CIDOC CRM 101
with Notre-Dame de Paris

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57th joint meeting of the CIDOC CRM SIG, 50th FRBR/LRMoo SIG
Pedagogical material revamped from:
CIDOC CRM as a Language for Cultural Heritage Level A1

George Bruseker - Takin.solutions
CIDOC 2023, Mexico
Hands-on CIDOC CRM 101

- Starter exercise: This is a ....
- Lesson 2: What’s there to talk about?
- Lesson 3: What’s it called?
- Lesson 4: What kind of thing is that?
- Lesson 5: What happened?
CIDOC CRM Ontology and Modelling, Where to Begin?

Language of

90+- Classes / Nouns &
160 +- Properties / Verbs

The Standard: Link

Friendly Representation: Link
What is CIDOC CRM?

- “The overall scope of the CIDOC CRM can be summarised in simple terms as the curated knowledge of museums...”

- A lingua franca for cultural heritage specialists to express and exchange knowledge in a machine readable format

- A collaborative effort to support:
  - a generic model of recording of “what has happened” in human scale
  - generate huge, meaningful networks of knowledge by a simple abstraction: history as meetings of people, things and information
CIDOC CRM Starter exercise:
This is a …
Lesson 1: This is a …

The most basic thing that we can and must assert in our formal language to begin communicating about any object is what something is.

“X is a Y.”

X is the thing we are talking about.

Y is the kind of thing we say it is.

Rdfs:type is the verb that lets us say X is a Y.
Lesson 1: Examples

Natural Language

The person is a **E21 Person**

The Eiffel Tower is a **E22 Human Made Object**

The place Paris is a **E53 Place**

The event World War II is a **E5 Event**

The play Hamlet is a **E28 Conceptual Object**
Exercise 1

- Get the instance card that represents your institution
- Get 2 blank cards and fill the information in
- Let’s make 2 triples:
  - Your name is …
  - I am part of …
Exercise 1a

- Get the instance card that represents your institution
- Get 2 blank cards and fill the information in
- Let’s make 2 triples:
  - Your name is …
  - I am part of …

Example:

- **Your name is** …
- **I am part of** …

**Anaïs Guillem**
Exercise 1b

- Get the instance card that represent your institution
- Get 2 blank cards and fill the information in
- Let’s make 2 triples:
  - Your name is …
  - I am part of …
**Lesson 1: Learning Outcomes / Review**

<table>
<thead>
<tr>
<th>Natural Language Sentence Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is a …</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Class</th>
<th>Subclass of</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1 CRM Entity</td>
<td>rdfs:Class</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Basic Formal Language Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate an instance of a class</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Domain</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>rdfs:type</td>
<td>rdfs:Resource</td>
<td>rdfs:Class</td>
</tr>
</tbody>
</table>
Case study of Notre-Dame de Paris
Semantics works best with examples

Ontology and semantics allow us to create fact based networks of knowledge about real world things. “Stories”, but non-fictional ones.

Here is a textual version of Notre-Dame de Paris:


We will use playing cards to begin to learn how to tell the story of Notre-Dame de Paris using CIDOC CRM:

https://docs.google.com/spreadsheets/d/1Q3sn7kzz_JvmytIKDijYM0CtVzrn4KUmIjZxjSSrv8s/edit?usp=sharing

For the rest of this course, the example of Notre-Dame de Paris will provide a frame for exploring how to ‘speak’ with CIDOC CRM.
Lesson 2: What’s there to talk about?
Lesson 2: What’s there to talk about?

As large and confusing as our world is, the kinds of things that we talk about break down into a very small set of kinds of things. CIDOC CRM allows for describing five basic kinds of things. Learn these and you have the foundation of thinking in this language.

[Image of CIDOC CRM cards]

Check these 5 CIDOC CRM cards:

- E2_Temporal_Entity
- E53Place
- E18_Physical_Thing
- E28_Conceptual_Object
- E39_Actor
Lesson 2: Definitions

E2_Temporal_Entity

Objects which are temporal in nature, something that takes place over time, and about which you want to make assertions regarding their duration, location, involved entities etc.

