CRMaaa: An (unofficial) CIDOC Extension for the World of Social Facts

CIDOC CRM SIG
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Origin of the Project:
- Development of CRMcpr in 2020 (initiated and funded by Swiss Art Research Infrastructure, University of Zurich in cooperation with ETH Zurich)
- Development of CRMaaa in 2022 (initiated and funded by ETH Zürich, Prof. Maarten Delbeke)

Current Institutional Framework
- Further Developing as part of the Open Research Data for the Art Environment (ORDEA) project
- CRMaa and CRMcpr as Integrated “twin project” with SDRM 2.0 and Zellij (ontology and semantic pattern management system)
  - SRDM 2.0 updates the previous version of SRDM and aligns it with Linked.Art
  - SDRM 2.0 is ready for publication in early summer, first release of Zellij is due in summer.
- Developed by Takin.solution on behalf of SARI
Action Relations for SIG

- Would like an official recognition as ‘logically CRM compatible’ and reference on the site [in a section for CRM compatible extensions]
- Contributes full modelling and examples for consistently representing social facts as they appear in CIDOC CRM… open to have that modelling adopted into CRMsoc
- Happy to collaborate with other projects working in the same space to align fundamental ideas under ‘CRMsoc’ as umbrella. If so, CRMsoc should rebooted with this explicitly in mind
- If there is not an interest in continuing CRMsoc as a formal extension that takes input from the community of users, it should be removed from the site: it is not a standard.
What Are Social Facts?
What Are Social Facts?

“…in recent years, many things which would once have been accepted without question as ‘statements’ by both philosophers and grammarians have been scrutinized with new care… It has come to be commonly held that many utterances which look like statements are either not intended at all, or only intended in part, to record or impart straightforward information about the facts.”

(1962, p. 1)
What Are Social Facts?

- Not all meaningful language is truth-functional (contra the Logical Positivists)
- There are, e.g., also performative utterances or speech acts
What Are Social Facts?

- “I hereby pronounce you husband and wife”
- “I quit!”
- “I promise to pay you $10 tomorrow”
“We live in exactly one world, not two or three or seventeen As far as we currently know, the most fundamental features of that world are as described by physics, chemistry, and the other natural sciences… How can there be an objective world that consists of money, property, marriage, governments, elections, football games, cocktail parties and law courts in a world that consists entirely of physical particles in fields of force?”

(1995, p. xi)
What Are Social Facts?

- Take X as Y in C
  - Ontological **Subjective** (i.e., they supervene on subjectivity)
  - Epistemologically **Objective** (i.e., open to investigation and falsification)
CRMaaa Motivation

● True to the Facts
  ○ Marriages exist, adoption exists, debt exists, intellectual property rights exist…
  ○ Open to verification and falsification

● True to the way we speak about these facts
  ○ We can say true things about them… and we do!
  ○ They are, however, multivalent - more on this!
Historical Information is typically partial, we don’t always know the ‘events’ of history, we know their effects [social facts]

Historical research is interested in the social context and consequence of historical events but CRMbase is optimized for recording a presentist view of history [the present state of knowledge]

Historical research is interested in knowing contradictory facts and their social contexts as well as social cause (in their social aspect on top of their space-time aspect)

Historical method requires a means of determining provenance of facts
As ontologists/semantic modellers, this presents us with a number of technical challenges…

Principal among these is the *temporalization* and *categorization* of properties

Some ways to deal with this:

- Temporally-specified properties
## CRMaaa Motivation

<table>
<thead>
<tr>
<th>Temporally Exclusive Properties in CIDOC</th>
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</tr>
</thead>
<tbody>
<tr>
<td>- P50 has current keeper</td>
<td>- P49 has former or current keeper</td>
</tr>
<tr>
<td>- P52 has current owner</td>
<td>- P51 has former or current owner</td>
</tr>
<tr>
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- Reified Properties
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**Diagram:**

- **E39 Actor**
  - `crm:p107` has current or former member (is current or former member of)
  - **E74 Group**
P107 has current or former member (is current or former member of) in version 7.1.1

Domain: E74 Group
Range: E39 Actor

Subproperty of: No subproperties found
Superproperty of: No superproperties found

Quantification:
many to many (0, n, 0, n)

Scope Note:
This property associates an instance of E74 Group with an instance of E39 Actor that is or has been a member thereof.

Instances of E74 Group and E21 Person, may all be members of instances of E74 Group. An instance of E74 Group may be founded initially without any member.

This property is a shortcut of the more fully developed path from E74 Group, P144i gained member by, E85 Joining, P143 joined to E39 Actor.

The property P107.1 kind of member can be used to specify the type of membership or the role the member has in the group.

