

43rd joint meeting of the CIDOC CRM SIG and ISO/TC46/SC4/WG9; 36th
FRBR - CIDOC CRM Harmonization meeting.

26 - 28 March, 2019

FORTH

Heraklion- Crete,

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Tuesday, 26 March 2019.

ISSUE 410: Layout of CIDOC CRM official version (part 1)

(A) outline of changes

- 1) CB informed the sig that she has separated the CIDOC Conceptual Reference Model document (version 6.2.5) in two volumes, the first containing the definition of the model and the other the amendments, as it was gradually becoming impossible to browse through.

DECISION: the sig accepted CB's proposal. They insisted that the document should be given a title (the same for both volumes) and then each volume should bear a number and what it is about:

- a. Volume A: *Definition of the CIDOC Conceptual Reference Model*
- b. Volume B: *Amendments of the CIDOC Conceptual reference Model*

(B) The CRM-sig reviewed edits by CEO in the FOL representation and listing of the properties:

DECISION: the sig agreed on listing the [sub-/super-]classes and [sub-/super-]properties in the definitions by increasing numerical order. The same applies to listing the inferences drawn among classes in the FOL representation of the CRM.

(C) The sig reviewed the inconsistencies pointed by CEO

- 1) The universal quantification assumed in all FOL representations has undesirable ramifications when it comes to E59 Primitive Value: E59(x) is interpreted by saying that everything in the universe is a primitive value, which is neither intended, nor true.

DECISION: The sig decided to delete the axiom E59(x) from the definition of E59 Primitive Value. The notation E59(x) appears in the FOL representation of inferences from subclasses of E59 to E59, without problems

(f.i. $E62(x) \supset E59(x)$)

- 2) Based on the rule that has been proposed and accepted by the CRM-sig, properties having a deprecated class as range are to be deleted as long as they have no special semantic purport (f.i. properties with no distinct label, such as “is identified by”). On the contrary, properties whose range is a deprecated class but whose label is distinct are to be kept in the model (f.i. P76 has contact point \subseteq <E39 Actor x E51 Contact Point>).

DECISION: subproperties of P1 is identified by (identifies) \subseteq <E1 CRM Entity x E41 Appellation> are to be deprecated, in accordance with the rule above. The affected properties include:

- P78 is identified by (identifies) \subseteq <E52 TimeSpan x E41 Appellation>,
- P87 is identified by (identifies) \subseteq <E53 Place x E41 Appellation>,
- P131 is identified by (identifies) \subseteq <E39 Actor x E41 Appellation>

DECISION: Whenever a class or property is deprecated, its definition should be listed in the amendments.

- 3) The sig reviewed CEO’s proposal to add E41 Appellation in the list of Superclasses of E94 Space Primitive.

DECISION: Discussion of this proposal is to be deferred to the discussion of CRMgeo –in view of the decision of the sig to harmonize CRMgeo with CRMbase.

- 4) The sig reviewed CEO’s proposal to:

- a. add the inverse superproperty of P9 consists of (forms part of) –namely P10i contains (falls within) –in the definition of P9, and
- b. add the FOL representation of the inference among P10 falls within (contains) and P132 spatiotemporally overlaps with –namely P10 (x,y) \supset P132 (x,y).

DECISION: both proposals were accepted.

- 5) P11 had participant (participated in) & P12 occurred in the presence of (was present at):

DECISION: the CRM-sig accepted CEO’s proposal to delete E50 Date from the scope notes of P11 & P12 (deprecated class). The sig assigned MD to redraft the scope notes, seeing as they mistakenly associate actors (P11) and things (P12) with the Place of the event, rather than the event itself.

HW: MD is to rewrite the scope note for P11 had participant and P12 occurred in the presence of.

- 6) P26 moved to (was destination of) & P27 moved from (was origin of).

DECISION: The crm-sig accepted CEO’s suggestions for the FOL representation of the relevant properties. Further, it was decided that the spatiotemporal topological relations between E9 Move and P7 took place at (witnessed), P26 moved to (was destination of), P27 moved from (was origin of) and P161 has spatial projection (is spatial projection of) be defined. (Unassigned)

- 7) P31 has modified:

DECISION: the sig has accepted CEO’s proposal to update the scope note of P31 so that it matches the classes in its domain and range.

- 8) P92 brought into existence (was brought into existence by) & P93 took out of existence (was taken out of existence by)

DECISION: The CRM-sig accepted CEO’s proposal to delete E51 Contact Point from the scope note definition of P92 & P93. The new scope notes read:

P92 brought into existence (was brought into existence by)

Scope note: This property allows an E63 Beginning of Existence event to be linked to the E77 Persistent Item brought into existence by it.

It allows a “start” to be attached to any Persistent Item being documented i.e. E70 Thing, E72 Legal Object, E39 Actor, E41 Appellation and E55 Type.

P93 took out of existence (was taken out of existence by)

Scope note: This property allows an E64 End of Existence event to be linked to the E77 Persistent Item taken out of existence by it.

In the case of immaterial things, the E64 End of Existence is considered to take place with the destruction of the last physical carrier.

This allows an “end” to be attached to any Persistent Item being documented i.e. E70 Thing, E72 Legal Object, E39 Actor, E41 Appellation and E55 Type. For many Persistent Items we know the maximum life-span and can infer, that they must have ended to exist. We assume in that case an End of Existence, which may be as unnoticeable as forgetting the secret knowledge by the last representative of some indigenous nation.

9) P114 is equal in time to

DECISION: The CRM-sig accepted CEO’s proposal to add FOL representations for the superproperties of P114 is equal in time to, namely:

- $P114(x,y) \supset P175(y,x)$
- $P114(x,y) \supset P184(y,x)$

10) P164 during (was time-span of)

DECISION: The CRM-sig accepted CEO’s proposal regarding the FOL representation of the superproperty of P164 during (was time span of), namely:

- $P164(x,y) \supset P160(x,y)$

11) P128 carries (is carried by):

DECISION: The CRM-sig accepted CEO’s proposal to edit the domain class in the example for P128 carries (is carried by). The example now reads:

Examples:

- Matthew’s paperback copy of Reach for the Sky (E18) *carries* the text of Reach for the Sky (E73)

12) P156 occupies (is occupied by):

The sig rejected CEO’s proposal that the FOL representation of P156 occupies (is occupied by) and the inferences that can be drawn from it be stated as a set of statements rather than a conjunction of the said statements. These are not independently holding propositions weakly inferred from the property at hand; rather they must all hold for P156 to also hold ($P156(x)$ entails that $E18(x) \wedge E53(y) \wedge P161(x,y) \wedge P157(y,x)$).

13) P169 defines spacetime volume (spacetime volume is defined by) through P190 has symbolic content:

The sig discussed about the usefulness of STV. Thanasis asked if should STV go out to the crm-base? Or not? The sig decided that STV is about geometry of an entity. MD is assigned to revise the scope note of E92.

- 14) **HW:** The crm-sig assigned MD with reviewing the FOL notation by CEO for properties P169 through P190 as well as by revising the scope note of E92

ISSUE 241: Wider practical scope of CRM

The crm-sig went through the text by MD on expanding the practical scope in the **Introduction of crm** beyond museum documentation and overall agreed with it. The new text –minor modifications included –can be found under [A].

DECISION: The text of the Introduction is to undergo editorial changes before it is put up for an e-vote. Members of the CRM-sig should be explicitly informed that the text is not substantially changed, except for the parts that refer to the expansion of the scope of the CRM.

The discussion points made are summarized below.

- (a) The clause, “Its perspective is supra institutional and abstracted from any specific local context” [i], was considered repetitive and redundant –it had been elaborated upon in the previous paragraph –hence it was deleted.
- (b) There was some concern regarding the sentence “*The primary role of the CRM is to enable the exchange and integration of information from heterogeneous sources for the reconstruction and interpretation of the past at a human scale, based on all kinds of material evidence, including texts, audiovisual material and even oral tradition*”.
- AG proposed that the integration of information and its resulting interpretation could extend to the present rather than being confined to the past.
 - GB seconded that and proposed that the way that past things/events affect the present (even the future to some extent) can be accommodated in the scope of the crm.
 - MD was reluctant to extend the scope of crm to include the present. His concern had to do with the difficulty in modelling ongoing situations. He also noted that any reference to the present is achieved through objects from the past –or evidence of said objects and events in which they were involved –accessible in the present. These objects or evidence thereof serves to extrapolate into the past –not the present or the future –i.e. all the causal relations that can be modelled through the crm precede the documentation time (if only by ‘a little’).
- (c) Generalizing the scope of the CRM beyond museums to include Cultural Heritage does not suggest that museums are less of a focal point to CRM. It is still museum related material that the CRM gets its validation from (GB).