E53_Place

Objects which are geometric in nature, about which one wants to assert spatial properties like absolute and relative location.

E22_Human-Made_Object

Objects which are material and substantial in nature and exists as unique singular individuals in the world. About these objects one may make direction assertions of dimension, composition, part hole relations, its function as bearer or holder of information.

E28_Conceptual_Object

Objects which are ideas and exist in form of coherent identifiable concepts that can be identified through time. About these objects one may make direct assertions of composition, part whole relations, their content representational functions.

E21_Person

Objects which are agents in nature, having the capability to act as causes in events. Of which one wishes to make assertions of agency and membership.

1- Notre-Dame de Paris' fire
Exercise 2

Look at the cards for the lesson 2
Separate the Instance cards and CIDOC CRM Entity cards
Match instance cards with the CRM cards
Exercise 2

1. Notre-Dame de Paris' fire

5. Notre-Dame de Paris' cathedral (building)

7. Victor Hugo's novel Notre-Dame de Paris

10. Eugène Viollet-le-Duc

3. Paris, France
## Lesson 2: Learning Outcomes / Review

### Natural Language Sentence Types
- X is a temporal happening
- X is a geographic place
- X is a physical object
- X is an idea
- X is an agent

### Basic Formal Language Skill
Distinguish between the main kinds of entities that you can talk about in CIDOC CRM

<table>
<thead>
<tr>
<th>Class</th>
<th>Subclass of</th>
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<tbody>
<tr>
<td>E2 Temporal Entity</td>
<td>E1 CRM Entity</td>
</tr>
<tr>
<td>E53 Place</td>
<td>E1 CRM Entity</td>
</tr>
<tr>
<td>E18 Physical Thing</td>
<td>E70 Thing</td>
</tr>
<tr>
<td>E28 Conceptual Object</td>
<td>E71 Human-Made Thing</td>
</tr>
<tr>
<td>E39 Actor</td>
<td>E77 Persistent Item</td>
</tr>
</tbody>
</table>
Lesson 3: What’s it called?

P1
is identified by
(identifies)

Domain: E1 CRM Entity
Range: E41 Appellation

E41 Appellation

Scope Note:
This class comprises signs, either meaningful or not, or arrangements of signs following a specific syntax that are used or can be used to refer to and identify a specific instance of some class or category within a certain context.

13-the City of Light

"The City of Light"
A basic task in any language is to talk about the names that things have. This is also a basic feature of CIDOC CRM.

Natural language sentences of this type are of the form

\[ X \text{ is called } Y. \]

\( X \) is the thing we want to give the name of.

\( Y \) is the name we want to relate to it.

crm:P1_is_identified_by allows us to make this statement.
Lesson 3: Examples

- **E1_CRM_Entity**: the Object
  - **E1_CRM_Entity**: E41_Appellation
    - **P1_is_identified_by**: "Name"
  - **E5_Event**: the event World War II
    - **P1_is_identified_by**: "The Patriotic War"
- **E21_Person**: the person George
  - **E21_Person**: E41_Appellation
    - **P1_is_identified_by**: "Georges"
  - **E53_Place**: the place New York
    - **P1_is_identified_by**: "the Big Apple"
- **E22_Human-Made_Object**: Eiffel Tower
  - **E22_Human-Made_Object**: E41_Appellation
    - **P1_is_identified_by**: "Tour Eiffel"
  - **E28_Conceptual_Object**: the play Hamlet
    - **P1_is_identified_by**: "The Tragedy of Hamlet, Prince of Denmark"
Exercise 3

Try to find at least one appellation that correctly names an instance of:

- E2 Temporal Entity
- E18 Physical Thing
- E53 Place
- E39 Actor
- E28 Conceptual Object
Lesson 3: Learning Outcomes / Review

Natural Language Sentence Types

| X is called Y |

Basic Formal Language Skill

Connect a documented entity to a name that it has.

