CAO_CRM
(Corpus Author Ontology CRM)

A semantic framework developed by the "Metadata" working group of the Consortium-HN ARIANE to structure the organization, description, and interoperability of metadata describing textual corpora

Andrés Echavarría Peláez, Mélanie Bouland

CAO_CRM (Corpus Author Ontology CRM)

Release: 2026-07-01

Modified on: 2026-07-08

This version:
https://www.cao-crm.eu/ontology/1.0

Latest version:
https://www.cao-crm.eu/ontology/1.0

Revision:
CAO_CRM 1.0 (July 2026) -- first publicly released version, composed of CIDOC-CRM 7.1.3, LRMoo 1.1.1 and CRMdig 5.0

Issued on:
2026-07-08

Authors:
Andrés Echavarría Peláez
Mélanie Bouland

Contributors:
Fatiha Idmhand
Ioana Galleron
Sabine Loudcher
Ala Eddine Laouir
Ameni Guizani

Source:
https://github.com/andresecha/CAO_CRM

Download serialization:
Format JSON LD Format RDF/XML Format N Triples
Format TTL

License:

Cite as:
Andrés Echavarría Peláez; Mélanie Bouland. CAO_CRM (Corpus Author Ontology CRM), version 1.0. Revision: CIDOC-CRM 7.1.3, LRMoo 1.1.1 and CRMdig 5.0. Retrieved from: https://www.cao-crm.eu/ontology/1.0

Abstract

This version (1.0, published July 8, 2026) of CAO_CRM is a complete re-encoding, in RDF/OWL, of the conceptual model originally discussed and diagrammed by Mélanie Bouland within the Consortium Huma-Num ARIANE. The encoding was produced independently by Andrés Echavarría Peláez, for the AMIS project, using a reproducible method: the exact set of classes and properties needed was extracted from the official CIDOC CRM 7.1.3, LRMoo 1.1.1 and CRMdig 5.0 releases with the ROBOT ontology toolkit, in a single combined pass to preserve cross-ontology relationships within the chosen scope. The result was reasoned over with the HermiT OWL reasoner to confirm logical consistency, validated against SHACL constraints, and visually checked in Protégé, then re-verified by a chain of three independent, successive audits.

Status of this document

This document describes **CAO_CRM** (Corpus Author Ontology CRM), an ontology module developed within the Huma-Num ARIANE Consortium (Analyses, Research, Artificial Intelligence and New Digital Editions) to describe the metadata of textual corpora and, more specifically, literary objects.

Version 1.0. This first version was published on July 8, 2026.

The module comprises 41 classes, 84 object properties, and 5 data properties (a total of 1,165 triples). It was verified at every stage through an automated validation pipeline (`make validate`) covering syntax, logical consistency, SHACL constraints, standards compliance, metadata, and design quality, FAIR principles (FOOPS!), and competency questions on real data (all eight validation categories passed successfully, plus competency questions). It was then subjected to three successive independent audits. Each audit was conducted without assuming the validity of the previous one and consisted of verifying every statement directly against the source files rather than relying on summaries.

Source code and repository: https://github.com/andresecha/CAO_CRM (institutional reference copy on GitLab: https://gitlab.huma-num.fr/consortiumariane/cao_crm).

This document does not represent the official position of either the CIDOC CRM Special Interest Group (CRM-SIG), the IFLA consortium, which is responsible for LRMoo, or FORTH-ICS, which maintains CRMdig. CAO_CRM is a proposal developed by the Metadata Working Group of the Huma-Num ARIANE Consortium. It is an independent derivative work that assembles a selected subset of these three models without claiming to represent them in their entirety or to modify them. Questions and comments regarding this document may be addressed to the Huma-Num ARIANE Consortium (consortium.ariane@gmail.com).

Authors: Andrés Echavarría Peláez and Mélanie Bouland.

Contributors: Fatiha Idmhand, Ioana Galleron, Sabine Loudcher, Ala Eddine Laouir, and Ameni Guizani.

The authors. Mélanie Bouland developed a conceptual model synthesizing the extensive discussions initially conducted within the Metadata Working Group of the Huma-Num ARIANE Consortium, and subsequently within the scientific team involved in the development of the AMIS assistant. This work resulted in a conceptual model that the present module adopts and adapts to ensure compliance with the CIDOC CRM, LRMoo, and CRMdig standards.

The RDF/OWL encoding was carried out by Andrés Echavarría Peláez using a reproducible and fully documented methodology. The three complete official models were first merged into a single graph. The selected classes and properties (documented in `imports/module-terms.txt`) were then extracted in a single combined pass using the ROBOT tool, thereby preserving relationships spanning the three source models. The resulting ontology was

subsequently processed with the HermiT OWL reasoner to confirm its logical consistency and was finally validated through visual inspection in Protégé.

Introduction

Background and motivation

The literary text is not a univocal object. It may be understood as an intellectual work belonging to the realm of ideas, as a material artefact (manuscript, printed document, edition), as a linguistic resource existing in varying degrees of stabilization, or as a digital object subject to continuous transformations (encoding, annotation, algorithmic processing). This plurality of modes of existence, already identified by Galleron, Idmhand, and Meynard (2018) in their research on the modelling of literary objects, raises a central question: how can one represent, within a coherent semantic framework, an entity that simultaneously belongs to the domains of intellectual creation, documentary materiality, literary interpretation, and the digital environment?

This issue became particularly acute within the AMIS project, whose objective is to facilitate, through artificial intelligence models (named entity recognition, classification, automatic summarization, dependency analysis), the creation and enrichment of metadata for digital textual resources. Existing standards (the XML-TEI header and Dublin Core) have proven insufficient, as they do not reliably distinguish between what pertains to the work, the manifestation, the physical item, or the digital object: the same piece of information (a date or a name, for instance) may in fact refer to entities of fundamentally different natures.

CAO_CRM addresses this need by building, on the basis of the CIDOC-CRM, LRMoo, and CRMdig standards, an integrated model capable of representing the entire life cycle of textual objects, from the creation of the work to its contemporary editorial, material, and digital forms.

CAO_CRM: Hierarchy and descriptive organization

CAO_CRM adopts the hierarchy of LRMoo and structures the description according to a progression ranging from the work, understood as an abstract concept, to its various material or digital forms:

- `F1_Work` — the work in its purely conceptual dimension, independent of any material realization. The inalienable moral right is attached to this level through the path `F1_Work → F27_Work_Creation → P14_has_original_author → Person`.
- `F2_Expression` — an identifiable realization of this idea. Any substantial modification of the intellectual content results in a new expression. This entity is co-typed as `E33_Linguistic_Object` in order to carry information relating to language (`P72_has_language`) and writing system.
- `F3_Manifestation` — the generic material form through which the work is made accessible (for example, a printed book or an audiovisual edition). A manifestation may give rise to one or more items through `F32_Item_Production_Event`.

- `F5_Item` — a specific material copy, that is, the physical object actually consulted or handled. It is co-typed as `E22_Human-Made_Object` in order to represent its current location.
- `D1_Digital_Object` (CRMdig) — any digital file associated with an expression. It is co-typed as `D9_Data_Object` when it has a measurable dimension. It may originate either from the digitization of a pre-existing physical object (a process documented by `D2_Digitization_Process`) or from a native digital production process (documented by `D7_Digital_Machine_Event`).

For each entity, the model organizes possible metadata into four transversal categories:

- "Characteristics": identifiers, titles, dimensions, materials, formats, and languages — that is, the elements allowing a resource to be distinguished and uniquely identified;
- "Processes": actors, dates, places, and operations that led to the existence or transformation of the resource;
- "Status": applicable rights, preservation information, and deposit location;
- "Relations": links to other resources in the model, including relationships between expressions and between works through `R75`, `R76`, and `R2`.

CAO_CRM, RDF and OWL

CAO_CRM is published in RDF/OWL, with available serializations in RDF/XML, Turtle, N-Triples, and JSON-LD. The module was built according to a reproducible and documented methodology: the three complete official models (CIDOC-CRM 7.1.3, LRMoo 1.1.1, and CRMdig 5.0) are first merged. The selected classes and properties — documented in `imports/module-terms.txt` (130 terms) — are then extracted in a single combined operation using the ROBOT tool. This approach preserves the relationships that cross the three source models within the selected scope.

Unlike a conventional import using `owl:imports`, CAO_CRM is an autonomous ("vendored") module: it no longer depends on external source files at runtime.

The guiding principle of CAO_CRM is that of **pure composition**: the module defines no classes or properties of its own, with a single methodological exception explicitly authorized by CIDOC-CRM itself. This exception concerns the five role sub-properties:

- `P14_has_original_author`;
- `P14_has_translator`;
- `P14_has_abridger`;
- `P14_has_scientific_editor`;
- `P14_has_publisher`.

These sub-properties are declared in accordance with Encoding Rule 4 from the official CIDOC-CRM preamble (see "Design Justification" below).

Outside this specific case, every entity present in the module originates directly from CIDOC-CRM, LRMoo, or CRMdig, with its original axioms preserved (domains, ranges, labels, and comments).

Consistency and integrity

The ontology is validated at every modification through a reproducible toolchain (`make validate`) including:

- RDF/XML syntax validation (`rapper`, `riot`, `rdflib`);
- logical reasoning (HermiT reasoner via ROBOT, applied to the merged model incorporating the three complete official sources);
- SHACL constraint validation;
- verification of compliance with required metadata annotations;
- structural alignment with official sources (`robot diff`);
- detection of potential design issues (OOPS!).

At the time of publication, the module is logically consistent: the reasoner detects no unsatisfiable classes, and all eight validation categories, including the FAIR assessment (run locally, score 0.79/1.0), pass successfully without exception.

This consistency is not merely the result of an automated check: it is the outcome of an exhaustive verification process. The complete details of this process — including every non-trivial modeling decision and its justification based on official references — are presented in the following section.

Inference, dependency and the open world assumption

Like any RDF/OWL model, CAO_CRM adopts the **Open World Assumption**: the absence of a triple in the data never means it is false, only that it has not been, or not yet been, asserted. This point matters particularly for reading this module, for two concrete reasons:

1. **Deliberately absent domains and ranges are not errors.** Several official CIDOC-CRM properties have, in their complete model, a domain or range pointing to a class deliberately excluded from the chosen scope (for example `E1_CRM_Entity`, the root of the entire hierarchy). The module does not systematically replace these with a substitute class: in most cases, it simply leaves that domain or range absent; in a few specific cases (`P54`/`P55_has_current_location`, restricted to `E22_Human-Made_Object`), a deliberate restriction was applied, after verifying that no other use of the module would suffer from it.
2. **The HermiT reasoner confirms consistency; it does not invent missing facts.** That the module is consistent means that no logical contradiction has been detected within it, not that every useful relation has been automatically inferred or completed. Every relation must be explicitly asserted in the data to be usable.

The module depends, at runtime, on no external file (see "CAO_CRM, RDF and OWL" above). Its correctness, however, depends on the fidelity of the extraction to the official source files, a fidelity verified through systematic comparison (`robot diff`).

Design Justification

The guiding principle, **zero native classes or properties, pure composition of a subset of CIDOC-CRM, LRMoo, and CRMdig**, reflects the decision not to mobilize the entirety of the three combined models, whose complete use would be difficult to implement in practice, particularly for users who are not ontology specialists.

CAO_CRM therefore deliberately adopts a limited and controlled subset, even if this means leaving some descriptive requirements temporarily unaddressed, rather than developing specific extensions. This commitment to methodological rigor has led, during the construction of the module, to the following modeling decisions.

Typing the description of an object with `P3_has_note`

The source conceptual diagram represented the free-text description of an object through an artificial chain (`E55_Type` followed by `E62_String`), whereas `E62_String`, like `E60_Number`, does not officially have any URI class in CIDOC-CRM.

These two concepts correspond to "primitive values" that the standard itself specifies should be represented directly as literals (`rdfs:Literal`), rather than as entities with their own identity.

Consequently, `P3_has_note` has been declared as an `owl:DatatypeProperty`, with its range set to `rdfs:Literal`, exactly reproducing the convention applied by CIDOC-CRM for `P90_has_value`.

The intentional absence of class disjointness

No `owl:disjointWith` declaration has been added between the classes in the module. This choice faithfully follows the three complete official files of CIDOC-CRM, LRMoo, and CRMdig, which themselves declare no class disjointness axioms.

The CIDOC-CRM consortium deliberately leaves the definition of possible disjointness relationships to concrete implementations rather than imposing them at the generic model level. Introducing logical restrictions here that the source models intentionally avoid would have constituted a modeling decision specific to CAO_CRM, contrary to the principle of pure composition.

The absence of official translation for LRMoo and CRMdig terms, and for CIDOC-CRM's own definitions

The classes and properties from LRMoo and CRMdig used by CAO_CRM have, in their official sources, only `rdfs:label` values in English — unlike CIDOC-CRM, whose majority of terms

are available in multiple languages (up to seven in some cases). An exhaustive check further reveals that CIDOC-CRM itself never translates its long definitions (`rdfs:comment`), in any language, not even for its own native terms (for example, `E39_Actor` has a `label@fr` but a `comment` only in English).

Adding French or Spanish translations for these terms or definitions to `ontology/CAO_CRM-1.0.rdf` itself would, by definition, introduce content created by CAO_CRM itself rather than content derived from an official source — the published RDF file therefore remains, in this respect, rigorously faithful to the sources: these 130 terms officially have a translation only where CIDOC-CRM itself provides one (short labels, never definitions).

So that the documentation itself remains usable in French and Spanish, a separate working-translation layer (`docs/i18n/`) supplies the 44 missing French labels and 130 missing French definitions, as well as the 130 missing Spanish labels and 130 missing Spanish definitions — merged only into a temporary copy of the graph when generating the HTML and PDF, never into the published file. Every label or definition produced this way carries, in the generated documentation, a small mark (†) with a tooltip noting its status as a working, non-official translation.

Structural corrections identified through comparison with the official models

Eight structural issues were identified by comparing the conceptual diagram, page by page, against the complete official models. Each issue was resolved through a documented reference to the relevant official specifications.