PROPOSAL (GB): The text could offer an outline of the stages in the development of the CRM and progressive expansion of its scope, i.e. that it started like a means to integrate semantic information relevant for museum documentation but its scope has now evolved to such and such domains.

PROPOSAL (MD): Assuming that the original scope of the CRM was the integration of the *curated, factual knowledge about the past at a human scale* through collecting of objects recoverable in the present, its current scope can incorporate references to the methods and processes of sciences and scientific branches it aims to model; f.i. “archaeology, natural science, conservation, archaeometry, ect.”.

PROPOSAL (MD): The CIDOC should also be made aware of the impending expansion in the scope of the CRM –the sig should explicitly ask for their feedback within a designated period.

HW: GB and SS are to edit the new parts of the Introduction relating to the Scope of the CRM..

[A]

Introduction

This document is the formal definition of the **CIDOC Conceptual Reference Model (“CRM”)**, a formal ontology intended to facilitate the integration, mediation and interchange of heterogeneous cultural heritage information and similar information from other domains, as detailed below. The CRM is the culmination of more than two decades of standards development work by the International Committee for Documentation (CIDOC) of the International Council of Museums (ICOM). Work on the CRM itself began in 1996 under the auspices of the ICOM-CIDOC Documentation Standards Working Group. Since 2000, development of the CRM has been officially delegated by ICOM-CIDOC to the CIDOC CRM Special Interest Group, which has been collaborating soon after with the ISO working group ISO/TC46/SC4/WG9 to bring the CRM to the form and status of an International Standard. This collaboration has resulted in ISO21127:2004 and ISO21127:2014, and will be continued to produce the next update of the standard. This document belongs to the series of evolving versions of the formal definition of the CRM, which serve the ISO working group as community draft for the standard. Eventual minor differences of the ISO standard text from the CIDOC version in semantics and notation that the ISO working group requires and implements are harmonized in the subsequent versions of the CIDOC version.

Objectives of the CIDOC CRM

(a)

The primary role of the CRM is to enable the exchange and integration of information from heterogeneous sources for the reconstruction and interpretation of the past at a human scale, based on all kinds of material evidence, including texts, audiovisual material and even oral tradition. It starts from, but is not limited to, the needs of museum documentation and research based on museum holdings. It aims at providing the semantic definitions and clarifications needed to transform disparate, localised information sources into a coherent global resource, be it within a larger institution, in intranets or on the Internet, and to make it available for scholarly interpretation and scientific evaluation. [i] These goals determine the constructs and level of detail of the CRM.

More specifically, it defines, in terms of a formal ontology, the **underlying semantics** of database **schemata** and **structured** documents used in the documentation of cultural heritage and

scientific activities. In particular it defines the semantics related to the study of the past and current state of our world, as it is characteristic for museums, but also or other institutions and disciplines. It does **not** define any of the **terminology** appearing typically as data in the respective data structures; however it foresees the characteristic relationships for its use. It does **not** aim at proposing what cultural institutions **should** document. Rather it explains the logic of what they actually currently document, and thereby enables **semantic interoperability**

It intends to provide a model of the intellectual structure of the respective kinds of documentation in logical terms. As such, it is not optimised for implementation-specific storage and processing aspects. Implementations may lead to solutions where elements and links between relevant elements of our conceptualizations are no longer explicit in a database or other structured storage system. For instance, the birth event that connects elements such as father, mother, birth date, birth place may not appear in the database, in order to save storage space or response time of the system. The CRM allows us to explain how such apparently disparate entities are intellectually **and logically (?)** interconnected, and how the ability of the database to answer certain intellectual questions is affected by the omission of such elements and links.

Scope of the CIDOC CRM

The overall scope of the CIDOC CRM can be summarised in simple terms as the curated, **factual knowledge** about the past at a human scale.

However, a more detailed and useful definition can be articulated by defining both the **Intended Scope**, a broad and maximally-inclusive definition of general application principles, and the Practical Scope, which is expressed by the overall scope of a growing reference set of specific, identifiable documentation standards and practices that the CRM aims to encompass, however restricted in its details to the limitations of the Intended Scope.

The reasons for this distinctions are twofold. Firstly, the CRM is developed in a **“bottom-up”** manner, starting from well-understood, actually and widely used concepts of domain experts, which are disambiguated and gradually generalized as more forms of encoding are encountered. This allows for avoiding the misadaptations and vagueness often found in introspection-driven attempts to find overarching concepts for such a wide scope, and provides stability to the generalizations found.

Secondly, it is a means to identify and keep a focus on the concepts most needed by the communities working in the scope of the CRM and to maintain a well-defined agenda for its evolution.

The **Intended Scope** of the CRM may be defined as all information required for the exchange and integration of heterogeneous scientific and scholarly documentation about the past at a human scale and its evidence that has come upon us. This definition requires further elaboration:

- a) The term “scientific and scholarly documentation” is intended to convey the requirement that the depth and quality of descriptive information that can be handled by the CRM should be sufficient for serious academic research. This does not mean that information intended for presentation to members of the general public is excluded, but rather that the CRM is intended to provide the level of detail and precision expected and required by museum professionals and researchers in the field.
- b) As “evidence that has come upon us” are regarded all types of material collected and displayed by museums and related institutions, as defined by ICOM[1], and other collections, in-

situ objects, sites, monuments and intangible heritage relating to fields such as social history, ethnography, archaeology, fine and applied arts, natural history, history of sciences and technology.

- c) The documentation includes the detailed description of individual items, in situ or within collections, groups of items and collections as a whole, as well as practices of intangible heritage. It pertains to their current state as well as to information about their past. The CRM is specifically intended to cover contextual information: the historical, geographical and theoretical background that gives cultural heritage collections much of their cultural significance and value.
- d) The exchange of relevant information with libraries and archives, and the harmonisation of the CRM with their models, falls within the Intended Scope of the CRM.
- e) Information required solely for the administration and management of cultural institutions, such as information relating to personnel, accounting, and visitor statistics, falls outside the Intended Scope of the CRM.

The Practical Scope[2] of the CRM is expressed in terms of the set of reference standards and de facto standards for documenting factual knowledge that have been used to guide and validate the CRM's development and its further evolution. The CRM covers the same domain of discourse as the union of these reference standards; this means that for data correctly encoded according to these documentation formats there can be a CRM-compatible expression that conveys the same meaning.

[1] The ICOM Statutes provide a definition of the term "museum" at <http://icom.museum/statutes.html#2> [213]

[2] The Practical Scope of the CIDOC CRM, including a list of the relevant museum documentation standards, is discussed in more detail on the CIDOC CRM website at <http://cidoc.ics.forth.gr/scope.html> [214]

Reference to Cidoc Version:
[version 6.2.5](#) [1]

ISSUE 360: 360-LRM_{oo}

General discussion:

TA mentioned that some of the classes in LRM –such as F20 Performance Work –are really marginal given the scope of the model, and their link to other useful concepts is not self-evident. Some of the concepts and the relations documented are of little significance to actual users of the model.

HW: TA committed to have produce the FRBR-LRM graphs by May. The document will essentially –i.e. it will comprise of the numbers of classes and properties –not their scope notes. The model will be based on the mapping of LRMer to LRMoo.

A feedback from the sig is to precede the updating of the scope notes.

