
19286		Canon	Canon EOS 70D	2017-01-11T15:55:17.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T15:55:14.000Z	Digital Photo Professional
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19289		Canon	Canon EOS 70D	2017-01-11T15:57:14.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-11T15:55:11.000Z	Digital Photo Professional
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19314		Canon	Canon EOS 70D	2017-01-13T10:54:55.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-13T10:54:52.000Z	Digital Photo Professional
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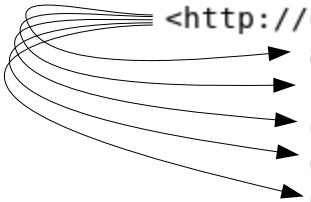
19316		Canon	Canon EOS 70D	2017-01-13T10:55:00.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-13T10:54:58.000Z	Digital Photo Professional
19317		Canon	Canon EOS 70D	2017-01-13T10:55:07.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-13T10:55:01.000Z	Digital Photo Professional
19318		Canon	Canon EOS 70D	2017-01-13T10:55:11.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-13T10:55:08.000Z	Digital Photo Professional
19319		Canon	Canon EOS 70D	2017-01-13T10:55:18.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-13T10:55:14.000Z	Digital Photo Professional
19320		Canon	Canon EOS 70D	2017-01-13T10:55:24.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-13T10:55:21.000Z	Digital Photo Professional
19323		Canon	Canon EOS 70D	2017-01-13T11:04:38.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-13T10:55:11.000Z	Digital Photo Professional
19324		Canon	Canon EOS 70D	2017-01-13T11:04:38.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-13T10:55:18.000Z	Digital Photo Professional
19338		Canon	Canon EOS 70D	2017-01-16T09:59:15.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:58.000Z	Digital Photo Professional
19339		Canon	Canon EOS 70D	2017-01-16T09:59:19.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:58.000Z	Digital Photo Professional
19340		Canon	Canon EOS 70D	2017-01-16T09:59:28.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:58.000Z	Digital Photo Professional
19341		Canon	Canon EOS 70D	2017-01-16T09:59:36.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:58.000Z	Digital Photo Professional
19342		Canon	Canon EOS 70D	2017-01-16T09:59:40.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:58.000Z	Digital Photo Professional
19343		Canon	Canon EOS 70D	2017-01-16T09:59:45.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:59.000Z	Digital Photo Professional
19344		Canon	Canon EOS 70D	2017-01-16T10:00:03.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:18:09.000Z	Digital Photo Professional
19345		Canon	Canon EOS 70D	2017-01-16T10:04:06.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:12:40.000Z	Digital Photo Professional
19346		Canon	Canon EOS 70D	2017-01-16T10:04:06.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:58.000Z	Digital Photo Professional
19348		Canon	Canon EOS 70D	2017-01-16T10:04:06.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:58.000Z	Digital Photo Professional
19349		Canon	Canon EOS 70D	2017-01-16T10:04:07.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:18:44.000Z	Digital Photo Professional
19350		Canon	Canon EOS 70D	2017-01-16T10:04:08.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:58.000Z	Digital Photo Professional
19351		Canon	Canon EOS 70D	2017-01-16T10:04:08.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:06:00.000Z	Digital Photo Professional
19352		Canon	Canon EOS 70D	2017-01-16T10:04:08.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:59.000Z	Digital Photo Professional
19353		Canon	Canon EOS 70D	2017-01-16T10:04:09.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-16T10:05:59.000Z	Digital Photo Professional
19388		Canon	Canon EOS 70D	2017-01-23T16:39:37.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-24T15:40:53.000Z	Digital Photo Professional
19389		Canon	Canon EOS 70D	2017-01-23T16:40:01.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-23T16:39:59.000Z	Digital Photo Professional
19390		Canon	Canon EOS 70D	2017-01-23T16:40:16.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-23T16:40:12.000Z	Digital Photo Professional
19391		Canon	Canon EOS 70D	2017-01-23T16:40:20.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-23T16:40:17.000Z	Digital Photo Professional
19392		Canon	Canon EOS 70D	2017-01-23T16:40:24.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-23T16:40:21.000Z	Digital Photo Professional
19393		Canon	Canon EOS 70D	2017-01-23T16:40:42.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-23T16:40:39.000Z	Digital Photo Professional
19394		Canon	Canon EOS 70D	2017-01-23T16:40:46.000Z	AutoSync	3	sRGB v1.31 (Canon)	Bodleian Libraries, University of Oxford	2017-01-23T16:40:44.000Z	Digital Photo Professional



```
<http://conservation.bodleian.ox.ac.uk/23945/dimension-height>
        a                   crm:E54_Dimension ;
        rdfs:label          "Height of image 23945"@en ;
        crm:P2_has_type     <http://vocab.getty.edu/aat/300055644> ;
        crm:P90_has_value   "2000"@en ;
        crm:P91_has_unit    <http://vocab.getty.edu/aat/300266190> .

<http://conservation.bodleian.ox.ac.uk/19605/digitisation-process>
        a                               crmdig:D2_Digitization_Process ;
        rdfs:label                      "Digitisation process which produced image 19605"@en ;
        crm:P14_carried_out_by          <http://conservation.bodleian.ox.ac.uk/authority/people/andrewhoney>
        crm:P33_used_specific_technique
                <http://conservation.bodleian.ox.ac.uk/19605/digitisation-process-design-procedure> ;
        crmdig:L12_happened_on_device   <http://conservation.bodleian.ox.ac.uk/19605/digital-device> ;
        crmdig:L61_was_ongoing_at       "2017-02-24T13:47:58.000Z"@en .
```