1. Description and writing system. The diagram routed these two characteristics through the same construction (`E55_Type` followed by `E62_String`), although they serve fundamentally different purposes: free text for the description and a controlled vocabulary value for the writing system. The description is now represented directly through `P3_has_note`; the writing system is represented through an `E55_Type` value linked via `P2_has_type`, with `P127_has_broader_term` used to organize related values whenever several controlled facets coexist (writing system, production mode, rights type).

2. The language of an expression. The property `P150_defines_typical_parts_of` was incorrectly diverted from its official meaning and used to attach language information to `F3_Manifestation`, whereas LRMoo's own official scope note explicitly places this information at the Expression level: *"An instance of F2 Expression which includes spoken or written text may be multiply instantiated as an instance of E33 Linguistic Object."* Language is therefore now represented at the `F2_Expression` level, co-typed as `E33_Linguistic_Object`, through `P72_has_language`.

3. The location of an item. `P7_took_place_at` was applied to `E3_Condition_State`, which is not a valid subclass of `E4_Period`, the only official domain of this property. This verification also revealed a genuine modeling gap: no property allowed the location of `F5_Item` to be represented in the diagram. The adopted solution is to co-type the item as

E22_Human-Made_Object — a practice explicitly authorized by the official scope note of F5_Item — thereby enabling the use of P54_has_current_location and P55_has_current_location.

4. Rights. P104_is_subject_to was applied to seven classes simultaneously, three of which are categorically incompatible (F1_Work, E7_Activity, and D2_Digitization_Process). The official range of this property requires E72_Legal_Object, which includes neither abstract works nor processes. The complete resolution of this issue is discussed below, in the section "Moral rights and patrimonial rights."

5. The production of an item. R27_materialized linked E12_Production directly to F3_Manifestation, whereas the official domain requires F32_Item_Production_Event, a specialized subclass of E12_Production specifically intended for this purpose. No information is lost through this correction: F32_Item_Production_Event inherits all axioms from its superclass.

6. The digital object carrying a dimension. This follows the same pattern as the previous case: L61_contains_value_set_of requires D9_Data_Object, a specialized subclass of D1_Digital_Object, rather than D1_Digital_Object itself.

7. The unit of measurement. P90_has_value requires a range of rdfs:Literal, not E60_Number (another "Primitive Value" without an official URI class). In addition, P91_has_unit, which links a dimension to its measurement unit through E58_Measurement_Unit, was entirely absent from the diagram and has therefore been added.

8. Date precision. The first extraction of the module had lost the precise XSD datatype declarations (xsd:dateTime, xsd:integer) that Mélanie Bouland's original file correctly applied to P82, P82a, P82b, and P90_has_value. While the official standard defines these properties more generically through rdfs:Literal, this additional precision was restored without removing any existing information from the module.

A ninth, more subtle case required revisiting an earlier conclusion. One branch of the diagram distinguished between the digitization of an existing physical object and native digital production without a prior physical carrier. However, it implemented this distinction through a class requiring a physical input object (D2_Digitization_Process, which presupposes E18_Physical_Thing). This was not an error to eliminate, but rather a distinction genuinely intended by the project team. It is now represented through D7_Digital_Machine_Event, the more general CRMdig class of which D2_Digitization_Process is a specialization and which does not require a prior physical object.

Completion of the four cross-cutting category matrix

An exhaustive review of this matrix for the five main classes made it possible to add three missing relationships, all of them official and introducing no new classes:

- `R75_incorporates` and `R76_is_derivative_of` between two instances of `F2_Expression`, in order to document, for example, a translation or an abridged version derived from an original expression;
- `R2_is_derivative_of` between two instances of `F1_Work`, in order to document adaptations or sequels derived from a source work;
- `R28_produced`, linking a production event directly to the item it produces.

Moral rights and patrimonial rights

Moral rights — inalienable and non-transferable, attached to the author's person and to the work itself independently of any particular expression — create a structural modeling challenge. `P104_is_subject_to` requires `E72_Legal_Object`, whose official scope note explicitly excludes conceptual objects such as `F1_Work` (*"the identity of an instance of E28 Conceptual Object [...] may be too ambiguous to reliably establish instances of E30 Right"*).

This exclusion was confirmed by the official CIDOC-CRM SIG issue concerning the rights model (Issue 328, 2017), which specifically addresses the case of moral rights and concludes that no mechanism currently exists for transferring or directly attaching this type of right to such an object.

The solution adopted distinguishes two mechanisms already available within the module, each used according to the legal reality it represents best.

To answer, uniquely and unambiguously, the question "Who is the moral author of this work?", the appropriate path is: `F1_Work → R16i_was_created_by → F27_Work_Creation → P14_has_original_author → Person`, which LRMoo itself explicitly describes as representing "the notion of the creator of the work."

To document the formal legal framework and transferable patrimonial rights (translation rights, publishing rights), specific to a particular Expression or Manifestation, the appropriate mechanism is: `P104_is_subject_to` toward an instance of `E30_Right`, typed through `P2_has_type` (for example, "moral right" or "inalienable intellectual property").

This dual interpretation requires no new terms: it explicitly connects two mechanisms already provided by LRMoo and CIDOC-CRM, each applied to the legal reality it represents most appropriately.

Five role subproperties: the sole exception to the pure-composition principle

No official property allows the different actor roles associated with a single text to be distinguished: `P14_carried_out_by` indiscriminately covers any role in any activity.

However, CIDOC-CRM explicitly authorizes, in its own preamble, the creation of named subproperties for role specialization — a mechanism referred to as Encoding Rule 4.

Three authorship roles are therefore distinguished at the Expression level, each aligned with the international MARC Relator Terms vocabulary:

- `P14_has_original_author` (original author, code `aut`);
- `P14_has_translator` (translator, code `trl`);
- `P14_has_abridger` (person responsible for producing an abridged version, code `abr`).

The same principle applies to the Manifestation level, where CAO_CRM's source paper explicitly identifies, as an original differentiating feature of the model compared with plain LRMoo, an "editorial activities" branch distinguishing the responsibility of the commercial publisher (the agent who publishes and prints) from that of the scientific editor (the agent who establishes the critical text and writes the preface).

These two roles are represented respectively by:

- `P14_has_publisher` (MARC code `pbl`);
- `P14_has_scientific_editor` (MARC code `edt`);

both applied to the same `F30_Manifestation_Creation` event.

The latter property also applies separately to the Item and the Digital Object whenever a distinct scholarly activity (such as copy collation or editorial decisions for a digital edition) involves specialist responsibility independently from the material production process.

How to read this document

This document follows the standard structure of an ontology specification. Following this introduction, it presents an overview of the module (a list of its classes and properties), followed by a cross-reference section describing each class and property individually, including its label, multilingual comments, domain, and range.

Each term is identified by its original code from CIDOC-CRM, LRMoo, or CRMdig (for example, `E7` for Activity, `P2` for has type, and `F1` for Work). This code, which appears both in the full IRI of each term and on its reference entry, allows readers to locate the corresponding definition directly in the official documentation of the source models.

Readers seeking a non-technical introduction to the model may instead consult the documentation in `documentation/en/`, which comprises ten introductory pages ranging from "What is CAO_CRM?" to a glossary and FAQ (also available in French and Spanish). Additional resources include the interactive visualization `graph/CAO_CRM-1.0-graph.html`, the practical Protégé guide `documentation/en/07-guia-protege.md`, and the application notes `documentation/en/10-notas-de-aplicacion.md`, which provide concrete examples for every `P14_has_*` role and every `E55_Type` value used in the model.

Conformance

CAO_CRM is expressed in OWL 2 and RDF Schema. With the sole exception of the five `P14_has_*` role subproperties, described and justified in the Design Justification section, every class and property in the module corresponds exactly to a class or property declared in one of the following official releases:

- CIDOC-CRM version 7.1.3 (RDFS Implementation, February 2024);
- LRMoo version 1.1.1 (November 2025), an extension of the IFLA LRM model;
- CRMdig version 5.0 (October 2025).

CAO_CRM (Corpus Author Ontology CRM): Overview

This ontology has the following classes and properties.

Classes

- E7 — Activity
- E39 — Actor
- E41 — Appellation
- E67 — Birth
- E3 — Condition State
- E1 — CRM Entity
- D9 — Data Object
- E69 — Death
- D13 — Digital Information Carrier
- D7 — Digital Machine Event
- D1 — Digital Object
- D2 — Digitization Process
- E54 — Dimension
- F2 — Expression
- F28 — Expression Creation
- E22 — Human-Made Object
- E42 — Identifier
- F5 — Item
- F32 — Item Production Event
- E56 — Language
- E72 — Legal Object
- E33 — Linguistic Object
- F3 — Manifestation
- F30 — Manifestation Creation
- E57 — Material
- E58 — Measurement Unit
- E4 — Period
- E21 — Person
- E18 — Physical Thing

- E53 — Place
- E12 — Production
- E89 — Propositional Object
- E30 — Right
- E90 — Symbolic Object
- E2 — Temporal Entity
- E70 — Thing
- E52 — Time-Span
- E35 — Title
- E55 — Type
- F1 — Work
- F27 — Work Creation

Object Properties

- P104i — applies to
- P98 — brought into life
- P14 — carried out by
- P45 — consists of
- P86i — contains
- L61 — contains value set of
- R16 — created
- R17 — created
- R24 — created
- P55i — currently holds
- P150 — defines typical parts of
- P150i — defines typical wholes for
- P100i — died in
- L1 — digitized
- R4 — embodies
- P86 — falls within
- P106i — forms part of
- P46i — forms part of
- P21 — had general purpose
- L11 — had output
- P14 — has abridger
- R78 — has alternate
- P127 — has broader term
- P44 — has condition
- P55 — has current location
- P54 — has current permanent location
- R2i — has derivative
- R76i — has derivative
- P43 — has dimension
- P72 — has language
- P127i — has narrower term

- P14 — has original author
- R71 — has part
- P108 — has produced
- P14 — has publisher
- P14 — has scientific editor
- P4 — has time-span
- P14 — has translator
- P2 — has type
- P91 — has unit
- L61i — has value set representation
- P1i — identifies
- R75 — incorporates
- P106 — is composed of
- P46 — is composed of
- P44i — is condition of
- P54i — is current permanent location of
- R2 — is derivative of
- R76 — is derivative of
- P43i — is dimension of
- R4i — is embodied in
- P1 — is identified by
- R75i — is incorporated in
- P45i — is incorporated in
- P72i — is language of
- R71i — is part of
- R3 — is realised in
- P67i — is referred to by
- L19i — is stored on
- P104 — is subject to
- P4i — is time-span of
- P2i — is type of
- P91i — is unit of
- R27 — materialized
- P14i — performed
- R28 — produced
- R3i — realises
- P67 — refers to
- L19 — stores
- P7 — took place at
- P16 — used specific object
- P98i — was born
- R16i — was created by
- R17i — was created by
- R24i — was created through
- P100 — was death of
- L1i — was digitized by

- R27i — was materialized by
- L11i — was output of
- R28i — was produced by
- P108i — was produced by
- P21i — was purpose of
- P16i — was used for
- P7i — witnessed

Data Properties

- P82 — at some time within
- P82a — begin of the begin
- P82b — end of the end
- P3 — has note
- P90 — has value

Annotation Properties

- abstract
- bibliographic Citation
- contributor
- created
- creator
- description
- description
- issued
- license
- license
- logo
- preferred Namespace Prefix
- preferred Namespace Uri
- publisher
- references
- rights
- source
- status
- title

CAO_CRM (Corpus Author Ontology CRM): Description

This ontological model formalizes and improves the description of metadata around corpora. Named CAO_CRM, it implements -- as a bounded, composed subset of CIDOC CRM and its extensions LRMoo and CRMdig -- the conceptual model discussed and diagrammed by Mélanie Bouland within the Consortium Huma-Num ARIANE. This particular RDF/OWL encoding is a new, independent implementation, distinct from the file originally delivered by Ms. Bouland: it was built with the ROBOT ontology toolkit (module extraction, http://

robot.obolibrary.org/), reasoned over with the HermiT OWL reasoner (http://www.hermit-reasoner.com/), checked against SHACL constraints, and visually validated in Protégé (https://protege.stanford.edu/), then re-verified by a chain of three independent, successive audits.

Cross-reference for CAO_CRM (Corpus Author Ontology CRM) classes, object properties and data properties

This section provides details for each class and property defined by CAO_CRM (Corpus Author Ontology CRM).