LRMer to LRMoo

DECISIONS:

- (1) **F19 Publication Work** will be excluded from the LRMoo model, it cannot be distinguished from an F28 Expression Creation.
- (2) **F20 Performance Work** will be excluded from the LRMoo model –its substance is captured by W1 Work (comment by TA)
- (3) **F21 Recording Work** will be excluded from the LRMoo model.
- (4) **F26 Recording** will be excluded from the LRMoo model.
- (5) **F3 Manifestation** will be included in the LRMoo model. MD should review the properties of E3
- (6) **F5 Item** will be included in the LRMoo model.
- (7) A mapping between LRM-E7 Person to CRMbase E21 Person has been made. **F10 Person** in LRMoo is a deprecated class, hence there should be a note to “Use E21 instead”.
- (8) **F11 Representative Manifestation Assignment** will be excluded from the LRM-FRBRoo model definition
- (9) **F42 Representative Expression Assignment** will be excluded from the LRM-FRBRoo model definition
- (10) **F43 Identifier Rule** will be excluded from the LRM-FRBRoo model definition
- (11) **F44 Bibliographic Agency** will be excluded from the LRM-FRBRoo model definition.
- (12) **F52 Name Use Activity** will be excluded from the LRM-FRBRoo model definition but it will be included in CRMsoc –see ISSUE 358 below.
- (13) **F51 Pursuit** will be excluded from the LRM-FRBRoo model definition but it will be included in CRMsoc –see ISSUE 358 below.
- (14) **CLPs should be reconsidered** (MD’s HW). Some of them are not even class properties, but simply duplicate CRM properties.
- (15) **Regarding the mapping of LRM-E3 Expression to F25 Performance Plan the sig proposed the following:**
 - a. F25 Performance Plan will be excluded from the LRMoo model,
 - b. affected property **R25 performed (was performed in) [D:F31 Performance , R: F25 Performance Plan]** will take Fxx Externalization (i.e. a new superclass to F2 Expression) as range, instead.
 - c. instead of a performance plan, the link of an instance of F31 Performance to a set of directions on how to perform it should be achieved through P33 used specific technique and E29 Design or Procedure instead (F31-P33-E29)
 - d. **R25 performed (was performed in) [D:F33 Performance, R: Expression] is not a subproperty of P33 used specific technique (was used by) [D:E7 Activity, R:E29 Design or Procedure]**
- (16) Fxx Externalization (superclass of F2 Expression) is to be introduced to the model. Fxx Externalization is to be linked to F31 Performance and F28 Expression Creation through an Rxx created. It was assigned to MD
- (17) Regarding the **handling of aggregation works and their derivatives** (such as translations) of aggregation works on the one hand **and serial works** on the other, MZ proposed that the continuity of the serialized work be achieved through the introduction of a new F5 Item level that is the sum of all issues of a periodical for instance.
MD proposed that each issue should be assigned its own expression and that the relation with the overall (serial) work should be captured through the collective expression (the sum of all

expressions). In line with what was the practice in the PARTHENOS model, the identity of a collection that keeps changing over time could be cast in terms of the purpose the collection serves.

MZ suggested that a serial work cannot be treated on a par with an aggregation, given that the former is dynamic whereas the latter isn't. In the case of an aggregation, the collection is put together at one point in time.

MD explained that in this case, the sum of the expressions creates a new work.

MZ mentioned that this seems to work OK but there are problems in borderline cases, like a translation of a collection.

MD proposed that this should be treated as an instance of an overall F1 Work, comprising of the translation of the aggregated expressions –but this work is not considered an aggregation in and of itself.

The discussion resumed on May 27th.

Wednesday, 27 March 2019.

ISSUE 360: 360-LRM_{oo} (continued)

DECISION

(18) **F17 Aggregation Work will be excluded from the LRM_{oo} model.**

- a. The statement “F17 Aggregation Work may include additional original parts” found in the scope note should be integrated in the scope note for F1 Work (“F1 Work may include additional original parts.”)
- b. A new property Rxx uses expression (an expression is used in) [D: F1 Work, R: F1 Work] is to be introduced in LRM_{oo}. It portrays a relation between works (and their expressions), not parts thereof. It's a subproperty of P148 has component (is component of) [D: E89 Propositional Object, R: P89 Propositional Object].
It is to be inferred by the new property Rxx incorporates external expression (see below) by a deduction rule when the F2 Expression (in the range of the property) is the expression of a complete work.
- c. A new property Rxx incorporates external expression (external expression is incorporated in) [D: F2 Expression, R: F2 Expression] is to be introduced in LRM_{oo}. The incorporated F2 Expression (R) can be a component of the overall F2 Expression (D), as are the otherwise unrelated short stories that are put together to make up a collection. Alternatively, the incorporated E2 Expression can have less symbolic specificity, despite having integrity in and of itself –like the lyrics of a song that extend over a large portion of the score, but are by no means a separate constituent thereof.

ISSUE 358: CRM_{soc} and scope of CRM modules

1. MD presented his slides on the Business Model (Martin's post and ppt on 22/3/2019, See appendix A)
 - a. There was a question regarding the nature of proposed class SO3 Obligation, and MD clarified that it is considered as a debt essentially. Proposed properties SC2, SC3, SC4, SC5 who take SO3 Obligation as range amount to linking the activities of generating, increasing, decreasing and debt repayment.

- b. **HW:** MD, GB, AG, CEO are to provide the definition of the classes and properties of the Business model and their FOL representation.
- 2. Introduction and scope of CRMsoc by GB, TV, FB, VA (skype):
 - a. There were questions regarding the accessibility of the material and relevant discussions on CRMsoc through the CRM site, given that the document of the last updated version of CRMsoc (including definitions of classes and properties) was an export from ONtoME.
 GB proposed that the discussion be transferred to the Issues list, under a CRM-soc designated block in the CRM-site and that comments on the classes and properties be made through OntoME.
 TV considers it best not to resume the discussion regarding CRMsoc under two different channels, and proposed to use OntoME for editorial changes of the definitions.
 FB, MD, CB suggested that the main discussion concerning the CRMsoc should go to the CRMsig list, so that anyone who wishes to can comment.
DECISION: a new sub-site for CRMsoc is to be created within the site of CRM. The introductory text on the site should refer to the use of OntoME.
 - b. The sig went through the introduction (scope and naming conventions) See Appendix B.
DECISION: The CRM-sig accepted the introductory text to CRMsoc with minor modifications (see below). There was also agreement regarding the proposed naming conditions.
DECISION: The main focus of Issue 358 was to declare the scope and naming conventions for CRMsoc. This has been achieved, hence the issue is closed. Discussions on CRMsoc will resume in a separate, new issue.
 - c. The CRM-sig then decided to go through the Activity Plans (related issue 333) and Rights (related issue 408) and examine them separately and then resume the property definitions proposed for CRMsoc and decide on the issues to be merged.

ISSUE 333: Model for Plans

General discussion regarding component parts of CRMsoc:

The sig following its decision to incorporate the models for Activity Plans in the CRMsoc, reviewed Thanasis Velios's proposed changes on previous MD's HW and decided to introduce in the CRMsoc the following classes and properties :

socExx Activity Plan

PROPOSAL: socExx Activity Plan be construed as a reactive event specification

DECISION: E29 Design or Procedure isA socExx Activity Plan.

socP1 planned for [D:socExx Activity Plan, R: E70 Thing],

The initial setting of range was to E1 CRM Entity, but MD thought that binding an activity plan to an abstract E1 CRM Entity is far too underspecified to be of any use.

GB explained that this was intentional; in fact, the property was modelled as P67 refers to [R: E1 CRM Entity]// P67.1 has type [R: E55 Type], with the goal of selecting the appropriate type of event.

MD insisted that the property be made more specific, as it does not only associate categorical information with the plan (like the type of event) but information related to particulars as well (participants to the event for instance). Therefore, plans are to be construed as EVENT SPECIFICATIONS (see below “New class socExx Event Specification”)–their participants to be further specified.

The discussion shifted to the fact that an activity plan may never be (selected to be) executed – alternative plans are often concocted –and it’s not always possible to link a plan to the event it specifies. CEO explained that this is in fact a pseudo-problem and the workaround is to assume that activity plans are in a one to one relation with possible (not actual) events. The plan selected to be executed is the plan for the event specified.

Finally the identifier for the property *planned for* is set to **socP1** in the preliminary version of CRMsoc.

[socP2 requires type of event \[D: socExx Activity Plan, R: socExx Event Specification\]](#)

DECISION: The sig reviewed the property definition and decided that its range change to socExx Event Specification (new class to be introduced in CRMsoc). –see below. The initial setting of the range was to E55 Type.

The activity plan must be reactive –i.e. it is to be activated under such and such conditions –the latter are described by the event specification. They are best captured by invoking the type of the event and the type of the participants. These types can be instantiated by particulars, which help further specify the event. Legislative texts should come in handy in this respect.

The identifier for the property *requires type of event* is set to **socP2** in the preliminary version of CRMsoc.

[socP3 has assessment \[D: socExx Activity Plan, R: E31 Document\]](#)

DECISION: the sig reviewed the definition of the property and accepted it as is.

The identifier for the property *has assessment* is set to **socP3** in the preliminary version of CRMsoc.

The definition and scope note are found below:

[socP3 has assessment](#)

Domain: socE Activity Plan

Range: E31 Document

Scope note: This property associates an instance of socE1 Activity Plan with an instance of E31 Document which holds the assessment of the activity plan after it has been executed. This property allows reasoning on the quality or effectiveness of the activity plan. It is a shortcut which can be expanded as: socE1 Activity Plan → P140i was attributed by → E13 Attribute Assignment → P141 assigned → E31 Document.