Integrating catalogue – conservation photographs

```
PREFIX crm: <http://www.cidoc-crm.org/cidoc-crm/>

SELECT DISTINCT        ?ms {
  ?photo crm:P138_represents ?ms .
  GRAPH <https://medieval.bodleian.ox.ac.uk/> {
    ?ms a crm:E24_Physical_Man-Made_Thing .
  }
}
```

ms
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_1596>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7239>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_427>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_4820>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_407>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_1719>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_8391>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_1388>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_520>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6421>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_4630>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7355>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_3092>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_3090>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6682>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6334>
<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_9998>

photo	ms
<https://medieval.bodleian.ox.ac.uk/images/samples/17C02739.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_1596>
<https://medieval.bodleian.ox.ac.uk/images/samples/17C02575.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7239>
<https://medieval.bodleian.ox.ac.uk/images/samples/17C01586.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_427>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/18C00840.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/18C00839.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/18C00838.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/18C00837.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/18C00528.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_4820>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/18C00527.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_4820>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02784.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02783.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02782.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02781.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02780.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02779.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02778.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02777.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02776.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02775.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02774.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02773.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02772.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02771.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02770.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02769.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02768.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02767.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02766.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7565>

```
SELECT DISTINCT ?photo ?ms {
  ?photo crm:P138_represents ?ms .
  GRAPH <https://medieval.bodleian.ox.ac.uk/> {
    ?ms a crm:E24_Physical_Man-Made_Thing .
  }
} ORDER BY DESC(?photo)
```

photo	ms
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02702.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_8391>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02691.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_8391>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02570.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7239>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02551.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_7239>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C02537.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_1388>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C01690.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_4630>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C01035.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_3092>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C01029.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_3090>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C01013.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6682>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00836.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_4630>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00828.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6682>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00823.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_3090>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00820.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_3092>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00487.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6682>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00477.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6682>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00476.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6682>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00475.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6682>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00382.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6682>
<http://connect.ox.ac.uk/bodl/conserv/...derivatives/17C00381.jpg>	<https://medieval.bodleian.ox.ac.uk/catalog/manuscript_6682>

```
PREFIX crm: <http://www.cidoc-crm.org/cidoc-crm/>

SELECT DISTINCT ?photo ?ms {
  ?photo crm:P138_represents ?ms .
  ?photo crm:P2_has_type <http://conservation.bodleian.ox.ac.uk/authority/terms/02spine>
  GRAPH <https://medieval.bodleian.ox.ac.uk/> {
    ?ms a crm:E24_Physical_Man-Made_Thing .
  }
} ORDER BY DESC(?photo)
```

OXLOD Bodleian conservation search

Simple search | Search based on photographer

Conservation photos by catalogue shelfmark

Search for conserved books e.g. type "MS. Bodl. 579" or "MS. Laud Misc. 439"

Photos by scene setup type

Search for types of photos e.g. type "23: spine"