Classes

- E7 — Activity
- E39 — Actor
- E41 — Appellation
- E67 — Birth
- E3 — Condition State
- E1 — CRM Entity
- D9 — Data Object
- E69 — Death
- D13 — Digital Information Carrier
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- F3 — Manifestation
- F30 — Manifestation Creation
- E57 — Material
- E58 — Measurement Unit
- E4 — Period
- E21 — Person
- E18 — Physical Thing
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- E52 — Time-Span
- E35 — Title
- E55 — Type
- F1 — Work
- F27 — Work Creation

E7 — Activity[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E7_Activity

This class comprises actions intentionally carried out by instances of E39 Actor that result in changes of state in the cultural, social, or physical systems documented. This notion includes complex, composite, and long-lasting actions such as the building of a settlement or a war, as well as simple, short-lived actions such as the opening of a door.

has super-classes
E1 — CRM Entity [c], E4 — Period [c]
has sub-classes
D7 — Digital Machine Event [c], D2 — Digitization Process [c], E12 — Production [c], F27 — Work Creation [c]
is in domain of
P14 — carried out by [op], P21 — had general purpose [op], P14 — has abridger [op], P14 — has original author [op], P14 — has publisher [op], P14 — has scientific editor [op], P14 — has translator [op], P16 — used specific object [op]
is in range of
P14i — performed [op], P21i — was purpose of [op], P16i — was used for [op]

E39 — Actor[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E39_Actor

This class comprises people, either individually or in groups, who have the potential to perform intentional actions of kinds for which they can be held responsible.

has super-classes
E1 — CRM Entity [c]
has sub-classes
E21 — Person [c]
is in domain of
P14i — performed [op]
is in range of
P14 — carried out by [op], P14 — has abridger [op], P14 — has original author [op], P14 — has publisher [op], P14 — has scientific editor [op], P14 — has translator [op]

E41 — Appellation[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E41_Appellation

This class comprises all 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 within a certain context. Instances of E41 Appellation do not identify things by their meaning, even if they happen to have one, but by convention, tradition, or agreement. Instances of E41 Appellation are cultural constructs; as such, they have a context, a history, and a use in time and space by some group of users. A given instance of E41 Appellation can have alternative forms, i.e. other instances of E41 Appellation that are regarded as equivalent, regardless of the thing it denotes. Different languages may use different appellations for the same thing, such as the names of major cities. Some appellations may be formulated using a valid noun phrase of a particular language. In these cases, the respective instances of E41 Appellation should also be declared as instances of E33 Linguistic Object. Then the language using the appellation can be declared with the property P72 has language: E56 Language. Instances of E41 Appellation may be used to identify any instance of E1 CRM Entity and sometimes are characteristic for instances of more specific subclasses of E1 CRM Entity, such as for instances of E52 Time-Span (for instance “dates”), E39 Actor, E53 Place or E28 Conceptual Object. Postal addresses and E-mail addresses are characteristic examples of identifiers used by services transporting things between clients. Even numerically expressed identifiers for extents in space or time are also regarded as instances of E41 Appellation, such as Gregorian dates or spatial coordinates, even though they allow for determining some time or location by a known procedure starting from a reference point and by virtue of that fact play a double role as instances of E59 Primitive Value. E41 Appellation should not be confused with the act of naming something. Cf. E15 Identifier Assignment.

has super-classes
    E90 — Symbolic Object [c]
has sub-classes
    E42 — Identifier [c], E35 — Title [c]
is in domain of
    P1i — identifies [op]
is in range of
    P1 — is identified by [op]

E67 — Birth[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E67_Birth

This class comprises the births of human beings. E67 Birth is a biological event focussing on the context of people coming into life. (E63 Beginning of Existence comprises the coming into life of any living being.) Twins, triplets, etc. are brought into life by the same instance of E67 Birth. The introduction of the E67 Birth event as a documentation element allows the description of a range of family relationships in a simple model. Suitable extensions may describe more details and the complexity of motherhood since the advent of modern

medicine. In this model, the biological father is not seen as a necessary participant in the E67 Birth.

has super-classes
E1 — CRM Entity [c], E4 — Period [c]
is in domain of
P98 — brought into life [op]
is in range of
P98i — was born [op]

E3 — Condition State[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E3_Condition_State

This class comprises the states of objects characterised by a certain condition over a time-span. An instance of this class describes the prevailing physical condition of any material object or feature during a specific instance of E52 Time-Span. In general, the time-span for which a certain condition can be asserted may be shorter than the real time-span, for which this condition held. The nature of that condition can be described using P2 has type. For example, the instance of E3 Condition State “condition of the SS Great Britain between 22-nd September 1846 and 27-th August 1847” can be characterized as an instance “wrecked” of E55 Type.

has super-classes
E1 — CRM Entity [c], E2 — Temporal Entity [c]
is in domain of
P44i — is condition of [op]
is in range of
P44 — has condition [op]

E1 — CRM Entity[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E1_CRM_Entity

This class comprises all things in the universe of discourse of the CIDOC Conceptual Reference Model. It is an abstract concept providing for three general properties: Identification by name or appellation, and in particular by a preferred identifier Classification by type, allowing further refinement of the specific subclass to which an instance belongs Attachment of free text and other unstructured data for the expression of anything not captured by formal properties All other classes within the CIDOC CRM are directly or indirectly specialisations of E1 CRM Entity.

has sub-classes
E7 — Activity [c], E39 — Actor [c], E67 — Birth [c], E3 — Condition State [c], E69 — Death [c], E54 — Dimension [c], E18 — Physical Thing [c], E53 — Place [c], E89 — Propositional Object [c], E90 — Symbolic Object [c], E2 — Temporal Entity [c], E70 — Thing [c], E52 — Time-Span [c], E55 — Type [c]
is in domain of

P3 — has note [dp], P2 — has type [op], P1 — is identified by [op], P67i — is referred to by [op]
is in range of
P1i — identifies [op], P2i — is type of [op], P67 — refers to [op]

D9 — Data Object[c]

IRI: http://www.cidoc-crm.org/extensions/crmdig/D9_Data_Object

This class comprises instances of D1 Digital Object that are the result of measurements or other observations and / or their algorithmic evaluation in the form of structured data, such as encoded formal propositions, CSV files (“comma separated values”) or equivalent representations. If an instance of D1 Digital Object contains the value set of an instance of E54 Dimension, such as the primary data from an instance of S21 Measurement, this association can be documented with the property L61 contains value set of (has value set representation).

has super-classes
D1 — Digital Object [c]
is in domain of
L61 — contains value set of [op]
is in range of
L61i — has value set representation [op]

E69 — Death[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E69_Death

This class comprises the deaths of human beings. If a person is killed, their death should be instantiated as E69 Death and as E7 Activity. The death or perishing of other living beings should be documented as instances of E64 End of Existence.

has super-classes
E1 — CRM Entity [c], E4 — Period [c]
is in domain of
P100 — was death of [op]
is in range of
P100i — died in [op]

D13 — Digital Information Carrier[c]

IRI: http://www.cidoc-crm.org/extensions/crmdig/D13_Digital_Information_Carrier

This class comprises all instances of E84 Information Carrier that are explicitly designed to be used as persistent digital physical carriers of instances of D1 Digital Object. An instance of D13 Digital Information Carrier may or may not contain information, e.g., an empty diskette.

has super-classes
E22 — Human-Made Object [c], E18 — Physical Thing [c]
is in domain of

L19 — stores [op]
is in range of
L19i — is stored on [op]

D7 — Digital Machine Event[c]

IRI: http://www.cidoc-crm.org/extensions/crmdig/D7_Digital_Machine_Event

This class comprises events that happen on physical digital devices following a human activity that intentionally caused its immediate or delayed initiation and results in the creation of a new instance of D1 Digital Object on behalf of the human actor. The input of a D7 Digital Machine Event may be parameter settings and/or data to be processed. Some D7 Digital Machine Events may form part of a wider E65 Creation event. In this case, all machine output of the partial events is regarded as creation of the overall activity.

has super-classes
E7 — Activity [c]
has sub-classes
D2 — Digitization Process [c]
is in domain of
L11 — had output [op]
is in range of
L11i — was output of [op]

D1 — Digital Object[c]

IRI: http://www.cidoc-crm.org/extensions/crmdig/D1_Digital_Object

This class comprises identifiable immaterial items that can be represented as sets of bit sequences, such as data sets, e-texts, images, audio or video items, software, etc., and are documented as single units. Any change in the bit sequence results in a new instance of D1 Digital Object. Any aggregation of instances of D1 Digital Object into a whole treated as a single unit is also regarded as an instance of D1 Digital Object. This means that for instance, the content of a DVD, an XML file on it, and an element of this file, are regarded as distinct instances of D1 Digital Object, mutually related by the P106 is composed of (forms part of) property. In the case of embedded metadata, the documentalist must take care to distinguish the identity of the object including the metadata from the identity of the included content described by the metadata. A D1 Digital Object does not depend on a specific physical carrier, and it can exist on one or more carriers simultaneously.

has super-classes
E89 — Propositional Object [c], E90 — Symbolic Object [c]
has sub-classes
D9 — Data Object [c]
is in domain of
L61 — contains value set of [op], L19i — is stored on [op], L11i — was output of [op]
is in range of
L11 — had output [op], L61i — has value set representation [op], L19 — stores [op]

D2 — Digitization Process[c]

IRI: http://www.cidoc-crm.org/extensions/crmdig/D2_Digitization_Process

This class comprises events that result in the creation of instances of D9 Data Object that represent the appearance (for instance, light reflection properties), form or recorded inner structure of an instance of E18 Physical Thing such as paper documents, statues, buildings, paintings, biological objects etc. Such methods are typically called “imaging techniques”. A particular case is the analogue-to-digital conversion of audiovisual material. This class represents the transition from a material item to an immaterial representation of a relevant spatial distribution of local physical properties on the material item (in the case of audio material item, also along the respective sound track) Subsequent processing steps of the output of digitization processes that preserve or improve the relevant spatial correlations with the digitized object or a part of it are regarded as instances of D3 Formal Derivation.

has super-classes
E7 — Activity [c], D7 — Digital Machine Event [c]
is in domain of
L1 — digitized [op], L11 — had output [op]
is in range of
L1i — was digitized by [op], L11i — was output of [op]

E54 — Dimension[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E54_Dimension

This class comprises quantifiable properties that can be measured by some calibrated means and can be approximated by values, i.e. points or regions in a mathematical or conceptual space, such as natural or real numbers, RGB values, etc. An instance of E54 Dimension represents the empirical or theoretically derived quantity, including the precision tolerances resulting from the particular method or calculation. The identity of an instance of E54 Dimension depends on the method of its determination because each method may produce different values even when determining comparable qualities. For instance, the wingspan of a bird alive or dead is a different dimension. Thermoluminescence dating and Rehydroxylation [RHX] dating are different dimensions of temporal distance from now, even if they aim at dating the same object. The method of determination should be expressed using the property P2 has type (is type of). Note that simple terms such as “diameter” or “length” are normally insufficient to unambiguously describe a respective dimension. In contrast, “maximum linear extent” may be sufficient. The properties of the class E54 Dimension allow for expressing the numerical approximation of the values of instances of E54 Dimension adequate to the precision of the applied method of determination. If the respective quantity belongs to a non-discrete space according to the laws of physics, such as spatial distances, it is recommended to record them as approximations by intervals or regions of indeterminacy enclosing the assumed true values. For instance, a length of 5 cm may be recorded as 4.5-5.5 cm, according to the precision of the respective observation. Note, that comparability of values described in different units depends critically on the representation as value regions. Numerical approximations in archaic instances of E58 Measurement Unit used in historical

records should be preserved. Equivalents corresponding to current knowledge should be recorded as additional instances of E54 Dimension, as appropriate.

has super-classes
E1 — CRM Entity [c]
is in domain of
P91 — has unit [op], P90 — has value [dp], L61i — has value set representation [op], P43i — is dimension of [op]
is in range of
L61 — contains value set of [op], P43 — has dimension [op], P91i — is unit of [op]

F2 — Expression[c]

IRI: http://iflastandards.info/ns/lrm/lrmoo/F2_Expression

This class comprises the intellectual or artistic realisations of Works in the form of identifiable immaterial objects, such as texts, poems, jokes, musical or choreographic notations, movement pattern, sound pattern, images, multimedia objects, or any combination of such forms. The substance of F2 Expression is signs. An Expression is the outcome of the intellectual or creative process of realizing a Work. Subsequent expressions conveying the same work may be created over time. Expressions do not depend on a specific physical carrier and can exist on one or more carriers simultaneously. As far as bibliographic practice is concerned, only instances of F2 Expression that are externalised on physical carriers other than both the creator's brain and an auditor's brain are taken into account. The form of F2 Expression is an inherent characteristic of the F2 Expression. Differences in form imply different Expressions (e.g., from text to spoken word, a transcript of a recording). Similarly, differences in language or means of performance imply different Expressions (e.g., translations or arrangements for different instruments). Thus, if a text is revised or modified, the result is considered to be a new F2 Expression. While theoretically any change in signs will result in a new Expression, conventionally the context and use will determine the rules for distinguishing among expressions. An instance of F2 Expression which includes spoken or written text may be multiply instantiated as an instance of E33 Linguistic Object. This allows for the association of the E56 Language of the text with the instance of F2 Expression by using the property P72 has language (is language of) .

has super-classes
E89 — Propositional Object [c], E90 — Symbolic Object [c]
is in domain of
R76i — has derivative [op], R75 — incorporates [op], R76 — is derivative of [op], R4i — is embodied in [op], R75i — is incorporated in [op], R3i — realises [op], R17i — was created by [op]
is in range of
R17 — created [op], R4 — embodies [op], R76i — has derivative [op], R75 — incorporates [op], R76 — is derivative of [op], R75i — is incorporated in [op], R3 — is realised in [op]

F28 — Expression Creation[c]

IRI: http://iflastandards.info/ns/lrm/lrmoo/F28_Expression_Creation

This class comprises activities that result in instances of F2 Expression coming into existence. An instance of F2 Expression is considered to be created when it is captured on a carrier other than the creator's brain. Although F2 Expression is an abstract entity, a conceptual object, the creation of an expression inevitably also affects the physical world: when you scribble the first draft of a poem on a sheet of paper, you produce an instance of F3 Manifestation and an instance of F5 Item. F28 Expression Creation is a subclass of E12 Production because the recording of the expression causes a physical modification of the E18 Physical Thing that serves as the carrier. The creation of an instance of F2 Expression coincides with the creation of the first instance of F3 Manifestation that R4 embodies (is embodied in) this instance of F2 Expression. The P2 has type (is type of) property can be used to specify the type of the instance of F28 Expression Creation (i.e., activities such as translating, revising, or arranging music are types of creation process). The type of the process is distinct from the type of result even though the typology frequently used for instances of the resulting F2 Expressions may imply the category of the instance of the F28 Expression Creation. An instance of F28 Expression Creation may use as source material one or more specific instances of F2 Expression. When the source expression is documented this is also expressed by the property R76 is derivative of (has derivative) .

has super-classes
    E12 — Production [c]
is in domain of
    R17 — created [op]
is in range of
    R17i — was created by [op]

E22 — Human-Made Object[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E22_Human-Made_Object

This class comprises all persistent physical objects of any size that are purposely created by human activity and have physical boundaries that separate them completely in an objective way from other objects. The class also includes all aggregates of objects made for functional purposes of whatever kind, independent of physical coherence, such as a set of chessmen.

has super-classes
    E18 — Physical Thing [c]
has sub-classes
    D13 — Digital Information Carrier [c]
is in domain of
    P55 — has current location [op], P54 — has current permanent location [op]
is in range of
    P55i — currently holds [op], P54i — is current permanent location of [op]

E42 — Identifier[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E42_Identifier