[socP4 realized \(was realized by\) \[D: E7 Activity, socExx Activity Plan\]](#)

DECISION: the sig reviewed the definition of the property and accepted it as is.

The identifier for the property *realised (was realised by)* is set to **socP4** in the preliminary version of CRMsoc.

The definition and scope note are found below:

socP4 realised (was realised by)

Domain: E7 Activity
Range: socE Activity Plan

Scope note: This property associates an instance of E7 Activity with the instance of E100 Activity Plan of which it is regarded as being a valid execution by the actors holding the ‘intention to apply’. To be valid the E61 Time Primitive associated with the instance of E7 Activity must fall within the E61 Time Primitive foreseen in the E101 Intention to Apply.

Examples: The delivery of a fine to a citizen in the initial enforcement period of Law 3730/2008 against smoking in public/work places (E7) realized provisions of Law 3730/2008 of the Greek Government against smoking in work places (E100).
The conservation of MS Greek 418 (E7 Activity) realised the proposals for its conservation (Activity Plan).

New class socExx Event Specification (of future event)

HW: MD & TV to model event specification (properties linking it to other classes, isA relations with other classes) and come up with a definition of its scope note.

PROPOSAL: MD proposed that the event specification should have properties linking it

(a) to the thing to be acted upon (patient) and

(b) the actor who is to carry it out the activity plan (which isA event specification) –e.g. “a plan to dissolve a company, conceived by x”.

Issue 385: Social Relationships

The sig reviewed MD’s HW class definition of Formal Social Binding.

socExx Bond (former “Formal Social Binding”)

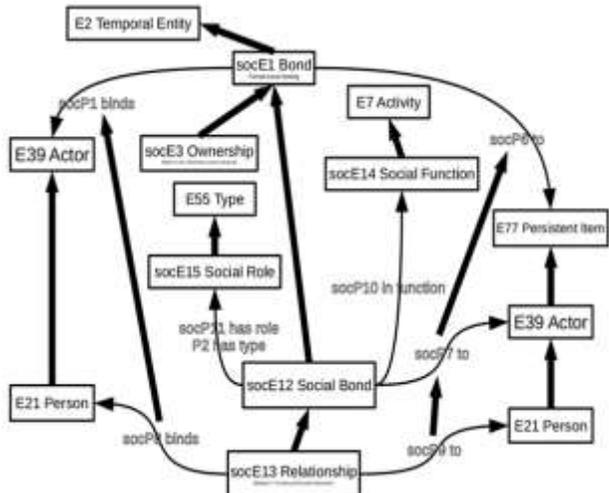
The sig reviewed the definition of socExx Bond (MD’s HW), edited and accepted it. New class definition can be found below.

DECISION: Aside minor editorial changes, the sig resolved to delete property socPxx to [D: socExx Bond, R: E31 Document].

The sig then revisited the properties linking socExx Bond to Actors (their subproperties too) and did some editing.

DECISION: proposed property socP6 [D: socE1 Bond, R: E77 Persistent Item]: its range is to be changed to E70 Thing –in accordance with the scope note definition.

NOTE: The indexes on the classes and properties listed here are preliminary and refer to the schema below:



HW: GB, MD to do some literature review regarding speech acts, to best capture bonds as temporal entities.

Bond

Subclass of: E2 Temporal Entity
 Superclass of: socE Ownership
 socE Social Bond

Scope note:

This class comprises phenomena of formally defined and socially respected bindings between different instances of E39 Actors or between multiple actors and instances of E70 Thing. Instances of SOxxx Formal Social BindingBond come into being and end with an explicit act of declaration or indirectly through other publicly acknowledged events, such as via heritage at birth or death. Depending on their type, they are associated with characteristic rights and obligations, which are subject to the formal legal system of the respecting society, regardless whether this is based on written laws or oral tradition.

Formal Social Bindings Bonds are not observable as such, even though the behavior of involved actors may suggest their existence, such as being married. They are exclusively a consequence of the establishing event, which should be kept as social memory in a persistent documented form or as oral tradition, and the continued respect of this kind of binding by a target community. For instance, a community may declare a certain kind of marriage as invalid from some date on, and later redeclare it as valid. Their existence does not depend on the existence of social memory. Documents may be lost or involved actors may not have been aware of the respective establishing events, but later evidence of the establishing events may be found. In these cases, the society may not act according to the respective rights and obligations as long as the fact remains unknown, but is obliged to when the necessary evidence has been provided. Involved actors may have difficulties proving the existence of the binding to authorities when respective documents are lost, but that does not affect their actual existence. However, certain legal systems may require in certain kinds of cases the provision of evidence itself as part of the establishing event.

In some contexts, Formal Social Bindings are also called social institutions. Examples include memberships, employments, ownerships, rights of use, marriage, parenthood and others. In documentation practice, instances of Formal Social Bindings may be shortcut by simple binary relations, such as “is married to”.

Examples: John owns his house.
 Properties: socP binds: E39 Actor

Also the sig decided to close this issue. Further discussions on CRMsoc will resume in a separate, new CRMsoc issue.

ISSUE 408: Rights Model Enriched

GB presented his HW, to be discussed on by the sig.

There were some objections raised regarding the definition of the proposed property pxx has jurisdictional validity [D: E30 Right, R: E53 Place]. MD proposed that the range best be changed to E4 Period instead, on the grounds that jurisdiction is a phenomenon that holds over space AND time.

PROPOSAL: To best capture the notion of jurisdictional validity MD proposed that a new class be introduced –in CRMsoc –namely socExx Jurisdiction (subclass of E4 Period). A property it will participate in is socPxx has governing body [D: socExx Jurisdiction, R: some subclass of E74 Group, such as “sovereign people” or E39 Actor]

There were questions regarding the proposed property pxx has temporal validity [D: E30 Right, E52 Time-Span], namely how is this time-span to be defined. MD proposed that this either be made through the events serving that help delimit the time-span at hand; alternatively, the time-span is ongoing at the time of documentation –that it be treated reactively defined by an E29 Design or Procedure. AG suggested that in this case the sig should examine closely the relation between the models for Rights and Activity Plans.

DECISION: Activity Plans and Rights should be joined together. The relations and classes relevant to Rights will not be introduced to CRMbase, but CRMsoc instead.

DECISION: ISSUES 172, 330, 335, 343 are to be merged into ISSUE 408.

DECISION: deprecated FRBR classes F51 Pursuit and F52 Name Use Activity will be introduced to CRMsoc (to be made into a new issue).

ISSUE 335: New class “Right Holding”

DECISION: The issue is to be merged with ISSUE 408 (Rights Model Enriched)

ISSUE 384: Template for family models

The sig reviewed the introductory sentence for the model extensions provided by TV and accepted it with minor modifications. It now reads:

This document describes work which uses and extends the CIDOC Conceptual Reference Model (CRM, ISO21127). The CIDOC-CRM definition document should be read before this document. References to the CRM in this document are taken from CRM version XX maintained by CIDOC.

DECISION: Issue closed.

Thursday, 28 March 2019

ISSUE 410: Layout of CIDOC CRM official version (part 2)

The sig reviewed the introductory text of CIDOC CRM (version 6.2.5) and did some rearranging in the order of the material plus additions and deletions in order to produce a text that will form the basis of the text to be submitted to ISO. Editorial work is still pending.