Applicable Templates: This resource does already have a direct corresponding page and as such no templates will be applied.

```
<semantic-context repository='bod-cons'>
<div class="page">
  <div class='page__body'>
    <h1> OXLOD Bodleian conservation search </h1>

    <bs-tabs id="tabs">
      <bs-tab event-key="1" title="Simple search">

      <!-- Object search -->

      <h2> Conservation photos by catalogue shelfmark </h2>

      <semantic-search>
        <semantic-search-query-keyword
        query='
        PREFIX crm: <http://www.cidoc-crm.org/cidoc-crm/>
        PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
        SELECT DISTINCT ?subject ?label {
          ?photo crm:P138_represents ?subject .
          GRAPH <https://medieval.bodleian.ox.ac.uk/> {
            ?subject a crm:E24_Physical_Man-Made_Thing .
            ?subject rdfs:label ?label .
            FILTER REGEX(?label, str(?__token__), "i")
          }
        }
        '
        placeholder='Search for conserved books e.g. type "MS. Bodl. 579" or "MS. Laud Misc. 439"'
        min-search-term-length=3
        ></semantic-search-query-keyword>


      <!-- Type search -->

      <h2> Photos by scene setup type </h2>

        <semantic-search-query-keyword
        query='
        PREFIX crm: <http://www.cidoc-crm.org/cidoc-crm/>
        PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
        SELECT DISTINCT ?subject ?label {
          ?photo crm:P138_represents ?subject .
```

OXLOD Bodleian conservation search

Simple search | Search based on photographer

Conservation photos by catalogue shelfmark

MS. Bodl. 579

Photos by scene setup type

Search for types of photos e.g. type "23:"

MS. Bodl. 579

```
<?xml version="1.0" encoding="UTF-8"?>
<row>
    <book>
        <uri>jacobus-philippus-de-claris-mulieribus</uri>
        <label>Jacobus Philippus, De claris mulieribus</label>
        <type>
            <uri>1395</uri>
            <label>inboard bindings</label>
        </type>
        <components>
            <component>
                <uri>1497-boards</uri>
                <label>1497 boards</label>
                <type>
                    <uri>1222</uri>
                    <label>boards</label>
                </type>
                <material>
                    <uri>2830</uri>
                    <label>beech</label>
                </material>
            </component>
            <component>
                <uri>1497-split-straps</uri>
                <label>1497 split-straps</label>
                <type>
                    <uri>1626</uri>
                    <label>split-straps</label>
                </type>
                <material>
                    <uri>1369</uri>
                    <label>goatskin</label>
                </material>
                <material>
                    <uri>1658</uri>
                    <label>tanned-skin</label>
                </material>
            </component>
            <component>
                <uri>1497-covers</uri>
                <label>1497 covers</label>
                <type>
                    <uri>1530</uri>
                    <label>quarter covers</label>
                </type>
            </component>
            <component>
                <uri>1600-slips</uri>
                <label>1600 slips</label>
            </component>
        </components>
    </book>
    <history>
        <production>
            <uri>v1-binding</uri>
            <label>V1 Binding</label>
            <book>
                <uri>jacobus-philippus-de-claris-mulieribus</uri>
                <label>Jacobus Philippus, De claris mulieribus</label>
            </book>
            <addition>
                <uri>v1-board-addition</uri>
                <label>V1 Board Addition</label>
                <added>
                    <uri>1497-boards</uri>
                    <label>1497 boards</label>
                </added>
                <augmented>
                    <uri>jacobus-philippus-de-claris-mulieribus</uri>
                    <label>Jacobus Philippus, De claris mulieribus</label>
                </augmented>
            </addition>
            <addition>
                <uri>v1-cover-addition</uri>
                <label>V1 Cover Addition</label>
                <added>
                    <uri>1497-cover</uri>
                    <label>1497 cover</label>
                </added>
                <augmented>
                    <uri>jacobus-philippus-de-claris-mulieribus</uri>
                    <label>Jacobus Philippus, De claris mulieribus</label>
                </augmented>
            </addition>
            <time-span>1497</time-span>
        </production>
        <modification>
            <uri>v2-binding</uri>
            <label>V2 Binding</label>
            <book>
                <uri>jacobus-philippus-de-claris-mulieribus</uri>
                <label>Jacobus Philippus, De claris mulieribus</label>
            </book>
            <removal>
                <uri>v2-board-removal</uri>
                <label>V2 Board Removal</label>
                <removed>
                    <uri>1497-boards</uri>
                    <label>1497 boards</label>
                </removed>
                <diminished>
                    <uri>jacobus-philippus-de-claris-mulieribus</uri>
                    <label>Jacobus Philippus, De claris mulieribus</label>
                </diminished>
            </removal>
            <removal>
                <uri>v2-cover-removal</uri>
                <label>V2 Cover Removal</label>
                <removed>
                    <uri>1497-cover</uri>
                    <label>1497 cover</label>
                </removed>
                <diminished>
                    <uri>jacobus-philippus-de-claris-mulieribus</uri>
                    <label>Jacobus Philippus, De claris mulieribus</label>
                </diminished>
                <before>
                    <uri>v2-cover-addition</uri>
                    <label>V2 Cover Addition</label>
                </before>
            </removal>
            <addition>
                <uri>v2-cover-addition</uri>
                <label>V2 Cover Addition</label>
                <added>
                    <uri>1600-cover</uri>
                    <label>1600 cover</label>
                </added>
                <augmented>
                    <uri>jacobus-philippus-de-claris-mulieribus</uri>
                    <label>Jacobus Philippus, De claris mulieribus</label>
                </augmented>
                <after>
                    <uri>v2-cover-removal</uri>
                    <label>V2 Cover Removal</label>
                </after>
            </addition>
            <time-span>1600</time-span>
        </modification>
    </history>
</row>
```