This class comprises strings or codes assigned to instances of E1 CRM Entity in order to identify them uniquely and permanently within the context of one or more organisations. Such codes are often known as inventory numbers, registration codes, etc. and are typically composed of alphanumeric sequences. Postal addresses, telephone numbers, URLs and e-mail addresses are characteristic examples of identifiers used by services transporting things between clients. The class E42 Identifier is not normally used for machine-generated identifiers used for automated processing unless these are also used by human agents.

has super-classes
E41 — Appellation [c], E90 — Symbolic Object [c]

F5 — Item[c]

IRI: http://iflastandards.info/ns/lrm/lrmoo/F5_Item

This class comprises physical objects (printed books, scores, CDs, DVDs, CD-ROMS, etc.) that were produced by (P186i) an industrial process involving a given instance of F3 Manifestation. As a result, all the instances of F5 Item associated with a given instance of F3 Manifestation are expected to carry the content defined in that instance of F3 Manifestation, although some or even all of them may happen to carry a content that significantly differs from it, due to either an accident in the course of industrial production, or subsequent physical modification or degradation. An instance of F5 Item that consists of a physical object or set of objects with clear physical boundaries is also an instance of E22 Human-Made Object. An instance of F5 Item that is stored on a part of a larger physical support (such as an electronic file among others on a disc) can also be considered to be an instance of E25 Human-Made Feature. The notion of F5 Item is only relevant with regard to the production process, from a bibliographic point of view. The physical units managed by cultural heritage institutions in their holdings are a distinct notion: a unit of holdings certainly can be equal to an instance of F5 Item, but it also can be either “bigger” than one (e.g., when two instances of F5 Item are bound together (in the case of printed books)), or “smaller” than one (e.g., for incomplete holdings, such as when only one CD from a two-CD set is held). From an operational point of view, cultural heritage institutions typically do not manage instances of F5 Item, but physical holdings units, instances of E19 Physical Object, although for libraries in most cases this is not significant because each item corresponds with a single unit. When this is not the case, the linkage between items and the units relevant for collection management can be recorded through the P46 is composed of (forms part of) property between instances of F5 Item and instances of E19 Physical Object. If needed, an instance of E19 Physical Object can be typed as a unit through the P2 has type (is type of) property.

has super-classes
E18 — Physical Thing [c]
is in domain of
P43 — has dimension [op], R28i — was produced by [op], P108i — was produced by [op]
is in range of
P108 — has produced [op], P43i — is dimension of [op], R28 — produced [op]

F32 — Item Production Event[c]

IRI: http://iflastandards.info/ns/lrm/lrmoo/F32_Item_Production_Event

This class comprises activities that result in one or more instances of F5 Item coming into existence. The production of a series of physical objects (printed books, scores, CDs, DVDs, CD-ROMs, etc.), producing a unique item (writing a manuscript on parchment, painting a watercolour, etc.), and the creation of a new copy of a file on an electronic carrier are all regarded as instances of F32 Item Production Event. For mass-produced items, the production process (no matter whether it is a book, a sound recording, a DVD, a cartographic resource, etc.) strives to produce items all as similar as possible to a prototype that displays all the features that all the copies of the publication should also display, which is reflected in the property R27 materialized: F3 Manifestation.

has super-classes
    E12 — Production [c]
is in domain of
    R27 — materialized [op], R28 — produced [op]
is in range of
    R27i — was materialized by [op], R28i — was produced by [op]

E56 — Language[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E56_Language

This class is a specialization of E55 Type and comprises the natural languages in the sense of concepts. This type is used categorically in the model without reference to instances of it, i.e. the Model does not foresee the description of instances of instances of E56 Language, e.g. “instances of Mandarin Chinese”. It is recommended that internationally or nationally agreed codes and terminology should be used to denote instances of E56 Language, such as those defined in ISO 639-3:2007 and later versions.

has super-classes
    E55 — Type [c]
is in domain of
    P72i — is language of [op]
is in range of
    P72 — has language [op]

E72 — Legal Object[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E72_Legal_Object

This class comprises those material or immaterial items to which instances of E30 Right, such as the right of ownership or use, can be applied. This is generally true for all instances of E18 Physical Thing. In the case of instances of E28 Conceptual Object, however, the identity of an instance of E28 Conceptual Object or the method of its use may be too ambiguous to reliably

establish instances of E30 Right, as in the case of taxa and inspirations. Ownership of corporations is currently regarded as out of scope of the CIDOC CRM.

has super-classes
E70 — Thing [c]
has sub-classes
E18 — Physical Thing [c], E90 — Symbolic Object [c]
is in domain of
P104 — is subject to [op]
is in range of
P104i — applies to [op]

E33 — Linguistic Object[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E33_Linguistic_Object

This class comprises identifiable expressions in natural language or languages. Instances of E33 Linguistic Object can be expressed in many ways: e.g. as written texts, recorded speech, or sign language. However, the CIDOC CRM treats instances of E33 Linguistic Object independently from the medium or method by which they are expressed. Expressions in formal languages, such as computer code or mathematical formulae, are not treated as instances of E33 Linguistic Object by the CIDOC CRM. These should be modelled as instances of E73 Information Object. In general, an instance of E33 Linguistic Object may also contain non-linguistic information, often of artistic or aesthetic value. Only in cases in which the content of an instance of E33 Linguistic Object can completely be expressed by a series of binary-encoded symbols, its content may be documented within a respective knowledge base by the property P190 has symbolic content: E62 String. Otherwise, it should be understood as an identifiable digital resource only available independently from the respective knowledge base. In other cases, such as pages of an illuminated manuscript or recordings containing speech in a language supported by a writing system, the linguistic part of the content of an instance of E33 Linguistic Object may be documented within a respective knowledge base in a note by P3 has note: E62 String. Otherwise, it may be described using the property P165 incorporates (is incorporated in): E73 Information Object as a different object with its own identity.

has super-classes
E89 — Propositional Object [c], E90 — Symbolic Object [c]
has sub-classes
E35 — Title [c]
is in domain of
P72 — has language [op]
is in range of
P72i — is language of [op]

F3 — Manifestation[c]

IRI: http://iflastandards.info/ns/lrm/lrmoo/F3_Manifestation

This class comprises products rendering one or more Expressions. A Manifestation is defined by both the overall content and the form of its presentation. The substance of F3 Manifestation is not only signs, but also the manner in which they are presented to be consumed by users, including the kind of media adopted. An F3 Manifestation is the outcome of a publication process where one or more F2 Expressions are prepared for public dissemination, but it may also be a unique form created directly on some material carrier without the intent of being formally published. An instance of F3 Manifestation typically incorporates one or more instances of F2 Expression representing a distinct logical content and all additional input by a publisher such as text layout and cover design. Additionally an F3 Manifestation can be identified by the physical features for the medium of distribution, if applicable. For example, publications in the form of hard-cover and paperback editions would be two distinct instances of F3 Manifestation, even though authorial and editorial content are otherwise identical in both publications. In the case of industrial products such as printed books or music CDs, but also digital material, an instance of F3 Manifestation can be regarded as the prototype for all copies of it. In these cases, an instance of F3 Manifestation specifies all of the features or traits that instances of F5 Item display in order to be copies of a particular publication. In the case of industrial products, instances of F3 Manifestation are also instances of E99 Product Type, normally nowadays identified by characteristic identifiers such as ISBN numbers.

has super-classes
    E89 — Propositional Object [c], E90 — Symbolic Object [c]
is in domain of
    R4 — embodies [op], R78 — has alternate [op], R71 — has part [op], R71i — is part of [op], R24i — was created through [op], R27i — was materialized by [op]
is in range of
    R24 — created [op], R78 — has alternate [op], R71 — has part [op], R4i — is embodied in [op], R71i — is part of [op], R27 — materialized [op]

F30 — Manifestation Creation[c]

IRI: http://iflastandards.info/ns/lrm/lrmoo/F30_Manifestation_Creation

This class comprises the activities of selecting, arranging and presenting one or more instances of F2 Expression on a carrier or other persistent presentation means with the purpose of communicating it to some public. It includes the specification of the presentation as to sensory impression (such as visual appearance or audio rendition).

has super-classes
    E12 — Production [c]
is in domain of
    R24 — created [op]
is in range of
    R24i — was created through [op]

E57 — Material[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E57_Material

This class is a specialization of E55 Type and comprises the concepts of materials. Instances of E57 Material may denote properties of matter before its use, during its use, and as incorporated in an object, such as ultramarine powder, tempera paste, reinforced concrete. Discrete pieces of raw-materials kept in museums, such as bricks, sheets of fabric, pieces of metal, should be modelled individually in the same way as other objects. Discrete used or processed pieces, such as the stones from Nefer Titi's temple, should be modelled as parts (cf. P46 is composed of (forms part of): E18 Physical Thing). This type is used categorically in the model without reference to instances of it, i.e. the Model does not foresee the description of instances of instances of E57 Material, e.g. “instances of gold”. It is recommended that internationally or nationally agreed codes and terminology should be used.

has super-classes
    E55 — Type [c]
is in domain of
    P45i — is incorporated in [op]
is in range of
    P45 — consists of [op]

E58 — Measurement Unit[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E58_Measurement_Unit

This class is a specialization of E55 Type and comprises the types of measurement units: feet, inches, centimetres, litres, lumens, etc. This type is used categorically in the model without reference to instances of it, i.e. the model does not foresee the description of instances of instances of E58 Measurement Unit, e.g. “instances of cm”. Système International (SI) units or internationally recognized non-SI terms should be used whenever possible, such as those defined by ISO80000:2009. Archaic Measurement Units used in historical records should be preserved.

has super-classes
    E55 — Type [c]
is in domain of
    P91i — is unit of [op]
is in range of
    P91 — has unit [op]

E4 — Period[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E4_Period

This class comprises sets of coherent phenomena or cultural manifestations occurring in time and space. It is the social or physical coherence of these phenomena that identify an instance of E4 Period and not the associated spatiotemporal extent. This extent is only the “ground” or

space in an abstract physical sense that the actual process of growth, spread and retreat has covered. Consequently, different periods can overlap and coexist in time and space, such as when a nomadic culture exists in the same area and time as a sedentary culture. This also means that overlapping land use rights, common among first nations, amounts to overlapping periods. Often, this class is used to describe prehistoric or historic periods such as the “Neolithic Period”, the “Ming Dynasty” or the “McCarthy Era”, but also geopolitical units and activities of settlements are regarded as special cases of E4 Period. However, there are no assumptions about the scale of the associated phenomena. In particular all events are seen as synthetic processes consisting of coherent phenomena. Therefore, E4 Period is a superclass of E5 Event. For example, a modern clinical birth, an instance of E67 Birth, can be seen as both a single event, i.e. an instance of E5 Event, and as an extended period, i.e. an instance of E4 Period, that consists of multiple physical processes and complementary activities performed by multiple instances of E39 Actor. E4 Period is a subclass of E2 Temporal Entity and of E92 Spacetime Volume. The latter is intended as a phenomenal spacetime volume as defined in CIDOC CRMgeo (Doerr & Hiebel, 2013). By virtue of this multiple inheritance, it is possible to discuss the physical extent of an instance of E4 Period without representing each instance of it together with an instance of its associated spacetime volume. This model combines two quite different kinds of substance: an instance of E4 Period is a phenomenon while an instance of E92 Spacetime Volume is an aggregation of points in spacetime. However, the real spatiotemporal extent of an instance of E4 Period is regarded to be unique to it due to all its details and fuzziness; its identity and existence depends uniquely on the identity of the instance of E4 Period. Therefore, this multiple inheritance is unambiguous and effective and furthermore corresponds to the intuitions of natural language. Typical use of this class in cultural heritage documentation is for documenting cultural and artistic periods. There are two different conceptualisations of ‘artistic style’, defined either by physical features or by historical context. For example, “Impressionism” can be viewed as a period in the European sphere of influence lasting from approximately 1870 to 1905 during which paintings with particular characteristics were produced by a group of artists that included (among others) Monet, Renoir, Pissarro, Sisley and Degas. Alternatively, it can be regarded as a style applicable to all paintings sharing the characteristics of the works produced by the Impressionist painters, regardless of historical context. The first interpretation is an instance of E4 Period, and the second defines morphological object types that fall under E55 Type. A geopolitical unit as a specific case of an instance of E4 Period is the set of activities and phenomena related to the claim of power, the consequences of belonging to a jurisdictional area and an administrative system that establishes a geopolitical unit. Examples from the modern period are countries or administrative areas of countries such as districts whose actions and structures define activities and phenomena in the area that they intend to govern. The borders of geopolitical units are often defined in contracts or treaties although they may deviate from the actual practice. The spatiotemporal properties of Geopolitical units can be modelled through the properties inherited from E92 Spacetime Volume. Another specific case of an instance of E4 Period is the actual extent of the set of activities and phenomena as evidenced by their physical traces that define a settlement, such as the populated period of Nineveh.

has super-classes

E2 — Temporal Entity [c]

has sub-classes
E7 — Activity [c], E67 — Birth [c], E69 — Death [c]
is in domain of
P7 — took place at [op]
is in range of
P7i — witnessed [op]

E21 — Person[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E21_Person

This class comprises real persons who live or are assumed to have lived. Legendary figures that may have existed, such as Ulysses and King Arthur, fall into this class if the documentation refers to them as historical figures. In cases where doubt exists as to whether several persons are in fact identical, multiple instances can be created and linked to indicate their relationship. The CIDOC CRM does not propose a specific form to support reasoning about possible identity. In a bibliographic context, a name presented following the conventions usually employed for personal names will be assumed to correspond to an actual real person (an instance of E21 Person), unless evidence is available to indicate that this is not the case. The fact that a persona may erroneously be classified as an instance of E21 Person does not imply that the concept comprises personae.

has super-classes
E39 — Actor [c], E18 — Physical Thing [c]
is in domain of
P100i — died in [op], P98i — was born [op]
is in range of
P98 — brought into life [op], P100 — was death of [op]

E18 — Physical Thing[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E18_Physical_Thing