DECISIONS:

- (a) Chapter “Property Quantifiers” needs be revised, it should also reference this paper:
Meghini, C. and Doerr, M. (2015) **A First-Order Logic Expression of the CIDOC Conceptual Reference Model**. Available online at: <http://new.cidoc-crm.org/sites/default/files/20150805-document.pdf>
- (b) Property quantifiers’ notation should also be made more readable (Chapter “Property Quantifiers”).
- (c) Chapter “Applied Form” (minus the “Terminology” part) should be moved to the end of the introductory text.
- (d) The introductory part of Chapter “Applied Form” (1st paragraph) must be brought to date with formats currently in use
- (e) Paragraph “Terminology” should be raised to Chapter status (i.e. to be taken out of the chapter “Applied form”). It is to immediately follow chapter “Scope of the CIDOC CRM”.
- (f) The FOL representations should be checked for consistency throughout the text –use of logical constants and quantifiers (**HW: CEO**)
- (g) The examples throughout the text need be made more relevant.
- (h) Sections “Monotonicity”, “Minimality” “Extensions”, “Coverage” and “Conservative Extension of the Scope of CIDOC CRM by Model Extensions” should all be merged –they cover different aspects of the same topic. (**HW: CEO, MD**)
- (i) The section “Compatibility with CRM” should be substituted by the text about Conformance found in the 2014 ISO revision
- (j) An **Overview of the model** (or **Introduction to the basic concepts**) and **examples** to help illustrate (containing graphical representations) is to be placed right before the chapter “Specific Modelling Constructs”.
 - a. a summary of the discussion points regarding the overview of the model and the examples to be used can be found below:
 - i. This section should help the reader grasp on what grounds are E2 Temporal Entities and E77 Persistent Items kept distinct and the properties associated with each class
 - ii. It should comprise of three sub-sections, each of them to including relevant examples, namely:
 - events and periods (and their relations to actors/participants)
 - persistent items, things and the like
 - space-time volumes (and how they differ from both temporal and spatial entities of the CRM)
 - iii. Regarding Spacetime volumes, it should be made clear that invoking an E92 Spacetime Volume is not the standard (or the preferred) way to model entities of interest in the CRM, but that it is in fact a representation consistent with physics which exploits the full possibilities of the model. This note to the reader should not only be found in the introductory text (Overview of the model) but also in the relevant scope note.
That being said, it will be included in the official version.

- iv. The “examples” must be carefully planned –i.e. they should be more than a listing of classes and the properties linking them to one another: they should also comprise INSTANCES thereof. Proposed examples:
- MD: Egyptian amphora found interred in Crete,
 - CEO: a copy of a painting by a relatively unacclaimed 19th century Norwegian painter found at the back of the ticket to an exhibition of a famous painter in Germany.
 - CEO: examples of digitized objects (manuscripts as e-books) could also come in handy.

HW: TV is to write the introductory part of this chapter, bearing in mind that it’s not to serve as an examples section, but as a graphical representation of the classes and the relations among them.

HW: MD, CEO, AK to provide examples

- (k) A new section dubbed “Reality and Knowledge Bases” designated for the handling of Appellations is to be inserted in the chapter “Modelling Principles”.

ISSUE 404: Modification of scope notes and ranges for E81-P123-P124

DECISION: The sig reviewed the modified the definitions for E81, P123 and P124 (SS’s HW), and accepted them with minor modifications.

HW: ET is to provide examples that are easily accessible but also relevant for E81 and its properties (P123, P124) alike.

The new definitions can be found below:

E81 Transformation

Subclass of: E63 Beginning of Existence
 E64 End of Existence

Scope note:

This class comprises the events that result in the simultaneous destruction of one or more than one E18 Physical Thing and the creation of one or more than one E18 Physical Thing that preserves recognizable substance and structure from the first one(s) but has fundamentally different nature or identity.

Although the old and the new instances of E18 Physical Thing are treated as discrete entities having separate, unique identities, they are causally connected through the E81 Transformation; the destruction of the old E18 Physical Thing(s) directly causes the creation of the new one(s) using or preserving some relevant substance and structure. Instances of E81 Transformation are therefore distinct from re-classifications (documented using E17 Type Assignment) or modifications (documented using E11 Modification) of objects that do not fundamentally change their nature or identity. Characteristic cases are reconstructions and repurposing of historical buildings or ruins, fires leaving buildings in ruins, taxidermy of specimen in natural history.

Examples:

- ♣ the death and mummification of Tut-Ankh-Amun (transformation of Tut-Ankh-Amun from a living person to a mummy) (E69,E81,E7)

In First Order Logic:

$E81(x) \supset E63(x)$

$E81(x) \supset E64(x)$

Properties:

P123 resulted in (resulted from): E18 Physical Thing

P124 transformed (was transformed by): E18 Physical Thing

[P123 resulted in \(resulted from\)](#)

Domain: E81 Transformation

Range: E18 Physical Thing

Subproperty of: E63 Beginning of Existence. P92 brought into existence (was brought into existence by): E77

Persistent Item

Quantification: many to many, necessary (1,n:0,n)

Scope note: This property identifies the E18 Physical Thing or things that are the result of an E81 Transformation. New items replace the transformed item or items, which cease to exist as units of documentation. The physical continuity between the old and the new is expressed by the link to the common Transformation.

Examples:

- ♣ the transformation of the Venetian Loggia in Heraklion into a city hall (E81) resulted in the City Hall of Heraklion (E22)
- ♣ the death and mummification of Tut-Ankh-Amun (E81) resulted in the Mummy of Tut-Ankh-Amun (E22 and E20)

In First Order Logic:

$P123(x,y) \supset E81(x)$

$P123(x,y) \supset E18(y)$

$P123(x,y) \supset P92(x,y)$

[P124 transformed \(was transformed by\)](#)

Domain: E81 Transformation

Range: E18 Physical Thing

Subproperty of: E64 End of Existence. P93 took out of existence (was taken out of existence by): E77

Persistent Item

Quantification: one to many, necessary (1,n:0,1)

Scope note: This property identifies the E18 Physical Thing or things that have ceased to exist due to a E81 Transformation.

The item that has ceased to exist and was replaced by the result of the Transformation. The continuity between both items, the new and the old, is expressed by the link to the common Transformation.

Examples:

- the transformation of the Venetian Loggia in Heraklion into a city hall (E81) transformed the Venetian Loggia in Heraklion (E22)

- the death and mummification of Tut-Ankh-Amun (E81) transformed the ruling Pharaoh Tut-Ankh-Amun (E21)

In First Order Logic:

$P124(x,y) \supset E81(x)$

$P124(x,y) \supset E18(y)$

$P124(x,y) \supset P93(x,y)$

ISSUE 409: CRMarcheo generalization of the properties AP12 confines and AP11 has physical relation.

The sig reviewed the proposals put forth by CEO and decided against the introduction of

- a new APxx has physical relation (is physical relation of) –D & R set to A10 Excavation Interface and A8 Stratigraphic Unit, respectively –and a new APyy has physical relation (is physical relation of) –D & R set to A10 Excavation Interface.
- a new Oxx has physical relation (is physical relation of) –D & R set to R 20 Rigid Physical Feature
- a new APxx has physical relation (is physical relation of) –D & R set to R 20 Rigid Physical Feature.

This decision is grounded on the fact that the inferencing process that CEO wants to model is already available through AP14 justified (is justification of) –i.e. the stratigraphic reasoning component, where observable connections between stratigraphic units are interpreted as evidence for the temporal sequence of their genesis. It's only in very special cases that the temporal succession of two stratigraphic units can be inferred from their topological relation.

In general, reasoning about stratigraphic relations cannot be directly inferred based on evidence from physical relations among strata –physical relations not being a subset of stratigraphic ones; for instance, if an A8 Stratigraphic Unit is found on top of another, then it is only likely that it formed later on. Unless there is other more robust evidence to support such a claim, it should be considered an unwarranted conclusion.

Final the sig decided the things are to be kept as are and make a tutorial for archeologists.

HW to CEO to revise scope note of AP 11 if you want to show that a stratigraphic unit is actually on top of another. That if that's what one is trying to model, they should go for AP11 rather than a topological relation.

ISSUE 282: Mappings of CRMarcheo and EH

DECISION: Allen operators are going to be imported to CRMarcheo, hence their mapping to the temporal relation primitives in use in the CIDOC-CRM must be made available (Allen operators should be mapped to their respective temporal primitive superproperties in CIDOC-CRM).

DECISION: There should be a new document "From Allen Operators to Temporal Relation Primitives and from Temporal Relation Primitives to Allen Operators", which will describe the mapping of Allen operators to the primitives. This document will be uploaded to the best practices. (MD's HW)

HW: LCH is to copy the definitions of the temporal properties into the pre mentioned document.

HW: AF is assigned to contact Keith May so that we get the last updated version of the EH (to use in the mapping).

ISSUE 283: Add superproperties to properties of CRMarcheo

Going through the new text for CRMarcheo, the sig discussed the proposal put forth by MD to declare A7 Embedding a subclass of R20 Rigid Physical Feature instead of E3 Condition State. This proposal is accepted by sig.