Mapping : versioning-paper

Info | Matching Table | Generators | Analysis | Transformation | Configuration | About

TOP BOTTOM VIEW MODE XML

(ALL) SOURCES (ALL) TARGETS (ALL) IF RULES (ALL) COMMENTS (ALL) MAPS

Click on a row to edit the matching table

#		SOURCE	TARGET	IF RULE	COMMENTS
1	D	../book	E24_Physical_Man-Made_Thing		
1.1	P	type	*P2_has_type*		
	R	type	E55_Type		
1.2	P	../component	*P46_is_composed_of*		
	R	../component	E18_Physical_Thing		
1.3	P	../type	*P46_is_composed_of* E18_Physical_Thing *P2_has_type*		
	R	../type	E55_Type		
1.4	P	../material	*P46_is_composed_of* E18_Physical_Thing *P45_consists_of*		
	R	../material	E57_Material		

+ Link + Map

#		SOURCE	TARGET	IF RULE	COMMENTS
2	D	../production	E12_Production		
2.1	P	book	*P108_has_produced*		
	R	book	E24_Physical_Man-Made_Thing		
2.2	P	time-span	*P4_has_time-span* E52_Time-Span *P82_at_some_time_within*		
	R	time-span	rdf-schema#Literal		

+ Link + Map

#		SOURCE	TARGET	IF RULE	COMMENTS
3	D	../modification	E11_Modification		
3.1	P	book	*P31_has_modified*		
	R	book	E24_Physical_Man-Made_Thing		

+ Link + Map

#		SOURCE	TARGET	IF RULE	COMMENTS
4	D	../addition	E79_Part_Addition		
4.1	P	uri	*P117_occurs_during*		
	R	uri	E12_Production		
4.2	P	added	*P111_added*		
	R	added	E18_Physical_Thing		
4.3	P	augmented	*P110_augmented*		
	R	augmented	E24_Physical_Man-Made_Thing		

+ Link + Map

#		SOURCE	TARGET	IF RULE	COMMENTS
5	D	../addition	E79_Part_Addition		
5.1	P	uri	*P117_occurs_during*		
	R	uri	E11_Modification		
5.2	P	added	*P111_added*		
	R	added	E18_Physical_Thing		
5.3	P	augmented	*P110_augmented*		
	R	augmented	E24_Physical_Man-Made_Thing		
5.4	P	after	*P120i_occurs_after*		
	R	after	E80_Part_Removal		

+ Link + Map

#		SOURCE	TARGET	IF RULE	COMMENTS
6	D	../removal	E80_Part_Removal		
6.1	P	uri	*P117_occurs_during*		
	R	uri	E11_Modification		
6.2	P	removed	*P113_removed*		
	R	removed	E18_Physical_Thing		
6.3	P	diminished	*P112_diminished*		
	R	diminished	E24_Physical_Man-Made_Thing		
6.4	P	before	*P120_occurs_before*		
	R	before	E79_Part_Addition		