This class comprises all persistent physical items with a relatively stable form, human-made or natural. Depending on the existence of natural boundaries of such things, the CIDOC CRM distinguishes the instances of E19 Physical Object from instances of E26 Physical Feature, such as holes, rivers, pieces of land, etc. Most instances of E19 Physical Object can be moved (if not too heavy), whereas features are integral to the surrounding matter. An instance of E18 Physical Thing occupies not only a particular geometric space at any instant of its existence, but in the course of its existence it also forms a trajectory through spacetime, which occupies a real, that is phenomenal, volume in spacetime. We include in the occupied space the space filled by the matter of the physical thing and all its inner spaces, such as the interior of a box. For the purpose of more detailed descriptions of the presence of an instance of E18 Physical Thing in space and time it can be associated with its specific instance of E92 Spacetime Volume by the property P196 defines (is defined by). The CIDOC CRM is generally not concerned with amounts of matter in fluid or gaseous states, as long as they are not confined in an identifiable way for an identifiable minimal time-span.

has super-classes
E1 — CRM Entity [c], E72 — Legal Object [c]
has sub-classes
D13 — Digital Information Carrier [c], E22 — Human-Made Object [c], F5 — Item [c], E21 — Person [c]
is in domain of
P45 — consists of [op], P46i — forms part of [op], P44 — has condition [op], P46 — is composed of [op], L1i — was digitized by [op]
is in range of
L1 — digitized [op], P46i — forms part of [op], P46 — is composed of [op], P44i — is condition of [op], P45i — is incorporated in [op]

E53 — Place[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E53_Place

This class comprises extents in the natural space where people live, in particular on the surface of the Earth, in the pure sense of physics: independent from temporal phenomena and matter. They may serve describing the physical location of things or phenomena or other areas of interest. Geometrically, instances of E53 Place constitute single contiguous areas or a finite aggregation of disjoint areas in space which are each individually contiguous. They may have fuzzy boundaries. The instances of E53 Place are usually determined by reference to the position of “immobile” objects such as buildings, cities, mountains, rivers, or dedicated geodetic marks, but may also be determined by reference to mobile objects. A Place can be determined by combining a frame of reference and a location with respect to this frame. It is sometimes argued that instances of E53 Place are best identified by global coordinates or absolute reference systems. However, relative references are often more relevant in the context of cultural documentation and tend to be more precise. In particular, people are often interested in position in relation to large, mobile objects, such as ships. For example, the Place at which Nelson died is known with reference to a large mobile object, i.e. H.M.S Victory. A resolution of this Place in terms of absolute coordinates would require knowledge of the movements of the vessel and the precise time of death, either of which may be revised, and the result would lack historical and cultural relevance. Any instance of E18 Physical Thing can serve as a frame of reference for an instance of E53 Place. This may be documented using the property P157 is at rest relative to (provides reference space for).

has super-classes
E1 — CRM Entity [c]
is in domain of
P55i — currently holds [op], P54i — is current permanent location of [op], P7i — witnessed [op]
is in range of
P55 — has current location [op], P54 — has current permanent location [op], P7 — took place at [op]

E12 — Production[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E12_Production

This class comprises activities that are designed to, and succeed in, creating one or more new items. It specializes the notion of modification into production. The decision as to whether or not an object is regarded as new is context sensitive. Normally, items are considered “new” if there is no obvious overall similarity between them and the consumed items and material used in their production. In other cases, an item is considered “new” because it becomes relevant to documentation by a modification. For example, the scribbling of a name on a potsherd may make it a voting token. The original potsherd may not be worth documenting, in contrast to the inscribed one. This entity can be collective: the printing of a thousand books, for example, would normally be considered a single event. An event should also be documented using an instance of E81 Transformation if it results in the destruction of one or more objects and the simultaneous production of others using parts or material from the originals. In this case, the new items have separate identities and matter is preserved, but identity is not.

has super-classes
E7 — Activity [c]
has sub-classes
F28 — Expression Creation [c], F32 — Item Production Event [c], F30 — Manifestation Creation [c]
is in domain of
P108 — has produced [op], R27 — materialized [op]
is in range of
R27i — was materialized by [op], P108i — was produced by [op]

E89 — Propositional Object[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E89_Propositional_Object

This class comprises immaterial items, including but not limited to stories, plots, procedural prescriptions, algorithms, laws of physics or images that are, or represent in some sense, sets of propositions about real or imaginary things and that are documented as single units or serve as topic of discourse. This class also comprises items that are “about” something in the sense of a subject. In the wider sense, this class includes expressions of psychological value such as non-figural art and musical themes. However, conceptual items such as types and classes are not instances of E89 Propositional Object. This should not be confused with the definition of a type, which is indeed an instance of E89 Propositional Object.

has super-classes
E1 — CRM Entity [c], E70 — Thing [c]
has sub-classes
D1 — Digital Object [c], F2 — Expression [c], E33 — Linguistic Object [c], F3 — Manifestation [c], E30 — Right [c], E35 — Title [c], F1 — Work [c]
is in domain of
P67 — refers to [op]
is in range of
P67i — is referred to by [op]

E30 — Right[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E30_Right

This class comprises legal privileges concerning material and immaterial things or their derivatives. These include reproduction and property rights.

has super-classes
E89 — Propositional Object [c]
is in domain of
P104i — applies to [op]
is in range of
P104 — is subject to [op]

E90 — Symbolic Object[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E90_Symbolic_Object

This class comprises identifiable symbols and any aggregation of symbols, such as characters, identifiers, traffic signs, emblems, texts, data sets, images, musical scores, multimedia objects, computer program code, or mathematical formulae that have an objectively recognizable structure and that are documented as single units. It includes sets of signs of any nature, which may serve to designate something, or to communicate some propositional content. An instance of E90 Symbolic Object may or may not have a specific meaning, for example an arbitrary character string. In some cases, the content of an instance of E90 Symbolic Object may completely be represented by a serialized digital content model, such as a sequence of ASCII-encoded characters, an XML or HTML document, or a TIFF image. The property P3 has note and its subproperty P190 has symbolic content allow for the description of this content model. In order to disambiguate which symbolic level is the carrier of the meaning, the property P3.1 has type can be used to specify the encoding (e.g. “bit”, “Latin character”, RGB pixel).

has super-classes
E1 — CRM Entity [c], E72 — Legal Object [c]
has sub-classes
E41 — Appellation [c], D1 — Digital Object [c], F2 — Expression [c], E42 — Identifier [c], E33 — Linguistic Object [c], F3 — Manifestation [c], E35 — Title [c]
is in domain of
P106i — forms part of [op], P106 — is composed of [op]
is in range of
P106i — forms part of [op], P106 — is composed of [op]

E2 — Temporal Entity[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E2_Temporal_Entity

This class comprises all phenomena, such as the instances of E4 Periods and E5 Events, which happen over a limited extent in time. This extent in time must be contiguous, i.e., without

gaps. In case the defining kinds of phenomena for an instance of E2 Temporal Entity cease to happen, and occur later again at another time, we regard that the former instance of E2 Temporal Entity has ended and a new instance has come into existence. In more intuitive terms, the same event cannot happen twice. In some contexts, such phenomena are also called perdurants. This class is disjoint from E77 Persistent Item and is an abstract class that typically has no direct instances. E2 Temporal Entity is specialized into E4 Period, which applies to a particular geographic area (defined with a greater or lesser degree of precision), and E3 Condition State, which applies to instances of E18 Physical Thing.

has super-classes
E1 — CRM Entity [c]
has sub-classes
E3 — Condition State [c], E4 — Period [c]
is in domain of
P4 — has time-span [op]
is in range of
P4i — is time-span of [op]

E70 — Thing[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E70_Thing

This general class comprises discrete, identifiable, instances of E77 Persistent Item that are documented as single units, that either consist of matter or depend on being carried by matter and are characterized by relative stability. They may be intellectual products or physical things. They may, for instance, have a solid physical form, an electronic encoding, or they may be a logical concept or structure.

has super-classes
E1 — CRM Entity [c]
has sub-classes
E72 — Legal Object [c], E89 — Propositional Object [c], E55 — Type [c]
is in domain of
P43 — has dimension [op], P16i — was used for [op]
is in range of
P43i — is dimension of [op], P16 — used specific object [op]

E52 — Time-Span[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E52_Time-Span

This class comprises abstract temporal extents, in the sense of Galilean physics, having a beginning, an end, and a duration. Instances of E52 Time-Span have no semantic connotations about phenomena happening within the temporal extent they represent. They do not convey any meaning other than a positioning on the “time-line” of chronology. The actual extent of an instance of E52 Time-Span can be approximated by properties of E52 Time-Span giving inner and outer bounds in the form of dates (instances of E61 Time Primitive). Comparing knowledge about time-spans is fundamental for chronological

reasoning. Some instances of E52 Time-Span may be defined as the actual, in principle observable, temporal extent of instances of E2 Temporal Entity via the property P4 has time-span (is time-span of): E52 Time-Span. They constitute phenomenal time-spans as defined in CRMgeo (Doerr & Hiebel 2013). Since our knowledge of history is imperfect and physical phenomena are fuzzy in nature, the extent of phenomenal time-spans can only be described in approximation. An extreme case of approximation, might, for example, define an instance of E52 Time-Span having unknown beginning, end and duration. It may, nevertheless, be associated with other descriptions by which people can infer knowledge about it, such as in relative chronologies. Some instances of E52 may be defined precisely as representing a declaration of a temporal extent, as, for instance, done in a business contract. They constitute declarative time-spans as defined in CRMgeo (Doerr & Hiebel 2013) and can be described via the property E61 Time Primitive P170 defines time (time is defined by): E52 Time-Span. When used as a common E52 Time-Span for two events, it will nevertheless describe them as being simultaneous, even if nothing else is known.

has super-classes
E1 — CRM Entity [c]
is in domain of
P82 — at some time within [dp], P82a — begin of the begin [dp], P86i — contains [op], P82b — end of the end [dp], P86 — falls within [op], P67i — is referred to by [op], P4i — is time-span of [op]
is in range of
P86i — contains [op], P86 — falls within [op], P4 — has time-span [op], P67 — refers to [op]

E35 — Title[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E35_Title

This class comprises the textual strings that within a cultural context can be clearly identified as titles due to their form. Being a subclass of E41 Appellation, E35 Title can only be used when such a string is actually used as a title of a work, such as a text, an artwork, or a piece of music. Titles are proper noun phrases or verbal phrases, and should not be confused with generic object names such as “chair”, “painting”, or “book” (the latter are common nouns that stand for instances of E55 Type). Titles may be assigned by the creator of the work itself, or by a social group. This class also comprises the translations of titles that are used as surrogates for the original titles in different social contexts.

has super-classes
E41 — Appellation [c], E33 — Linguistic Object [c], E89 — Propositional Object [c], E90 — Symbolic Object [c]

E55 — Type[c]

IRI: http://www.cidoc-crm.org/cidoc-crm/E55_Type

This class comprises concepts denoted by terms from thesauri and controlled vocabularies used to characterize and classify instances of CIDOC CRM classes. Instances of E55 Type represent concepts, in contrast to instances of E41 Appellation which are used to name instances of CIDOC CRM classes. E55 Type provides an interface to domain specific ontologies

and thesauri. These can be represented in the CIDOC CRM as subclasses of E55 Type, forming hierarchies of terms, i.e. instances of E55 Type linked via P127 has broader term (has narrower term): E55 Type. Such hierarchies may be extended with additional properties.

has super-classes
E1 — CRM Entity [c], E70 — Thing [c]
has sub-classes
E56 — Language [c], E57 — Material [c], E58 — Measurement Unit [c]
is in domain of
P150 — defines typical parts of [op], P150i — defines typical wholes for [op], P127 — has broader term [op], P127i — has narrower term [op], P2i — is type of [op], P21i — was purpose of [op]
is in range of
P150 — defines typical parts of [op], P150i — defines typical wholes for [op], P21 — had general purpose [op], P127 — has broader term [op], P127i — has narrower term [op], P2 — has type [op]

F1 — Work[c]

IRI: http://iflastandards.info/ns/lrm/lrmoo/F1_Work

This class comprises distinct intellectual ideas conveyed in artistic and intellectual creations, such a poems, stories or musical compositions. A Work is the outcome of an intellectual process of one or more persons. Inherent to the notion of work is the existence of recognisable realizations of the work in the form of one or more expressions. Works are often regarded as finished and discrete e.g. when declared as such by the creator of the work or based on the elaboration or logical coherence of its content. However, works may be recognized as existing but unfinished e.g. if the creators deliberately or accidentally never explicitly finished a particular Expression but have left behind partial expressions. In the absence of explicit information about the initial conception, which is rarely available, the first expression created constitutes witness of the beginning of existence of a Work. A Work can evolve over time, such as through revised editions. A Work may be elaborated by one or more Actors simultaneously, in parallel, or over time. Additional expressions of a Work can continue to be created over time. The boundaries of a Work have nothing to do with the value of the intellectual achievement but only with the dominance of a concept. The main purpose of this class is to enable bringing together intellectually equivalent Expressions in order to display to a user all available alternatives of the same intellectual or artistic content.

has super-classes
E89 — Propositional Object [c]
is in domain of
R2i — has derivative [op], R2 — is derivative of [op], R3 — is realised in [op], R16i — was created by [op]
is in range of
R16 — created [op], R2i — has derivative [op], R2 — is derivative of [op], R3i — realises [op]

F27 — Work Creation[c]

IRI: http://iflastandards.info/ns/lrm/lrmoo/F27_Work_Creation

This class comprises activities by which instances of F1 Work come into existence. An instance of F27 Work Creation can serve to document the period a work was coming into existence and the circumstances of it, when these are known. An instance of F27 Work Creation marks the initial creation of an instance of F1 Work through expressions or other externalisations that are sufficiently elaborated so that the characteristic conceptual identity of the work could be recognized as existing. In many cases this will coincide with the first known complete externalisation of an expression of the work. In other cases, the initial creation of an instance of F1 Work may be inferred from multiple, or later, expressions or other forms of evidence. For instance, commissioning of a work may explicitly be agreed on after the presentation of an already complete and detailed elaboration of the work that was not made public. Performances may be prior to written expressions, as in the case of Shakespeare's works. The work, as an intellectual construction, may evolve from its initial creation onwards, until the last known expression of it. An instance of E39 Actor with which a work is associated through the chain of properties F1 Work. R16i was created by: F27 Work Creation. P14 carried out by (performed): E39 Actor corresponds to the notion of the "creator" of the work. In the situation where an expression of one instance of F1 Work serves as source material for the creation of the first expression of a new instance of F1 Work, the direct relationship between the works is indicated using the property R2 is derivative of (has derivative) between the two instances of F1 Work. The link to the specific source expression is indicated with the property P16 used specific object (was used for) using the path: F1 Work(1). R3 is realised in: F2 Expression(1). P16i was used for: F27 Work Creation. R16 created : F1 Work(2).