The sig decided that properties of CRMarcheo found below, need to be associated with appropriate superproperties:

- AP15 [is or contains remains of (is or has remains contained in) D: A2 Stratigraphic Volume Unit, R: S10 Material Substantial],
- AP19 is embedding in *contains embedding) [D: A7 Embedding, R: A2 Stratigraphic Volume Unit],
- AP20 is embedding at (contains) [D:A7 Embedding, R: E53: Place], and
- AP21 contains (is contained in) [D: A2 Stratigraphic Volume Unit, R: E18 Physical Thing]

HW: CEO is to update the text of CRMarcheo and edit A7 and relevant properties, add superproperties to properties of CRMarcheo that are still missing and check whether properties **AP11 has physical relation** (is physical relation of), **AP13 has stratigraphic relation** (is stratigraphic relation of) and **AP14 justified by** (is justification of) map to CRMInf properties.

ISSUE 332: Properties of S10 Material Substantial of CRMsci.

The sig reviewed the proposal put forth by TV (to introduce a property Oxx shares characteristics with [D: S13 Sample, R: S13 Sample]; subproperty of O25 contains [D: S13 Sample, R: S13 Sample]) and decided against it.

DECISION: the sig opted for a subproperty of O3 sampled from [D: S2 Sample Taking, R: S13 Sample], defined over the same domain and range as O3. Its label should be Oxx split from

HW: TV is to provide the definition of the new property Oxx split from.

ISSUE 388: Reference to the measurement of the positions of things.

The sig reviewed the new class proposed by AK Position Measurement and accepted it as a starting point. However, it was proposed that the class be a subclass of S3 Observation rather than an S21 Measurement OR S3 Measurement by Sampling.

Furthermore, it was suggested (MD) that the definition of this class be cast as a situation measurement instead (i.e. that it should generalize to both space and time). It should measure phenomenal places that have acquired their identity through some observation event, while providing approximations for these phenomenal places. Finally, it should carry over to measuring the time of observation events.

HW: AK to revisit bearing in mind the sig's comments.

ISSUE 293: How to determine observable entities?

Narrowing down the discussion of Observable entities to their actual dimensions –the latter cast in terms of ranges –permits to model positions in time not only of static but also of dynamic (i.e. evolving) phenomena. The sig is to carry on this line of work.

HW: AK is assigned with gathering information on the ways to obtain different kinds of measurement:

- space
- time
- static things
- continua (things like the water flow, the tide, the speed of the wind, etc.)

ISSUE 397: Dimension Intervals.

The sig reviewed MD's HW on coming up with a property Pxxx ha duration (was duration of) [D: e52 Time-Span, R: E54 Dimension] to be used as the equivalent of P90 has value (and P90a, P90b), and the subsequent deprecation of P83 & P84 that compete with an interval interpretation of P90.

DECISION: the sig accepted MDs proposal (the insertion of a new property and the deprecation of P83 & P84), as well as the definition for Pxxx had duration (was duration of), with minor modifications.

DECISION: the duration example should appear under E54 Dimension.

The definition reads:

Pxxx had duration (was duration of)

Domain: E52 Time-Span
Range: E54 Dimension
Quantification: one to one (1,1:1,1)

Scope note: This property describes the length of time covered by an E52 Time-Span. It allows an E52 Time-Span to be associated with an E54 Dimension representing duration independent from the actual beginning and end. Indeterminacy of the duration value can be expressed by assigning a numerical interval to the property P90 has value of E54 Dimension.

Examples:

§ the time span of the Battle of Issos 333 B.C.E. (E52) had duration Battle of Issos duration (E54)

In First Order Logic:

$$\begin{aligned} Pxxx(x,y) &\supset E52(x) \\ Pxxx(x,y) &\supset E54(y) \end{aligned}$$

PROPOSAL: maybe other relevant examples could be used (the Battle of Varus or the WW1 or the WW2 –especially in view of the fact that neither its beginning nor its end occurred at the same time at different parts of the world, like for instance the state of war between Greece and Albania that lasted until 1987).

ISSUE 380: Qualified properties P79 beginning is qualified by & P80 end is qualified by

The sig reviewed MD's proposed definitions.

DECISION: The definition for P79 was accepted and the definition of P80 was accepted as a working definition. (see APPENDIX C)

P80 end is qualified by poses a problem for CRM in that there is no way to model time intervals that are ongoing at the time of documentation (or time intervals that are possibly ongoing at the time of the documentation –i.e. time intervals of situations for which it is not known whether they have ended).

A summary of the discussion that followed is given below:

MD proposed to distinguish among three separate conditions:

1. knowing that a situation has come to an end by the time of the documentation—but not knowing the right boundary of its designated time interval.
2. not knowing whether it has ended at the time of the documentation –the right boundary of the designated time interval might fall prior to the time of documentation or after it.
3. knowing that it has not ended at the time of the documentation –the right boundary of the designated time interval will necessarily follow the time of the documentation.

Given that time intervals have fuzzy boundaries, and that endpoints are likewise represented as intervals with outer and inner boundaries –the former being fuzzy –we need two values to represent the end-time of a time interval (occupied by a situation/phenomenon). With that in mind, the abovementioned distinct conditions can be represented as follows:

1. inner bound: \emptyset AND outer bound: set to “NOW” (i.e. documentation time).
2. inner bound: \emptyset AND outer bound: set to “infinite” (this is extremely underinformative though).
3. inner bound = outer bound = “infinite”

It was observed (MZ) that if the outer bound is arbitrarily set to “NOW” (documentation time), then cases (1) and (2) above become indistinguishable.

CEO suggested that condition No. 2 should be treated as “Unknown” (in a 3 valued logic) and possibly omitted altogether. He mentioned that this is an implementation issue and should not be dealt with in the definition of the property.

MD agreed, but considers it important, hence proposed to add a clause regarding “modelling open intervals” in the scope note, to serve as a guideline.

PROPOSAL: time spans could be cast like types, in which case we need the following types (roughly corresponding to 3 separate conditions above). Typed properties over time intervals need to find their way in the CRM definition, despite dealing with an implementation issue.

1. Known that it ended (prior to the documentation time)
2. Unknown if ended
 - a. Ongoing at documentation time
 - b. Possibly ongoing at documentation time

As a closing remark MD mentioned that Dimitris Plexousakis has specialized in temporal reasoning and the sig could approach him regarding how to make inferences with ongoing properties/phenomena.

DECISION: GB is to contact DP on the subject.

ISSUE 386: Functional Identity of E24 Physical Man Made Thing

DECISION: The sig reviewed MD's new definition of E24 Physical Man Made Thing and overall accepted it as a working definitions (it has undergone minor modifications too).

HW: CEO was assigned to rephrase the definition, taking into account discussion that followed.

The new working definition can be found below:

E24 Physical Man-Made Thing

Subclass of: E18 Physical Thing
E71 Man-Made Thing

Superclass of: E22 Man-Made Object
E25 Man-Made Feature
E78 Collection

Scope Note: This class comprises all persistent physical items that are purposely created by human activity. This class comprises, besides others, man-made objects, such as a swords, and man-made features, such as rock art. For example, a "cup and ring" carving on bedrock is regarded as instance of E24 Physical Man-Made Thing.

Instances of man-made thing may be the result of modifying pre-existing physical things, preserving larger parts or most of the original matter and structure, which poses the question if they are new or even man-made, in particular in natural history collections. Therefore, the respective interventions of production made on such original material should be obvious and sufficient to regard that the product has a new, distinct identity and intended function and is man-made. Substantial continuity of the previous matter and structure in the new product can be documented by describing the production process also as instance of E81 Transformation.

Whereas interventions of conservation and repair are not regarded to produce a new man-made thing, the results of preparation of natural history specimen that substantially change their natural or original state should be regarded as physical man-made things, including the uncovering of petrified biological features from a solid piece of stone. On the other side, scribbling a museum number on a natural object should not regarded to make it man-made. This notwithstanding, parts, sections, segments, or features of a physical man-made thing may continue to be non-man-made and preserved during the production process, such as the uncovered traces of the Archaeopterix in the Natural History Museum of Vienna, predating the prepared object. Instances of this class may act as carriers of instances of E73 Information Object.

The discussion points made regarding this proposed definition are summarized below:

There was a question whether buildings count as instances of E24 Physical Man Made Things. MD replied that the phrasing "besides others" (this class comprises, besides others, man-made objects, such as swords ...) allows for other things aside the ones mentioned to be captured by the definition. (aka buildings too)

It was mentioned (CEO) that the 3rd paragraph overshadows the 2nd, rendering it superfluous and making the scope note extremely lengthy. In a sense it is impossible to enumerate all kinds of physical man made things, so maybe some things might be excluded from the definition.

DECISION: a new issue is to start, regarding adding building descriptions in the scope note.