+ Link + Map

User:avelios

```
@prefix w3id:  <http://w3id.org/> .
@prefix rdf:   <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xml:   <http://www.w3.org/XML/1998/namespace> .
@prefix rdfs:  <http://www.w3.org/2000/01/rdf-schema#> .
@prefix exa:   <http://example.org/> .
@prefix crm:   <http://www.cidoc-crm.org/cidoc-crm/> .

exa:1497-covers  a       crm:E18_Physical_Thing ;
        rdfs:label       "1497 covers"@en ;
        crm:P2_has_type  <http://w3id.org/lob/concept/1530> .

<http://w3id.org/lob/concept/2830>
        a           crm:E57_Material ;
        rdfs:label  "beech"@en .

exa:1600-cover  a   crm:E18_Physical_Thing ;
        rdfs:label  "1600 cover"@en .

exa:1600-slips  a   crm:E18_Physical_Thing ;
        rdfs:label  "1600 slips"@en .

<http://w3id.org/lob/concept/1658>
        a           crm:E57_Material ;
        rdfs:label  "tanned-skin"@en .

exa:v2-cover-addition
        a                   crm:E79_Part_Addition ;
        rdfs:label          "V2 Cover Addition"@en ;
        crm:P110_augmented  exa:jacobus-philippus-de-claris-mulieribus ;
        crm:P111_added      exa:1600-cover .

exa:v1-binding  a              crm:E12_Production ;
        rdfs:label             "V1 Binding"@en ;
        crm:P108_has_produced  exa:jacobus-philippus-de-claris-mulieribus ;
        crm:P4_has_time-span   <uuid:AA> .

<http://w3id.org/lob/concept/1369>
        a           crm:E57_Material ;
        rdfs:label  "goatskin"@en .

<uuid:AA>  a                          crm:E52_Time-Span ;
        crm:P82_at_some_time_within  "1497"@en .

exa:1497-boards  a           crm:E18_Physical_Thing ;
        rdfs:label           "1497 boards"@en ;
        crm:P2_has_type      <http://w3id.org/lob/concept/1222> ;
        crm:P45_consists_of  <http://w3id.org/lob/concept/2830> .

exa:v2-cover-removal  a      crm:E80_Part_Removal ;
        rdfs:label           "V2 Cover Removal"@en ;
        crm:P112_diminished  exa:jacobus-philippus-de-claris-mulieribus ;
        crm:P113_removed     exa:1497-cover .

<http://w3id.org/lob/concept/1395>
        a           crm:E55_Type ;
        rdfs:label  "inboard bindings"@en .

exa:v1-cover-addition
        a                   crm:E79_Part_Addition ;
        rdfs:label          "V1 Cover Addition"@en ;