has super-classes
E7 — Activity [c]
is in domain of
R16 — created [op]
is in range of
R16i — was created by [op]

Object Properties

- P104i — applies to
- P98 — brought into life
- P14 — carried out by
- P45 — consists of
- P86i — contains
- L61 — contains value set of
- R16 — created
- R17 — created
- R24 — created
- P55i — currently holds
- P150 — defines typical parts of

- P150i — defines typical wholes for
- P100i — died in
- L1 — digitized
- R4 — embodies
- P86 — falls within
- P106i — forms part of
- P46i — forms part of
- P21 — had general purpose
- L11 — had output
- P14 — has abridger
- R78 — has alternate
- P127 — has broader term
- P44 — has condition
- P55 — has current location
- P54 — has current permanent location
- R2i — has derivative
- R76i — has derivative
- P43 — has dimension
- P72 — has language
- P127i — has narrower term
- P14 — has original author
- R71 — has part
- P108 — has produced
- P14 — has publisher
- P14 — has scientific editor
- P4 — has time-span
- P14 — has translator
- P2 — has type
- P91 — has unit
- L61i — has value set representation
- P1i — identifies
- R75 — incorporates
- P106 — is composed of
- P46 — is composed of
- P44i — is condition of
- P54i — is current permanent location of
- R2 — is derivative of
- R76 — is derivative of
- P43i — is dimension of
- R4i — is embodied in
- P1 — is identified by
- R75i — is incorporated in
- P45i — is incorporated in
- P72i — is language of
- R71i — is part of
- R3 — is realised in

- P67i — is referred to by
- L19i — is stored on
- P104 — is subject to
- P4i — is time-span of
- P2i — is type of
- P91i — is unit of
- R27 — materialized
- P14i — performed
- R28 — produced
- R3i — realises
- P67 — refers to
- L19 — stores
- P7 — took place at
- P16 — used specific object
- P98i — was born
- R16i — was created by
- R17i — was created by
- R24i — was created through
- P100 — was death of
- L1i — was digitized by
- R27i — was materialized by
- L11i — was output of
- R28i — was produced by
- P108i — was produced by
- P21i — was purpose of
- P16i — was used for
- P7i — witnessed

P104i — applies to[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P104i_applies_to

has domain
    E30 — Right [c]
has range
    E72 — Legal Object [c]
is inverse of
    P104 — is subject to [op]

P98 — brought into life[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P98_brought_into_life

This property links an instance of E67 Birth event to an instance of E21 Person in the role of offspring. Twins, triplets etc. are brought into life by the same instance of E67 Birth. This is not intended for use with general Natural History material, only people. There is no explicit method for modelling conception and gestation except by using extensions.

has domain
E67 — Birth [c]
has range
E21 — Person [c]
is inverse of
P98i — was born [op]

P14 — carried out by[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P14_carried_out_by

This property describes the active participation of an instance of E39 Actor in an instance of E7 Activity. It implies causal or legal responsibility. The P14.1 in the role of property of the property specifies the nature of an Actor's participation.

has sub-properties
P14 — has abridger [op], P14 — has original author [op], P14 — has publisher [op], P14 — has scientific editor [op], P14 — has translator [op]
has domain
E7 — Activity [c]
has range
E39 — Actor [c]
is inverse of
P14i — performed [op]

P45 — consists of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P45_consists_of

This property identifies the instances of E57 Materials of which an instance of E18 Physical Thing is composed. All physical things consist of physical materials. P45 consists of (is incorporated in) allows the different materials to be recorded. P45 consists of (is incorporated in) refers here to observed material as opposed to the consumed raw material. A material, such as a theoretical alloy, may not have any physical instances.

has domain
E18 — Physical Thing [c]
has range
E57 — Material [c]
is inverse of
P45i — is incorporated in [op]

P86i — contains[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P86i_contains

has domain
E52 — Time-Span [c]

has range
E52 — Time-Span c
is inverse of
P86 — falls within op

L61 — contains value set of op

IRI: http://www.cidoc-crm.org/extensions/crmdig/L61_contains_value_set_of

This property associates an instance of D9 Data Object with an instance of E54 Dimension, in the case that the former contains the set of values of the respective dimension in a digital format.

has domain
D1 — Digital Object c
D9 — Data Object c
has range
E54 — Dimension c
is inverse of
L61i — has value set representation op

R16 — created op

IRI: http://iflastandards.info/ns/lrm/lrmoo/R16_created

This property associates the initial creation of a work and the instance of F1 Work that was created.

has domain
F27 — Work Creation c
has range
F1 — Work c
is inverse of
R16i — was created by op

R17 — created op

IRI: http://iflastandards.info/ns/lrm/lrmoo/R17_created

This property associates an instance of F2 Expression that was externalised during a particular instance of F28 Expression Creation event with that particular creation event. An instance of expression creation creates an instance of expression and also creates any expressions that are parts of that expression.

has domain
F28 — Expression Creation c
has range
F2 — Expression c

is inverse of
R17i — was created by [op]

R24 — created[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R24_created

This property associates the instance of F3 Manifestation that was created during a particular instance of F30 Manifestation Creation with that instance of F30 Manifestation Creation event.

has domain
F30 — Manifestation Creation [c]
has range
F3 — Manifestation [c]
is inverse of
R24i — was created through [op]

P55i — currently holds[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P55i_currently_holds

has domain
E53 — Place [c]
has range
E22 — Human-Made Object [c]
is inverse of
P55 — has current location [op]

P150 — defines typical parts of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P150_defines_typical_parts_of

This property associates an instance of E55 Type “A” with an instance of E55 Type “B”, when items of type “A” typically form part of items of type “B”, such as “car motors” and “cars”. It allows types to be organised into hierarchies based on one type describing a typical part of another. This property is equivalent to “broader term partitive (BTP)” as defined in ISO 2788 and “broaderPartitive” in SKOS. This property is not transitive. This property is asymmetric.

has domain
E55 — Type [c]
has range
E55 — Type [c]
is inverse of
P150i — defines typical wholes for [op]

P150i — defines typical wholes for[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P150i_defines_typical_wholes_for

has domain
    E55 — Type [c]
has range
    E55 — Type [c]
is inverse of
    P150 — defines typical parts of [op]

P100i — died in[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P100i_died_in

has domain
    E21 — Person [c]
has range
    E69 — Death [c]
is inverse of
    P100 — was death of [op]

L1 — digitized[op]

IRI: http://www.cidoc-crm.org/extensions/crmdig/L1_digitized

This property associates an instance of D2 Digitization Process with an instance of E18 Physical Thing which is a material thing.

has domain
    D2 — Digitization Process [c]
has range
    E18 — Physical Thing [c]
is inverse of
    L1i — was digitized by [op]

R4 — embodies[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R4_embodies

This property associates an instance of F3 Manifestation with one or more instances of F2 Expression which are rendered by this instance of F3 Manifestation. The manifestation formats the expression(s) in the way they are to be presented to some public, including specifying the intended sensory impression (such as visual appearance or audio rendition).

has domain
    F3 — Manifestation [c]
has range

F2 — Expression [c]
is inverse of
R4i — is embodied in [op]

P86 — falls within[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P86_falls_within

This property describes the inclusion relationship between two instances of E52 Time-Span. This property supports the notion that the temporal extent of an instance of E52 Time-Span falls within the temporal extent of another instance of E52 Time-Span. It addresses temporal containment only, and no contextual link between the two instances of E52 Time-Span is implied. This property is transitive and reflexive.

has domain
E52 — Time-Span [c]
has range
E52 — Time-Span [c]
is inverse of
P86i — contains [op]

P106i — forms part of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P106i_forms_part_of

has domain
E90 — Symbolic Object [c]
has range
E90 — Symbolic Object [c]
is inverse of
P106 — is composed of [op]

P46i — forms part of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P46i_forms_part_of

has domain
E18 — Physical Thing [c]
has range
E18 — Physical Thing [c]
is inverse of
P46 — is composed of [op]

P21 — had general purpose[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P21_had_general_purpose

This property describes an intentional relationship between an instance of E7 Activity and some general goal or purpose, described as an instance of E55 Type. This may involve activities intended as preparation for some type of activity or event. P21 had general purpose (was purpose of) differs from P20 had specific purpose (was purpose of in that no specific event is implied as the purpose.

has domain
E7 — Activity [c]
has range
E55 — Type [c]
is inverse of
P21i — was purpose of [op]

L11 — had output[op]

IRI: http://www.cidoc-crm.org/extensions/crmdig/L11_had_output

This property associates an instance of D7 Digital Machine Event with an instance of D1 Digital Object which is the output of the activity.

has domain
D2 — Digitization Process [c]
D7 — Digital Machine Event [c]
has range
D1 — Digital Object [c]
is inverse of
L11i — was output of [op]

P14 — has abridger[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P14_has_abridger

Subproperty of P14_carried_out_by, restricted to the role of abridging a text (MARC Relator "abr" -- http://id.loc.gov/vocabulary/relators/abr). Declared following CIDOC-CRM's own official method for ".1" properties (Encoding Rule 4, imports/vendor/cidoc-crm-7.1.3.rdf). For example, the instance of F28_Expression_Creation that produces the abridged English version of "Murder on the Orient Express" (as published by HarperCollins, LRMoo's own official example) has abridger the person who produced that shortened version -- a role distinct from the original author of the full text.

has super-properties
P14 — carried out by [op]
has domain
E7 — Activity [c]
has range
E39 — Actor [c]

R78 — has alternate[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R78_has_alternate

This property associates one instance of F3 Manifestation with another instance of F3 Manifestation that exemplifies the same instance of F2 Expression, when the two instances of F3 Manifestation can be used as alternatives for each other in particular use cases. This property is transitive and symmetric. It is irreflexive. The alternative manifestations may be in the same physical form, for example, simultaneous publications in different markets. More frequently, the alternative relationship is established when the alternative manifestations are in different physical forms, designed to enable use of the same content with different playback equipment (such as a DVD and Blu-ray disc version of the same videorecording). This property is a shortcut for the path from one instance of F3 Manifestation to another instance of F3 Manifestation that are linked through R4 embodies (is embodied by) and its inverse, to the same instance of F2 Expression.

has domain
    F3 — Manifestation [c]
has range
    F3 — Manifestation [c]

P127 — has broader term[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P127_has_broader_term

This property associates an instance of E55 Type with another instance of E55 Type that has a broader meaning. It allows instances of E55 Types to be organised into hierarchies. This is the sense of “broader term generic (BTG)” as defined in ISO 25964-2:2013 (International Organization for Standardization 2013). This property is transitive. This property is asymmetric.

has domain
    E55 — Type [c]
has range
    E55 — Type [c]
is inverse of
    P127i — has narrower term [op]

P44 — has condition[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P44_has_condition

This property records an E3 Condition State for some E18 Physical Thing. This property is a shortcut of the more fully developed path from E18 Physical Thing through P34i was assessed by, E14 Condition Assessment, P35 has identified to E3 Condition State. It offers no information about how and when the E3 Condition State was established, nor by whom. An instance of E3 Condition State is specific to an instance of E18 Physical Thing.

has domain
E18 — Physical Thing [c]
has range
E3 — Condition State [c]
is inverse of
P44i — is condition of [op]

P55 — has current location[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P55_has_current_location

This property records the location of an instance of E19 Physical Object at the time of validity of the record or database containing the statement that uses this property. This property is a specialisation of P53 has former or current location (is former or current location of). It indicates that the instance of E53 Place associated with the instance of E19 Physical Object is the current location of the object. The property does not allow any indication of how long the object has been at the current location. This property is a shortcut. A more detailed representation can make use of the fully developed (i.e., indirect) path from E19 Physical Object, through, P25i moved by, E9 Move, P26 moved to to E53 Place if and only if this Move is the most recent.

has domain
E22 — Human-Made Object [c]
has range
E53 — Place [c]
is inverse of
P55i — currently holds [op]

P54 — has current permanent location[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P54_has_current_permanent_location

This property records the foreseen permanent location of an instance of E19 Physical Object at the time of validity of the record or database containing the statement that uses this property. P54 has current permanent location (is current permanent location of) is similar to P55 has current location (currently holds). However, it indicates the E53 Place currently reserved for an object, such as the permanent storage location or a permanent exhibit location. The object may be temporarily removed from the permanent location, for example when used in temporary exhibitions or loaned to another institution. The object may never actually be located at its permanent location.

has domain
E22 — Human-Made Object [c]
has range
E53 — Place [c]
is inverse of
P54i — is current permanent location of [op]

R2i — has derivative[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R2i_has_derivative

has domain
F1 — Work [c]
has range
F1 — Work [c]
is inverse of
R2 — is derivative of [op]

R76i — has derivative[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R76i_has_derivative

has domain
F2 — Expression [c]
has range
F2 — Expression [c]
is inverse of
R76 — is derivative of [op]

P43 — has dimension[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P43_has_dimension

This property records an instance of E54 Dimension of some instance of E70 Thing. In the case that the recorded property is a result of a measurement of an instance of E18 Physical Thing, this property is a shortcut of the more fully developed path from E18 Physical Thing through P39i was measured by, E16 Measurement, P40 observed dimension to E54 Dimension. It offers no information about how and when an E54 Dimension was established, nor by whom. Knowledge about an instance of E54 Dimension need not be the result of a measurement; it may be the result of evaluating data or other information, which should be documented as an instance of E13 Attribute Assignment. An instance of E54 Dimension is specific to an instance of E70 Thing.