Comment by MD: reworking the definition should take into account that really avant-garde exhibitions at the Tate for instance are not to be considered as instances of physical man-made things but rather as performances – assuming that their object is installations that have no robust identity criteria.

ISSUE 367: E13 Attribute Assignment

DECISION: The sig reviewed the new scope note for E13 Attribute Assignment (MD's HW) and accepted it.

New definition reads:

E13 Attribute Assignment

Subclass of: E7 Activity

Superclass of: E14 Condition Assessment
E15 Identifier Assignment
E16 Measurement
E17 Type Assignment

Scope note: This class comprises the actions of making assertions about one property of an object or any single relation between two items or concepts. The type of the property asserted to hold between two items or concepts can be described by the property Pxxx assigned property type.

For example, the class describes the actions of people making propositions and statements during certain scientific/scholarly procedures, e.g. the person and date when a condition statement was made, an identifier was assigned, the museum object was measured, etc. Which kinds of such assignments and statements need to be documented explicitly in structures of a schema rather than free text, depends on whether this information should be accessible by structured queries.

This class allows for the documentation of how the respective assignment came about, and whose opinion it was. Note that all instances of properties described in a knowledge base are the opinion of someone. Per default, they are the opinion of the team maintaining the knowledge base. This fact must not individually be registered for all instances of properties provided by the maintaining team, because it would result in an endless recursion of whose opinion was the description of an opinion. Therefore, the use of E13 Attribute Assignment marks the fact, that the maintaining team is in general neutral to the validity of the respective assertion, but registers someone else's opinion and how it came about.

All properties assigned in such an action can also be seen as directly relating the respective pair of items or concepts. Multiple use of E13 Attribute Assignment may possibly lead to a collection of contradictory values. All cases of properties in this model that are also described indirectly through a subclass of E13 Attribute Assignment are characterised as "short cuts" of a path via this subclass. This redundant modelling of two alternative views is preferred because many implementations may have good reasons to model either the action of assertion or the short cut, and the relation between both alternatives can be captured by simple rules.

Examples:

§ the assessment of the current ownership of Martin Doerr's silver cup in February 1997

Properties:

P140 assigned attribute to (was attributed by): E1 CRM Entity

P141 assigned (was assigned by): E1 CRM Entity

DECISION: Furthermore, the sig reviewed the proposed property Pxxx assigned property type [D: E13 Attribute Assignment, R: E55 Type] (part of the same HW) and accepted it as well. It will be assigned an identifier (one of those for properties that were deleted without having been part of an official release).

The definition of the property can be found below:

Pxxx assigned property type

Domain: E13 Attribute Assignment

Range: E55 Type

Subproperty of: E1 CRM Entity. P2 has type: E55 Type

Quantification: many to many, necessary (1,n:0,n)

Scope note: This property associates an instance of E13 Attribute Assignment with the type of property or relation that this assignment maintains to hold between the item to which it assigns an attribute and the attribute itself. Note that the properties defined by the CIDOC CRM also constitute instances of E55 Type themselves. The direction of the assigned property type is understood to be from the attributed item (the range of property P140 assigned attribute to) to the attribute item (the range of the property P141 assigned). More than one property type may be assigned to hold between two items.

Examples:

§ February 1997 Current Ownership Assessment of Martin Doerr's silver cup (E13) assigned property type P52 has former or current owner (is former or current keeper of) (E55)

§ 01 June 1997 Identifier Assignment of the silver cup donated by Martin Doerr (E15) assigned property type P48 has preferred identifier (is preferred identifier of) (E55)

In First Order Logic:

$P_{xxx}(x,y) \supset E13(x)$

$P_{xxx}(x,y) \supset E55(y)$

ISSUE 340: Classes without properties

The sig reviewed the text on the Minimality section of the introductory chapter of crm (HW by TV) and did some editorial work. The new text reads:

Minimality

Although the scope of the CRM is very broad, the model itself is constructed as economically as possible.

- CRM classes and properties are either primitive, or they are key concepts in the practical scope.
- Complements of CRM classes are not declared, because, considering the Open World Assumption, there are no properties for complements of a class (see Terminology).

A CRM class is declared when:

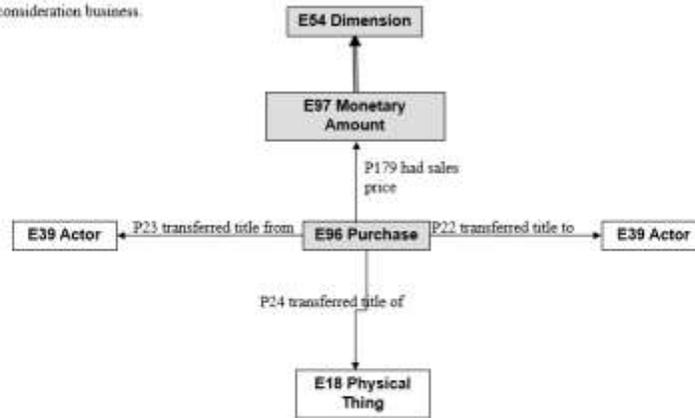
- It is required as the domain or range of a property not appropriate to its superclass.
- It serves as a merging point of two CRM class branches via multiple IsA (e.g. E25 Man-Made Feature). When the branch superclasses are used for multiple instantiation of an item, this item is in the intersection of the scopes. The class resulting from multiple IsA should be narrower in scope than the intersection of the scopes of the branch superclasses.
- It is useful as a leaf class (i.e. at the end of a CRM branch) to domain communities building CRM extensions or matching key domain classes from other models to the CRM (e.g. E34 Inscription).

Appendix A

ISSUE 385: Martin's proposal

Purchase: another kind of transaction activity

a kind of complete compensation/consideration business.

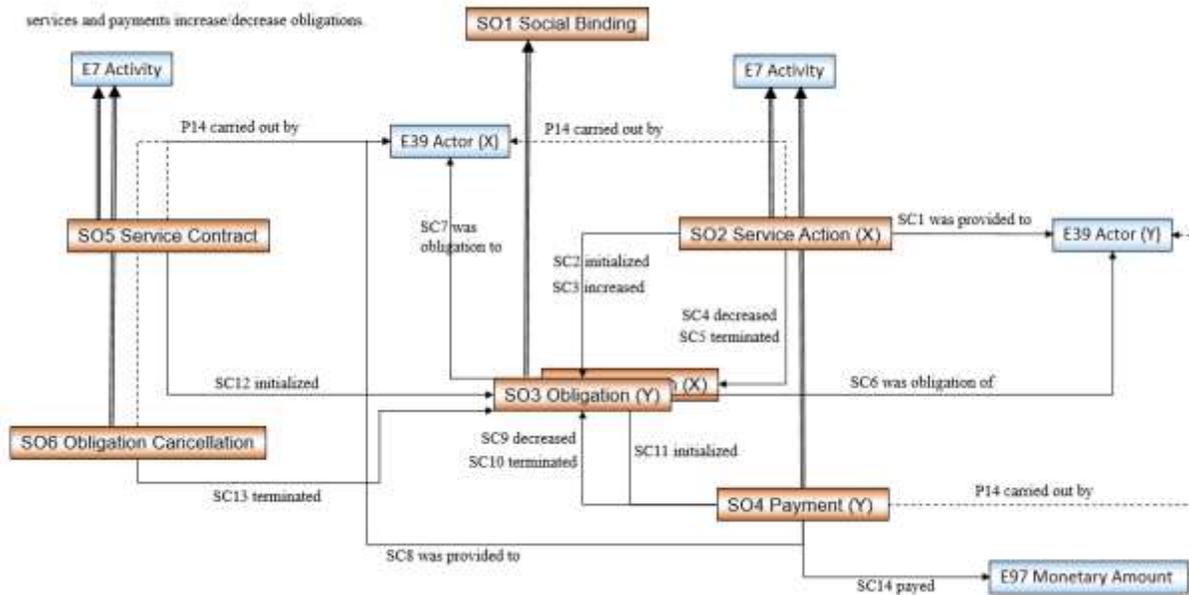


The property "had sales price: E70 Thing" is a shortcut of the more developed path through "Acquisition: had consideration: E70 Thing", which is also a generalization.

The "thing" that is used as a price, is money, which probably is not a dimension, it cannot be observed, measured; it is a quantity that is liquified and it is used in that form, and it is related to a legal status/contract and it has a specific time-span (a duration).