        crm:P110_augmented  exa:jacobus-philippus-de-claris-mulieribus ;
        crm:P111_added      exa:1497-cover .

<http://w3id.org/lob/concept/1626>
        a           crm:E55_Type ;
        rdfs:label  "split-straps"@en .

exa:v2-board-removal  a      crm:E80_Part_Removal ;
        rdfs:label           "V2 Board Removal"@en ;
        crm:P112_diminished  exa:jacobus-philippus-de-claris-mulieribus ;
        crm:P113_removed     exa:1497-boards .

<http://w3id.org/lob/concept/1530>
        a           crm:E55_Type ;
        rdfs:label  "quarter covers"@en .

exa:jacobus-philippus-de-claris-mulieribus
        a                   crm:E24_Physical_Man-Made_Thing ;
        rdfs:label          "Jacobus Philippus, De claris mulieribus"@en ;
        crm:P2_has_type     <http://w3id.org/lob/concept/1395> ;
        crm:P46_is_composed_of  exa:1600-slips , exa:1497-covers , exa:1497-split-straps , exa:1497-boards .

exa:1497-cover  a   crm:E18_Physical_Thing ;
        rdfs:label  "1497 cover"@en .

<http://w3id.org/lob/concept/1222>
        a           crm:E55_Type ;
        rdfs:label  "boards"@en .

exa:1497-split-straps
        a                   crm:E18_Physical_Thing ;
        rdfs:label          "1497 split-straps"@en ;
        crm:P2_has_type     <http://w3id.org/lob/concept/1626> ;
        crm:P45_consists_of  <http://w3id.org/lob/concept/1658> , <http://w3id.org/lob/concept/1369> .

exa:v1-board-addition
        a                   crm:E79_Part_Addition ;
        rdfs:label          "V1 Board Addition"@en ;
        crm:P110_augmented  exa:jacobus-philippus-de-claris-mulieribus ;
        crm:P111_added      exa:1497-boards .

exa:v2-binding  a              crm:E11_Modification ;
        rdfs:label             "V2 Binding"@en ;
        crm:P31_has_modified   exa:jacobus-philippus-de-claris-mulieribus .
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Summary

- Data integration:
  - does not affect existing systems
  - produces new conclusions
- Existing databases:
  - require mapping
  - require links to thesauri and authority files

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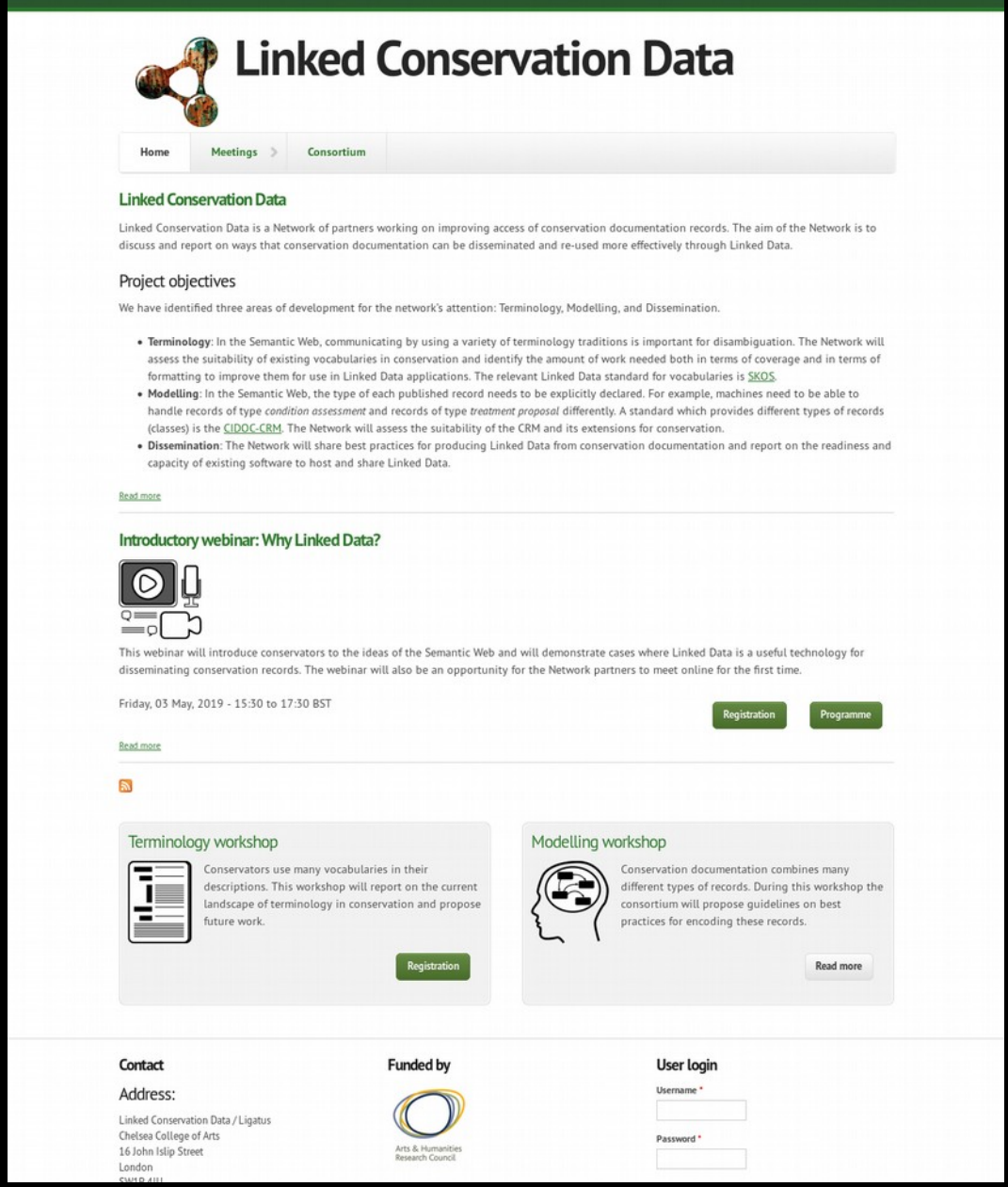
- Not discussed:
  - open data - licencing
  - observing uncertainty
  - contradicting observations

Linked Conservation Data



https://www.ligatus.org.uk/lcd/