has domain
F5 — Item [c]
E70 — Thing [c]
has range
E54 — Dimension [c]
is inverse of
P43i — is dimension of [op]

P72 — has language[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P72_has_language

This property associates an instance(s) of E33 Linguistic Object with an instance of E56 Language in which it is, at least partially, expressed. Linguistic Objects are composed in one or more human languages. This property allows these languages to be documented.

has domain
E33 — Linguistic Object [c]
has range
E56 — Language [c]
is inverse of
P72i — is language of [op]

P127i — has narrower term[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P127i_has_narrower_term

has domain
E55 — Type [c]
has range
E55 — Type [c]
is inverse of
P127 — has broader term [op]

P14 — has original author[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P14_has_original_author

Subproperty of P14_carried_out_by, restricted to the role of author of the original text (MARC Relator "aut" -- http://id.loc.gov/vocabulary/relators/aut). Declared following CIDOC-CRM's own official method for ".1" properties (Encoding Rule 4, imports/vendor/cidoc-crm-7.1.3.rdf). For example, the instance of F27_Work_Creation corresponding to the conception of the novel "Le Rouge et le Noir" has original author Stendhal -- a responsibility that remains unique and is not repeated for every later Expression or Manifestation of the work.

has super-properties
P14 — carried out by [op]
has domain
E7 — Activity [c]
has range
E39 — Actor [c]

R71 — has part[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R71_has_part

This property associates an instance of F3 Manifestation with a structural part of it that is itself an instance of F3 Manifestation. This property is transitive, asymmetric and irreflexive.

has domain

F3 — Manifestation [c]
has range
F3 — Manifestation [c]
is inverse of
R71i — is part of [op]

P108 — has produced[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P108_has_produced

This property identifies the instance of E24 Physical Human-Made Thing that came into existence as a result of the instance of E12 Production. The identity of an instance of E24 Physical Human-Made Thing is not defined by its matter, but by its existence as a subject of documentation. An E12 Production can result in the creation of multiple instances of E24 Physical Human-Made Thing.

has sub-properties
R28 — produced [op]
has domain
E12 — Production [c]
has range
F5 — Item [c]
is inverse of
P108i — was produced by [op]

P14 — has publisher[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P14_has_publisher

Subproperty of P14_carried_out_by, restricted to the role of commercial publisher/printer responsible for publishing or producing a manifestation or item (MARC Relator "pbl" -- http://id.loc.gov/vocabulary/relators/pbl, verified July 8, 2026: "A person or organization responsible for publishing, releasing, or issuing a resource."). Declared following CIDOC-CRM's own official method for ".1" properties (Encoding Rule 4, imports/vendor/cidoc-crm-7.1.3.rdf). Distinct from P14_has_scientific_editor: this property covers the commercial/material responsibility for publishing, the other the intellectual responsibility for the text's content. Applies to F30_Manifestation_Creation and F32_Item_Production_Event. For example, the instance of F30_Manifestation_Creation that establishes the 1927 critical edition of Stendhal's "Le Rouge et le Noir" has publisher Le Divan, the Paris publishing house responsible for publication and printing -- see decisions/fr/informe-activite-editoriale-scientifique.md.

has super-properties
P14 — carried out by [op]
has domain
E7 — Activity [c]
has range
E39 — Actor [c]

P14 — has scientific editor[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P14_has_scientific_editor

Subproperty of P14_carried_out_by, restricted to the role of scientific responsibility in editorially establishing a version of a work (revising the text, writing a preface or critical apparatus) (MARC Relator "edt" -- http://id.loc.gov/vocabulary/relators/edt, verified July 8, 2026: "A person, family, or organization contributing to a resource by revising or elucidating the content, e.g., adding an introduction, notes, or other critical matter. An editor may also prepare a resource for production, publication, or distribution."). Declared following CIDOC-CRM's own official method for ".1" properties (Encoding Rule 4, imports/vendor/cidoc-crm-7.1.3.rdf). Applies, by domain subsumption (E7_Activity), to F30_Manifestation_Creation and to any standalone E7_Activity linked to F5_Item/D1_Digital_Object via P16_used_specific_object. For example, the instance of F30_Manifestation_Creation that establishes the 1927 critical edition of Stendhal's "Le Rouge et le Noir" has scientific editor Henri Martineau, who revised the text and wrote the preface -- distinct from the publisher (see P14_has_publisher) who was commercially and materially responsible for the same manifestation -- see decisions/fr/informe-activite-editoriale-scientifique.md.

has super-properties
- P14 — carried out by [op]

has domain
- E7 — Activity [c]

has range
- E39 — Actor [c]

P4 — has time-span[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P4_has_time-span

This property associates an instance of E2 Temporal Entity with the instance of E52 Time-Span during which it was on-going. The associated instance of E52 Time-Span is understood as the real time-span during which the phenomena making up the temporal entity instance were active. More than one instance of E2 Temporal Entity may share a common instance of E52 Time-Span only if they come into being and end being due to identical declarations or events.

has domain
- E2 — Temporal Entity [c]

has range
- E52 — Time-Span [c]

is inverse of
- P4i — is time-span of [op]

P14 — has translator[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P14_has_translator

Subproperty of P14_carried_out_by, restricted to the role of translation (MARC Relator "trl" -- http://id.loc.gov/vocabulary/relators/trl). Declared following CIDOC-CRM's own official method for ".1" properties (Encoding Rule 4, imports/vendor/cidoc-crm-7.1.3.rdf). For example, the instance of F28_Expression_Creation producing the German version "Mord im Orientexpress" of an Agatha Christie novel (LRMoo's own official example) has translator the person who carried out that translation -- distinct from the original author of the English text.

has super-properties
P14 — carried out by [op]
has domain
E7 — Activity [c]
has range
E39 — Actor [c]

P2 — has type[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P2_has_type

This property allows sub-typing of CIDOC CRM entities –a form of specialisation – through the use of a terminological hierarchy, or thesaurus. The CIDOC CRM is intended to focus on the high-level entities and relationships needed to describe data structures. Consequently, it does not specialise entities any further than is required for this immediate purpose. However, entities in the isA hierarchy of the CIDOC CRM may by specialised into any number of sub-entities, which can be defined in the E55 Type hierarchy. E41 Appellation, for example, may be specialised into “e-mail address”, “telephone number”, “post office box”, “URL”, etc., none of which figures explicitly in the CIDOC CRM class hierarchy. A comprehensive explanation about refining CIDOC CRM concepts by E55 Type is given in the section “About Types” in the section on “Specific Modelling Constructs” of this document. This property is a shortcut for the path from E1 CRM Entity through P41i was classified by, E17 Type Assignment, P42 assigned to E55 Type.

has domain
E1 — CRM Entity [c]
has range
E55 — Type [c]
is inverse of
P2i — is type of [op]

P91 — has unit[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P91_has_unit

This property shows the type of unit an instance of E54 Dimension was expressed in.

has domain
E54 — Dimension [c]
has range
E58 — Measurement Unit [c]

is inverse of
P91i — is unit of [op]

L61i — has value set representation[op]

IRI: http://www.cidoc-crm.org/extensions/crmdig/L61i_has_value_set_representation

has domain
E54 — Dimension [c]
has range
D1 — Digital Object [c]
D9 — Data Object [c]
is inverse of
L61 — contains value set of [op]

P1i — identifies[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P1i_identifies

has domain
E41 — Appellation [c]
has range
E1 — CRM Entity [c]
is inverse of
P1 — is identified by [op]

R75 — incorporates[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R75_incorporates

This property associates an instance of F2 Expression with an instance of F2 Expression that is an integral part of the first, but where the latter realises a different instance of F1 Work from the first. This property is transitive, asymmetric and irreflexive.

has domain
F2 — Expression [c]
has range
F2 — Expression [c]
is inverse of
R75i — is incorporated in [op]

P106 — is composed of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P106_is_composed_of

This property associates an instance of E90 Symbolic Object with a part of it that is by itself an instance of E90 Symbolic Object, such as fragments of texts or clippings from an image. This property is transitive asymmetric.

has domain
E90 — Symbolic Object c
has range
E90 — Symbolic Object c
is inverse of
P106i — forms part of op

P46 — is composed of op

IRI: http://www.cidoc-crm.org/cidoc-crm/P46_is_composed_of

This property associates an instance of E18 Physical Thing with another instance of Physical Thing that forms part of it. The spatial extent of the composing part is included in the spatial extent of the whole. Component elements, since they are themselves instances of E18 Physical Thing, may be further analysed into sub-components, thereby creating a hierarchy of part decomposition. An instance of E18 Physical Thing may be shared between multiple wholes, for example two buildings may share a common wall. This property does not specify when and for how long a component element resided in the respective whole. If a component is not part of a whole from the beginning of existence or until the end of existence of the whole, the classes E79 Part Addition and E90 Part Removal can be used to document when a component became part of a particular whole and/or when it stopped being a part of it. For the time-span of being part of the respective whole, the component is completely contained in the place the whole occupies. This property is intended to describe specific components that are individually documented, rather than general aspects. Overall descriptions of the structure of an instance of E18 Physical Thing are captured by the P3 has note property. The instances of E57 Material of which an instance of E18 Physical Thing is composed should be documented using P45 consists of (is incorporated in). This property is transitive and asymmetric.

has domain
E18 — Physical Thing c
has range
E18 — Physical Thing c
is inverse of
P46i — forms part of op

P44i — is condition of op

IRI: http://www.cidoc-crm.org/cidoc-crm/P44i_is_condition_of

has domain
E3 — Condition State c
has range
E18 — Physical Thing c
is inverse of
P44 — has condition op

P54i — is current permanent location of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P54i_is_current_permanent_location_of

has domain
E53 — Place [c]
has range
E22 — Human-Made Object [c]
is inverse of
P54 — has current permanent location [op]

R2 — is derivative of[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R2_is_derivative_of

This property associates an instance of F1 Work which modifies the content of another instance of F1 Work with the latter. This property is transitive, asymmetric and irreflexive. This property is equivalent to the path: F1 Work(1). R3 is realised in: F2 Expression(1). R17i was created by: F28 Expression Creation. P16 used specific object : F2 Expression(2). R3i realises : F1 Work(2). That is, F1 Work(1). R2 is derivative of: F1 Work (2), without needing to specify the specific expressions involved in the derivation.

has domain
F1 — Work [c]
has range
F1 — Work [c]
is inverse of
R2i — has derivative [op]

R76 — is derivative of[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R76_is_derivative_of

This property associates an instance of F2 Expression with another instance of F2 Expression which was its source or one of its sources. This property is not transitive. It is asymmetric and irreflexive. This property is also a shortcut of the fully developed path: F2 Expression (1). P16i was used for : F28 Expression Creation. R17 created : F2 Expression (2).

has domain
F2 — Expression [c]
has range
F2 — Expression [c]
is inverse of
R76i — has derivative [op]

P43i — is dimension of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P43i_is_dimension_of

has domain
E54 — Dimension c
has range
F5 — Item c
E70 — Thing c
is inverse of
P43 — has dimension op

R4i — is embodied in op

IRI: http://iflastandards.info/ns/lrm/lrmoo/R4i_is_embodied_in

has domain
F2 — Expression c
has range
F3 — Manifestation c
is inverse of
R4 — embodies op

P1 — is identified by op

IRI: http://www.cidoc-crm.org/cidoc-crm/P1_is_identified_by

This property describes the naming or identification of any real-world item by a name or any other identifier. This property is intended for identifiers in general use, which form part of the world the model intends to describe, and not merely for internal database identifiers which are specific to a technical system, unless these latter also have a more general use outside the technical context. This property includes in particular identification by mathematical expressions such as coordinate systems used for the identification of instances of E53 Place. The property does not reveal anything about when, where and by whom this identifier was used. A more detailed representation can be made using the fully developed (i.e. indirect) path through E15 Identifier Assignment. This property is a shortcut for the path from E1 CRM Entity through P140i was attributed by, E15 Identifier Assignment, P37 assigned to E42 Identifier. It is also a shortcut for the path from E1 CRM Entity through P1 is identified by, E41 Appellation, P139 has alternative form to E41 Appellation.

has domain
E1 — CRM Entity c
has range
E41 — Appellation c
is inverse of
P1i — identifies op

R75i — is incorporated in op

IRI: http://iflastandards.info/ns/lrm/lrmoo/R75i_is_incorporated_in

has domain

F2 — Expression c
has range
F2 — Expression c
is inverse of
R75 — incorporates op

P45i — is incorporated in op

IRI: http://www.cidoc-crm.org/cidoc-crm/P45i_is_incorporated_in

has domain
E57 — Material c
has range
E18 — Physical Thing c
is inverse of
P45 — consists of op

P72i — is language of op

IRI: http://www.cidoc-crm.org/cidoc-crm/P72i_is_language_of

has domain
E56 — Language c
has range
E33 — Linguistic Object c
is inverse of
P72 — has language op

R71i — is part of op

IRI: http://iflastandards.info/ns/lrm/lrmoo/R71i_is_part_of

has domain
F3 — Manifestation c
has range
F3 — Manifestation c
is inverse of
R71 — has part op

R3 — is realised in op

IRI: http://iflastandards.info/ns/lrm/lrmoo/R3_is_realised_in

This property associates an instance of F2 Expression with an instance of F1 Work. This property expresses the association that exists between an expression and the work that this expression conveys. Our factual knowledge of how a given work is historically realised into expressions is often limited. Therefore, this property makes it possible to express the association between an instance of F2 Expression and the instance of F1 Work it conveys

without identifying the particular instances of F2 Expression that were part of a chain of derivation from the source.

has domain
F1 — Work [c]
has range
F2 — Expression [c]
is inverse of
R3i — realises [op]

P67i — is referred to by[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P67i_is_referred_to_by

has domain
E1 — CRM Entity [c]
E52 — Time-Span [c]
has range
E89 — Propositional Object [c]
is inverse of
P67 — refers to [op]

L19i — is stored on[op]

IRI: http://www.cidoc-crm.org/extensions/crmdig/L19i_is_stored_on

has domain
D1 — Digital Object [c]
has range
D13 — Digital Information Carrier [c]
is inverse of
L19 — stores [op]

P104 — is subject to[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P104_is_subject_to