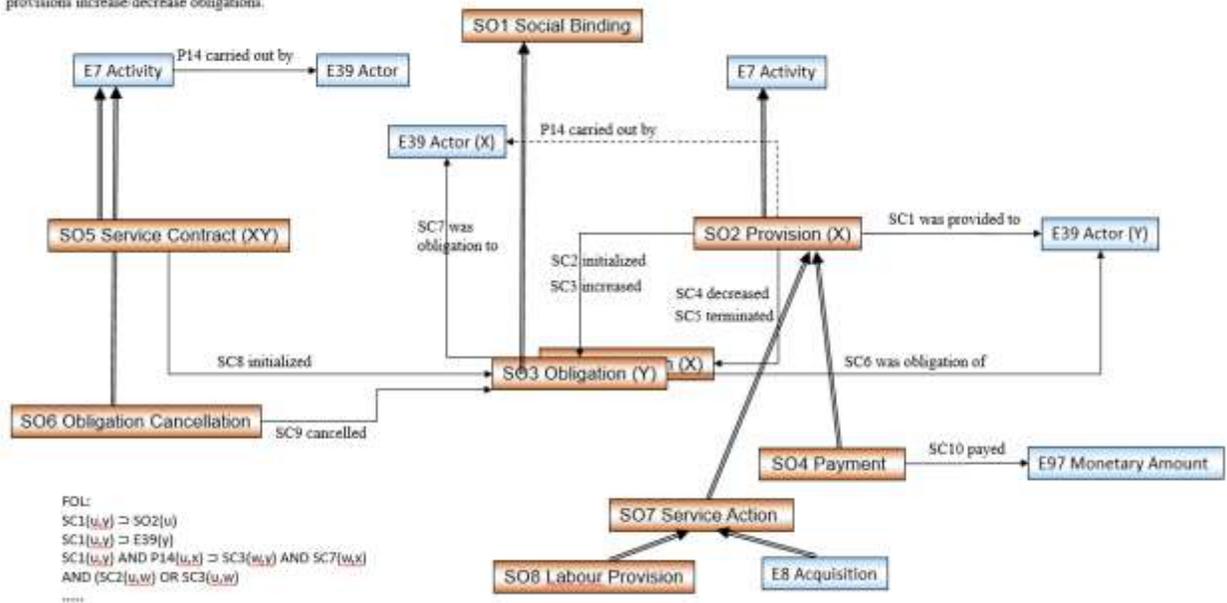
Bilateral Business Relation

services and payments increase/decrease obligations.



Bilateral Business Relation

provisions increase/decrease obligations.



Appendix B

ISSUE 358: CRMsoc Introduction (scope and naming conventions text)

1.1 Introduction

1.1.1 Scope

This document presents CRMsoc, an extension of CIDOC CRM created to support and capture social documentation.

CRM Social is a domain ontology extending the ISO21127 ontology CIDOC CRM, that can be used to (re-)encode data that document social phenomena and constructs that are typically recorded by humanities and social science scholars based on their analysis and transcription of primary documentary evidence or their representation of observational data in structured digital form. The kinds of social phenomena and constructs recorded by humanities and social science scholars extend beyond the practical scope of the CIDOC CRM in that they relate to the recording of indirectly observable, social phenomena and facts. CRM Social is being developed as a compatible extension of CIDOC CRM in order to be able to draw on its event oriented modelling and its capacity to represent facts related to cultural heritage while extending this to be able to represent and relate social facts and life. The expanded breadth and scope of CRM Social is presently under development but aims to take under its aegis documentation related to the representation of social facts recognizable by social agents and interpreters through intuition and inference. At this moment the following areas of analysis have been identified to be of interest and to fall within this scope:

- Characteristics of human beings, as individuals or groups (Mental attitude)
- Social relations, including between people (such as family and professional relationships), between people and groups (such as nationality and gender), and between groups (companies, NGOs, political parties).
- Rights and duties (such as ownership by inheritance and legal requirements by birth)
- Economic activities, including relations between people and things, such as financial transactions leading to ownership.
- Plans, including expressing proposed activities (for example in conservation and collection care planning) and legislation.
- Evaluations, including assessing risks and estimating the value of things.

CRM Social is being developed in relation to a growing body of primary humanities and social science schemas offered for analysis and incorporation by an active community of researchers. At present the list of considered schemas includes : the SPECTRUM museum standard (e.g. Acquisition and Accessioning procedure and Documentation planning procedure), the Linked Art community, Data for History consortium and the domain of heritage conservation.

1.1.2 Status

Under development!

1.1.3 Naming Convention

CRM Social classes and properties are given both a name and an identifier following the conventions of the CIDOC CRM. Class identifiers start with the letters "socE" and are followed by a number. Property identifiers start with the letters "socP" and are also followed by a number. When using a property in the reverse direction (inverse property) the identifier is further followed by the letter "i" (see also section Applied Form → Naming Conventions of the CIDOC-CRM definition document).

APPENDIX C

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P79 beginning is qualified by

Domain: E52 Time-Span
Range: E62 String
Subproperty of: E1 CRM Entity. P3 has note: E62 String
Quantification: many to one (0,1:0,n)

Scope note: This property associates an instance of E52 Time-Span with a note detailing the scholarly or scientific opinions and justifications about the beginning of this time-span concerning certainty, precision, sources etc. This property may also be used to describe arguments constraining possible dates and to distinguish reasons for alternative dates.

Examples:

§ the time-span of the Holocene (E52) beginning is qualified by “The formal definition and dating of the GSSP (Global Stratotype Section and Point) for the base of the Holocene using the Greenland NGRIP ice core, and selected auxiliary records” * (E62)

P80 end is qualified by

Domain: E52 Time-Span
Range: E62 String
Subproperty of: E1 CRM Entity. P3 has note: E62 String
Quantification: many to one (0,1:0,n)

Scope note: This property associates an instance of E52 Time-Span with a note detailing the scholarly or scientific opinions and justifications about the end of this time-span concerning certainty, precision, sources etc. This property may also be used to describe arguments constraining possible dates and to distinguish reasons for alternative dates.

Examples:

§ the time-span of the Holocene (E52) end is qualified by “still ongoing” (E62)

* Walker, Mike; Johnsen, Sigfus; Rasmussen, Sune Olander; Popp, Trevor; Steffensen, Jorgen-Peder; Gibrard, Phil; Hoek, Wim; Lowe, John; Andrews, John; Bjo Rck, Svante; Cwynar, Les C.; Hughen, Konrad; Kersahw, Peter; Kromer, Bernd; Litt, Thomas; Lowe, David J.; Nakagawa, Takeshi; Newnham, Rewi; Schwander, Jakob (2009). "Formal definition and dating of the GSSP (Global Stratotype Section and Point) for the base of the Holocene using the Greenland NGRIP ice core, and selected auxiliary records" (PDF). *Journal of Quaternary Science*. 24 (1): 3–17. Bibcode:2009JQS....24....3W. doi:10.1002/jqs.1227.

List of abbreviated names found in the document:

Acronym	First Name	Last Nam	Institution
AF	Achille	Felicetti	PIN, IT
AG	Anais	Guillem	University of California, USA
CB	Chryssoula	Bekiari	ICS FORTH, GR
CEO	Christian Emil	Ore	University of Oslo, NO
CG	Christos	Georgis	ICS FORTH, GR
CM	Carlo	Meghini	CNR, IT
ET	Eleni	Tsouloucha	ICS FORTH, GR
FB	Francesco	Beretta	CNRS/Université de Lyon, FR
FK	Florian	Kraütli	MPIWG, DE
FM	Francesca	Murano	Universita di Firenze, IT
GB	George	Bruseker	ICS FORTH, GR
GG	Guenther	Goerl	Fau Erlangen NBG/ Bibl. Hertz, DE
GH	Gerald	Hiebel	University of Innsbruck, AT
LCH	Lida	Charami	ICS FORTH, GR
MD	Martin	Doerr	ICS FORTH, GR
ML	Matteo	Lorenzini	ACDH-OAW,AT
MR	Mélanie	Roche	BnF, FR
NC	Nicola	Carboni	University of Zurich, CH
OB	Oguzhan	Balandi	Foto Marburg, DE
PH	Peter	Haak	Metaphacts, DE
PR	Pat	Riva	Concordia University, CA
RL	Richard	Light	UK
RS	Rob	Sanderson	J.Paul Getty Trust, USA
SS	Stephen D.	Stead	PPL, UK
TA	Trond	Aalberg	NTNU, NO
TH	Thomas	Hänsli	Universität Zürich, CH
TV	Thanasis	Velios	UAL, UK
VA	Vincent	Alamercery	Université de Lyon, FR
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