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<tr>
<td>E41 Appellation</td>
<td>rdfs:Class</td>
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<th>Property</th>
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<th>Range</th>
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</thead>
<tbody>
<tr>
<td>P1_is_identified_by</td>
<td>E1 CRM Entity</td>
<td>E41 Appellation</td>
</tr>
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</table>
Lesson 4: What kind of thing is that?
Lesson 4: What kind of thing is that?

A basic task in any language is to classify the things you are talking about, to indicate what kind of thing it is.

Natural language sentences of this type are of the form

**X is classified as Y.**

X is the thing we want to give the type to.

Y is the type we want to relate to it.

crm:P2_has_type allows us to make this statement.
Lesson 4: Examples

- **E1_CRM_Entity**: the Object
- **E21_Person**: the person George
- **E22_Human-Made_Object**: Eiffel Tower
- **E55_Type**: Type
- **E5_Event**: the event World War II
- **E53_Place**: the place New York
- **E28_Conceptual_Object**: the play Hamlet
- **E55_Type**: War
- **E55_Type**: City
- **E55_Type**: Play
Exercise 4

Try to find at least one type that correctly classifies an instance of:

- E2 Temporal Entity
- E18 Physical Thing
- E53 Place
- E39 Actor
- E28 Conceptual Object
Lesson 4: Learning Outcomes / Review

<table>
<thead>
<tr>
<th>Natural Language Sentence Types</th>
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<tbody>
<tr>
<td>X is classified as Y</td>
<td>Connect a documented entity to a type that categorizes it</td>
</tr>
<tr>
<td>X is of type Y</td>
<td></td>
</tr>
<tr>
<td>X is of the kind Y</td>
<td></td>
</tr>
</tbody>
</table>

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<tr>
<th>Class</th>
<th>Subclass of</th>
<th>Property</th>
<th>Domain</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>E55 Type</td>
<td>E28 Conceptual Object</td>
<td>P2_has_type</td>
<td>E1 CRM Entity</td>
<td>E55 Type</td>
</tr>
</tbody>
</table>
Lesson 5: What happened?
Lesson 5: What happened?

Talking about the past, there are typical sets of facts we want to be able to talk about that answer basic questions. When did that happen? Where did it happen? Who was involved? What was involved? All these questions relate to events in the past and this is how CIDOC CRM allows you to express them, as statements about events.

Natural language sentences of this type are of the form

X took place at time Y

X took place at place Q

X involved person P

X involved object Z

Using the event centred representation, CIDOC CRM gives several basic properties which allow you to express these ideas.
Lesson 5: Examples

Consider the following fictional example and its translation to CIDOC CRM formalization.

- The murder took place on the evening of June 24, 1928, at dusk.
- The murder took place in the parlour.
- The murder was carried out by Mr Plum. (Mr Plum was the murderer)
- The murder used the candlestick. (The candlestick was the murder weapon)
Exercise 5a

Using lesson 5-cards, document the construction of Notre-Dame using CIDOC CRM entities and properties.
Exercise 5b

Using lesson 5-cards, same exercise with the restoration of Notre-Dame by Viollet-le-Duc
Lesson 5: Learning Outcomes / Review

Natural Language Sentence Types

- X took place at time Y
- X took place at place Q
- X involved person P
- X involved object Z

Basic Formal Language Skill

Choose an appropriate property to express your meaning.

Choose the correct domain class in order to be able to use your property.

<table>
<thead>
<tr>
<th>Property</th>
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<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>P4_has_time-span</td>
<td>E2 Temporal Entity</td>
<td>E52 Time-Span</td>
</tr>
<tr>
<td>P7_took_place_at</td>
<td>E5 Event</td>
<td>E53 Place</td>
</tr>
<tr>
<td>P14_carried_out_by</td>
<td>E7 Activity</td>
<td>E39 Actor</td>
</tr>
<tr>
<td>P16_used_specific_object</td>
<td>E7 Activity</td>
<td>E70 Thing</td>
</tr>
</tbody>
</table>
More to come:

● Lesson 6: Telling Time
● Lesson 7: Describing the Physical
● Lesson 8: Describing the Conceptual
● Lesson 9: Talking about Endings and Beginnings
● Lesson 10: Where is / was it?