This property links a particular instance of E72 Legal Object to the instances of E30 Right to which it is subject. The Right is held by an instance of E39 Actor as described by P75 possesses (is possessed by).

has domain
E72 — Legal Object [c]
has range
E30 — Right [c]
is inverse of
P104i — applies to [op]

P4i — is time-span of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P4i_is_time-span_of

has domain
    E52 — Time-Span [c]
has range
    E2 — Temporal Entity [c]
is inverse of
    P4 — has time-span [op]

P2i — is type of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P2i_is_type_of

has domain
    E55 — Type [c]
has range
    E1 — CRM Entity [c]
is inverse of
    P2 — has type [op]

P91i — is unit of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P91i_is_unit_of

has domain
    E58 — Measurement Unit [c]
has range
    E54 — Dimension [c]
is inverse of
    P91 — has unit [op]

R27 — materialized[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R27_materialized

This property associates an instance of F32 Item Production Event with the set of signs provided by the publisher to be carried by all of the produced items (i.e., the instances of F5 Item) and any other physical features foreseen as integral to the instance of F3 Manifestation that is materialised.

has super-properties
    P16 — used specific object [op]
has domain
    F32 — Item Production Event [c]
    E12 — Production [c]
has range

F3 — Manifestation c
is inverse of
R27i — was materialized by op

P14i — performed op

IRI: http://www.cidoc-crm.org/cidoc-crm/P14i_performed

has domain
E39 — Actor c
has range
E7 — Activity c
is inverse of
P14 — carried out by op

R28 — produced op

IRI: http://iflastandards.info/ns/lrm/lrmoo/R28_produced

This property associates an instance of F32 Item Production Event with any one of the produced items (i.e., the instances of F5 Item).

has super-properties
P108 — has produced op
has domain
F32 — Item Production Event c
has range
F5 — Item c
is inverse of
R28i — was produced by op

R3i — realises op

IRI: http://iflastandards.info/ns/lrm/lrmoo/R3i_realises

has domain
F2 — Expression c
has range
F1 — Work c
is inverse of
R3 — is realised in op

P67 — refers to op

IRI: http://www.cidoc-crm.org/cidoc-crm/P67_refers_to

This property documents that an instance of E89 Propositional Object makes a statement about an instance of E1 CRM Entity. P67 refers to (is referred to by) has the P67.1 has type link

to an instance of E55 Type. This is intended to allow a more detailed description of the type of reference. This differs from P129 is about (is subject of), which describes the primary subject or subjects of the instance of E89 Propositional Object.

has domain
E89 — Propositional Object [c]
has range
E1 — CRM Entity [c]
E52 — Time-Span [c]
is inverse of
P67i — is referred to by [op]

L19 — stores[op]

IRI: http://www.cidoc-crm.org/extensions/crmdig/L19_stores

This property associates an instance of a D13 Digital Information Carrier with the instance of Digital Object that is stored on it.

has domain
D13 — Digital Information Carrier [c]
has range
D1 — Digital Object [c]
is inverse of
L19i — is stored on [op]

P7 — took place at[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P7_took_place_at

This property describes the spatial location of an instance of E4 Period. The related instance of E53 Place should be seen as a wider approximation of the geometric area within which the phenomena that characterise the period in question occurred, see below. P7 took place at (witnessed) does not convey any meaning other than spatial positioning (frequently on the surface of the earth). For example, the period “Révolution française” can be said to have taken place in “France in 1789”; the “Victorian” period may be said to have taken place in “Britain from 1837-1901” and its colonies, as well as other parts of Europe and North America. An instance of E4 Period can take place at multiple non-contiguous, non-overlapping locations. Any place where something happened includes the spatial projection of the happening given in the same geometric reference system. For instance, HMS Victory, as place of Lord Nelson's dying, includes the location of his body relative to the hull of HMS Victory at his time of death as the most precise location of his death. By the definition of P161 has spatial projection, an instance of E4 Period takes place on all its spatial projections to respective reference systems, that is, instances of E53 Place. Therefore, this property implies the more fully developed path from E4 Period through P161 has spatial projection, E53 Place, P89 falls within to E53 Place, where both places are defined in the same geometric reference system. The relation between an instance of E53 Place and its reference system can conveniently be documented via the property P157 is at rest relative to (provides reference space for).

Something that has happened at a given place can also be considered to have happened at a smaller place within it: for example, it is reasonable to say Caesar's murder took place in Rome, but also on the Forum Romanum, and more precisely in the Curia. It is characteristic for different historical sources to use varying precision in such statements, without being in contradiction with each other. This may be due to lack of knowledge or to the relevance of the precision for the purpose of the statement. In information integration, the more precise statement improves the overall knowledge.

has domain
    E4 — Period [c]
has range
    E53 — Place [c]
is inverse of
    P7i — witnessed [op]

P16 — used specific object[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P16_used_specific_object

This property describes the use of material or immaterial things in a way essential to the performance or the outcome of an instance of E7 Activity. This property typically applies to tools, instruments, moulds, raw materials and items embedded in a product. It implies that the presence of the object in question was a necessary condition for the action. For example, the activity of writing this text required the use of a computer. An immaterial thing can be used if at least one of its carriers is present. For example, the software tools on a computer. Another example is the use of a particular name by a particular group of people over some span to identify a thing, such as a settlement. In this case, the physical carriers of this name are at least the people understanding its use.

has sub-properties
    R27 — materialized [op]
has domain
    E7 — Activity [c]
has range
    E70 — Thing [c]
is inverse of
    P16i — was used for [op]

P98i — was born[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P98i_was_born

has domain
    E21 — Person [c]
has range
    E67 — Birth [c]
is inverse of
    P98 — brought into life [op]

R16i — was created by[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R16i_was_created_by

has domain
    F1 — Work [c]
has range
    F27 — Work Creation [c]
is inverse of
    R16 — created [op]

R17i — was created by[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R17i_was_created_by

has domain
    F2 — Expression [c]
has range
    F28 — Expression Creation [c]
is inverse of
    R17 — created [op]

R24i — was created through[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R24i_was_created_through

has domain
    F3 — Manifestation [c]
has range
    F30 — Manifestation Creation [c]
is inverse of
    R24 — created [op]

P100 — was death of[op]

IRI: http://www.cidoc-crm.org/cidoc-crm/P100_was_death_of

This property links an instance of E69 Death to the instance of E21 Person that died. An instance of E69 Death may involve multiple people, for example in the case of a battle or disaster. This is not intended for use with general natural history material, only people.

has domain
    E69 — Death [c]
has range
    E21 — Person [c]
is inverse of
    P100i — died in [op]

L1i — was digitized by[op]

IRI: http://www.cidoc-crm.org/extensions/crmdig/L1i_was_digitized_by

has domain
    E18 — Physical Thing [c]
has range
    D2 — Digitization Process [c]
is inverse of
    L1 — digitized [op]

R27i — was materialized by[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R27i_was_materialized_by

has super-properties
    P16i — was used for [op]
has domain
    F3 — Manifestation [c]
has range
    F32 — Item Production Event [c]
    E12 — Production [c]
is inverse of
    R27 — materialized [op]

L11i — was output of[op]

IRI: http://www.cidoc-crm.org/extensions/crmdig/L11i_was_output_of

has domain
    D1 — Digital Object [c]
has range
    D2 — Digitization Process [c]
    D7 — Digital Machine Event [c]
is inverse of
    L11 — had output [op]

R28i — was produced by[op]

IRI: http://iflastandards.info/ns/lrm/lrmoo/R28i_was_produced_by

has super-properties
    P108i — was produced by [op]
has domain
    F5 — Item [c]
has range
    F32 — Item Production Event [c]
is inverse of

R28 — produced op

P108i — was produced by op

IRI: http://www.cidoc-crm.org/cidoc-crm/P108i_was_produced_by

has sub-properties
R28i — was produced by op
has domain
F5 — Item c
has range
E12 — Production c
is inverse of
P108 — has produced op

P21i — was purpose of op

IRI: http://www.cidoc-crm.org/cidoc-crm/P21i_was_purpose_of

has domain
E55 — Type c
has range
E7 — Activity c
is inverse of
P21 — had general purpose op

P16i — was used for op

IRI: http://www.cidoc-crm.org/cidoc-crm/P16i_was_used_for

has sub-properties
R27i — was materialized by op
has domain
E70 — Thing c
has range
E7 — Activity c
is inverse of
P16 — used specific object op

P7i — witnessed op

IRI: http://www.cidoc-crm.org/cidoc-crm/P7i_witnessed

has domain
E53 — Place c
has range
E4 — Period c
is inverse of

P7 — took place at op

Data Properties

- P82 — at some time within
- P82a — begin of the begin
- P82b — end of the end
- P3 — has note
- P90 — has value

P82 — at some time within dp

IRI: http://www.cidoc-crm.org/cidoc-crm/P82_at_some_time_within

This property describes the maximum period of time within which an E52 Time-Span falls. Since Time-Spans may not have precisely known temporal extents, the CIDOC CRM supports statements about the minimum and maximum temporal extents of Time-Spans. This property allows a Time-Span's maximum temporal extent (i.e. its outer boundary) to be assigned an E61 Time Primitive value. Time Primitives are treated by the CIDOC CRM as application or system specific date intervals, and are not further analysed. If different sources of evidence justify different maximum extents without contradicting each other, the resulting intersection of all these extents will be the best estimate. This should be taken into account for information integration.

has sub-properties
P82a — begin of the begin dp, P82b — end of the end dp
has domain
E52 — Time-Span c
has range
Literal
date Time

P82a — begin of the begin dp

IRI: http://www.cidoc-crm.org/cidoc-crm/P82a_begin_of_the_begin

has super-properties
P82 — at some time within dp
has domain
E52 — Time-Span c
has range
Literal
date Time

P82b — end of the end dp

IRI: http://www.cidoc-crm.org/cidoc-crm/P82b_end_of_the_end

has super-properties
P82 — at some time within dp
has domain
E52 — Time-Span c
has range
Literal
date Time

P3 — has note dp

IRI: http://www.cidoc-crm.org/cidoc-crm/P3_has_note

This property is a container for all informal descriptions about an object that have not been expressed in terms of CIDOC CRM constructs. In particular, it captures the characterisation of the item itself, its internal structures, appearance, etc. Like property P2 has type (is type of), this property is a consequence of the restricted focus of the CIDOC CRM. The aim is not to capture, in a structured form, everything that can be said about an item; indeed, the CIDOC CRM formalism is not regarded as sufficient to express everything that can be said. Good practice requires use of distinct note fields for different aspects of a characterisation. The P3.1 has type property of P3 has note allows differentiation of specific notes, e.g. “construction”, “decoration”, etc. An item may have many notes, but a note is attached to a specific item.

has domain
E1 — CRM Entity c
has range
Literal

P90 — has value dp

IRI: http://www.cidoc-crm.org/cidoc-crm/P90_has_value

This property allows an instance of E54 Dimension to be approximated by an instance of E60 Number primitive.

has domain
E54 — Dimension c
has range
Literal
integer

Annotation Properties

- abstract
- bibliographic Citation
- contributor
- created
- creator
- description

- description
- issued
- license
- license
- logo
- preferred Namespace Prefix
- preferred Namespace Uri
- publisher
- references
- rights
- source
- status
- title

abstract[ap]

IRI: http://purl.org/dc/terms/abstract

bibliographic Citation[ap]

IRI: http://purl.org/dc/terms/bibliographicCitation

contributor[ap]

IRI: http://purl.org/dc/elements/1.1/contributor

created[ap]

IRI: http://purl.org/dc/terms/created

creator[ap]

IRI: http://purl.org/dc/elements/1.1/creator

description[ap]

IRI: http://purl.org/dc/elements/1.1/description

description[ap]

IRI: http://purl.org/dc/terms/description

issued[ap]

IRI: http://purl.org/dc/terms/issued

license[ap]

IRI: http://purl.org/dc/elements/1.1/license

license[ap]

IRI: http://purl.org/dc/terms/license

logo[ap]

IRI: http://xmlns.com/foaf/0.1/logo

preferred Namespace Prefix[ap]

IRI: http://purl.org/vocab/vann/preferredNamespacePrefix

preferred Namespace Uri[ap]

IRI: http://purl.org/vocab/vann/preferredNamespaceUri

publisher[ap]

IRI: http://purl.org/dc/terms/publisher

references[ap]

IRI: http://purl.org/dc/terms/references

rights[ap]

IRI: http://purl.org/dc/elements/1.1/rights

source[ap]

IRI: http://purl.org/dc/terms/source

status[ap]

IRI: https://w3id.org/mod#status

title[ap]

IRI: http://purl.org/dc/elements/1.1/title

Legend

[c]: Classes
[op]: Object Properties

ᵈᵖ: Data Properties

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Acknowledgments

The Metadata Working Group of the Huma-Num ARIANE Consortium would like to express its sincere gratitude to Andrés Echavarría Peláez and Mélanie Bouland for their outstanding contribution to the design, coordination, and development of this ontology.

The Working Group also gratefully acknowledges the support of the Huma-Num IR* research infrastructure, and extends its special thanks to Fatiha Idmhand, Ioana Galleron, and Sabine Loudcher for their commitment as coordinators of the ARIANE Consortium from 2023 to 2026, as well as for their roles as coordinators and active members of the Working Group.

The Working Group further wishes to thank all members of the AMIS (Advanced Metadata Intelligent System) project, Ala Eddine Laouir, Ameni Guizani, Roxana Patras, Amelia Sanz, and Simone Rebora, whose careful reading, insightful comments, and stimulating discussions

have significantly enriched this work, which lies at the intersection of knowledge modelling, Semantic Web technologies, Digital Humanities, and Comparative Literary Studies.

The Working Group also wishes to thank the members of the Huma-Num MASAPlus Consortium, and especially Florian Hivert and Olivier Marlet, for their valuable advice, recommendations, and constructive discussions throughout the development of this ontology.

The authors would like to thank Silvio Peroni for developing LODE, a Live OWL Documentation Environment, which is used for representing the Cross Referencing Section of this document and Daniel Garijo for developing Widoco, the program used to create the template used in this documentation.