Examples:
- Moholy-Nagy (E21) is current or former member of Bauhaus (E74). (Moholy-Nagy, 2012)
- National Museum of Science and Industry (E74) has current or former member The National Railway Museum (E74). (Rolt, 1971)
- The married couple Queen Elisabeth and Prince Phillip (E74) has current or former member Prince Phillip (E21) kind of member husband (E55). (Brandreth, 2004)

In First Order Logic:
P107(x, y) \rightarrow E74(x), P107(x, y) \rightarrow E39(y), P107(x, y, z) \rightarrow [P107(x, y) \land E55(z)], P107(x, y) \leftarrow (\exists z) [E85(z) \land P144i(x, z) \land P143(z, y)]

Properties:
P107.1 kind of member: E55 Type
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- Reified Properties
- RDF*
CRMaaa Motivation

- Principal among these is the *temporalization* and *categorization* of properties
- Some ways to deal with this:
  - Temporally-specified properties
  - Reified Properties
  - RDF*
- Best to avoid all of these, if possible
Basic CRMaaa Structure: Institutional Facts
Provides Mapping to Properties, e.g. CRM
CRMaaa ZE1 Institutional Fact Hierarchy

- ZE1 Institutional Fact
  - E2 Temporal Entity
    - ZE10 Family Status
    - ZE11 Membership Status
    - ZE12 Referential Status
    - ZE14 Similarity Status
    - ZE15 Set Status
    - ZE25 Dating Status
    - ZE30 Property Right Status
      - ZE36 Obligation Status
        - ZE37 Custodial Status
        - ZE38 Ownership Status
    - ZE9 Residential Status
    - ZE4 Classificatory Status
    - ZE5 Function Status
    - ZE6 Social Status
    - ZE7 Custodial Status
    - ZE8 Ownership Status
    - ZE3 Contact Point Status
    - ZE2 Appellative Status
CRMaaa Hierarchy: Institutional Fact

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- ZE30 Property Right Status
  - ZE7 Custodial Status
  - ZE8 Ownership Status
Basic CRM Structure: Speech Act
CRMaaa ZE13 Speech Act Hierarchy
CRMaaa ZE13 Speech Act Hierarchy

E7 Activity

E85 Joining

ZE13 Speech Act

E86 Leaving

ZE17 Declarative Joining

ZE18 Declarative Leaving

ZE19 Naming

ZE15 Attribute Assignment

ZE16 Critical Reading

ZE17 Type Assignment

ZE18 Declaration of Obligation

ZE19 Declaration
25 CRM properties identified in our first analysis
- 20 incorporated so far into v1.5
  - Across 8 Institutional Fact
    - “Status Types”
Social Facts in CIDOC CRM Core

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  - Across 8 Institutional Fact “Status Types”

- P1 is identified by (Appellative Status)
- P2 has type (Classificatory Status)
- P152 has parent (Family Status)
- P107 has current/former member (Membership Status)
- P52 has current/former owner (Ownership Status)
- P74 has current/former residence (Residential Status)
Social Facts in CIDOC CRM Core

And the work continues…!

ZE13 Speech Act

- ZP42 intentionally initiated
- ZP52 intentionally terminated

E74 Group

- ZP4 holds for

ZE?? Topographical Status

- P4 has time-span
- ZP?? ascribes topographical place
- ZP?? has topographical subject

E52 Time-Span

E53 Place

E55 Type

- crm:p89 falls within
- crm:p121 overlaps with
- crm:p122 borders with
Some Examples
Repatriation of the G’psgolox pole


Some Projects
<table>
<thead>
<tr>
<th>Past Partners</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://chin.gc.ca">Canadian Heritage Information Network</a></td>
<td>Mapping Indigenous Canadian Place Names</td>
</tr>
<tr>
<td><a href="http://dhi.roma1929.it">German Historical Institute Rome</a></td>
<td>Medieval Merchant Trade Documentation</td>
</tr>
<tr>
<td><a href="http://www.mpib-berlin.mpg.de/">Max Planck Institute for the History of Science</a></td>
<td>History of the Max Planck Society</td>
</tr>
<tr>
<td><a href="http://www.swiss-art-research.ch/">Swiss Art Research Infrastructure</a></td>
<td>SRDM 1.0 -&gt; SRDM 2.0</td>
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Some Resources
## Tools/Resources

<table>
<thead>
<tr>
<th>Task</th>
<th>Tool</th>
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<tr>
<td>Ontological Modelling</td>
<td>OntoMe</td>
<td><a href="https://ontome.net/project/69">https://ontome.net/project/69</a></td>
</tr>
<tr>
<td>Distribution and Materials</td>
<td>GitHub</td>
<td><a href="https://github.com/takinsolutions/crmaaa">https://github.com/takinsolutions/crmaaa</a></td>
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<td>Issues Management</td>
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<td>Pattern Documentation</td>
<td>Zellij</td>
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<tr>
<td>Long Term Archiving</td>
<td>Zenodo</td>
<td>Planned</td>
</tr>
<tr>
<td>Evangelization</td>
<td>Applied Ontology</td>
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</tbody>
</table>

## Principles

- Open-Source
- Public
- Declarative
- Collaborative

See the project evolve and participate at [OntoMe](https://ontome.net/project/69)!

Download usable specification and rdf documents at [Github](https://github.com/takinsolutions/crmaaa)!

Understand ontology deployment in patterns through [Zellij](https://github.com/takinsolutions/crmaaa)!
Some Questions?

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