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| LRMoo-FRBRoo  *object-oriented definition and mapping from LRM - FRBRER, FRAD and FRSAD*  *(version 0.5)* |

International Working Group on LRM, FRBR and CIDOC CRM Harmonisation

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[Option a) Modify E74 Group so that it clearly corresponds to LRM-E8 Collective Agent. Do not create an additional class. To do this any groups of people not having agency, such as national, religious, cultural, ethnic groups, must be excluded from the scope of E74. In this option there is no problem with E74 as a subclass of E39 Actor or superclass of E40, F11 and F39. Nothing needs to change formally, however certain instances attributed to this class may be incorrect. 130](#_Toc21450506)

[Consequence: In the mapping from LRM(er), the Intended Audience attributes cannot be mapped using only LRM-E8 as national, religious, cultural, ethnic, linguistic and age groups are valid as intended audiences. Unclear what existing constructs can be used for these attributes. 130](#_Toc21450507)

[Option b) Define an LRMoo class for LRM-E8 Collective Agent, with the LRM definition and examples, but declare the equivalence with E74 so as to preserve the hierarchical structure. However, there may be instances of E74 that are not actually instances of LRM-E8. The mapping of the Intended Audience attributes can continue to use E74 (not the LRMoo class). 130](#_Toc21450508)

[Option c) Define a Collective Agent/Collective Actor class in CRMbase/LRMoo to exactly match LRM-E8. Keep the new class in the hierarchy between E39 Actor and E40, F11, F39. Keep E74 Group with a broader definition, but remove E39 Actor as its superclass (E40, F11, F39 and the new Collective Agent class can all be subclasses of both E74 and E39). Make E74 a direct subclass of E77 Persistent Item. Use E74 Group in the mapping of the Intended Audience attributes. 130](#_Toc21450509)

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# Foreword

This document contains a comprehensive description of the object-oriented definition of FRBR, a model in the form of a formal ontology interpreting FRBR for specific purposes, as analysed below. The document comprises the following sections:

* Section 1, The Introduction, describes the rationale, history and methodology of the development of this model.
* Section 2, The Description of the Model, explains the model in context from a functional perspective with the help of a comprehensive graphical representation of all constructs, describes the format conventions for the formal specifications, and lists the complete class and property definitions that make up the model. Whereas the first serves an overall understanding, the second is the reference for the individual declarations. Here a first reading may stop.
* Section 3 describes the mapping of the entity-relationship models of the FRBR family to the object-oriented model FRBROO. This section defines the transition from one form to the other, and serves as information for further understanding of the intended meaning of the object-oriented definition. It is also a proof that the object-oriented form is an alternative view of the FRBR family, and a proof of completeness of the object-oriented form with respect to the original.
* Since the object-oriented model reuses, wherever appropriate, large parts of ISO21127, the CIDOC Conceptual Reference Model, section 4 provides a comprehensive list of all constructs used from ISO21127, together with their definitions following version 6.0 maintained by CIDOC. Some of these constructs appear only in the mapping in section 3 and not in section 2, because they are generic in nature.
* Section 5 provides a bibliography.
* Section 6 traces changes that were made in previous versions of the model.

# 1. Introduction

This document is the definition of the object-oriented version of the **FRBR[[1]](#footnote-1)** family of conceptual models[[2]](#footnote-2), harmonised with CIDOC CRM, hereafter referred to as **FRBROO**, a formal ontology that captures and represents the underlying semantics of bibliographic information and therefore facilitates the integration, mediation, and interchange of bibliographic and museum information. Such a common view is necessary for the development of interoperable information systems serving users interested in accessing common or related content. Beyond that, it results in a formalisation which is more suited for the implementation of concepts from the FRBR family of conceptual models with object-oriented tools, and which facilitates the testing and adoption of these concepts in implementations with different functional specifications and beyond the library domain. It applies empirical analysis and ontological structure to the entities and processes associated with the bibliographic universe, to their properties, and to the relationships among them. It thereby reveals a web of interrelationships, which are also applicable to information objects in non-bibliographic arenas[[3]](#footnote-3).

The FRBR model was designed as an entity-relationship model by a study group appointed by the International Federation of Library Associations and Institutions (IFLA) during the period 1991-1997, it was approved by the IFLA Cataloguing Section in 1997, and was published in 1998. The original entity-relationship definition of FRBR is referred to hereafter as FRBRER.

Quite independently, the CIDOC CRM[[4]](#footnote-4) model was being developed, beginning in 1996, under the auspices of the ICOM-CIDOC (International Council for Museums – International Committee on Documentation) Documentation Standards Working Group. The definition of the CIDOC CRM model was adopted as ISO standard 21127.[[5]](#footnote-5)

The idea that both the library and museum communities might benefit from harmonising their two models was first expressed in 2000, on the occasion of ELAG’s (European Library Automation Group) 24th Library Systems Seminar in Paris. This idea led to the formation, in 2003, of the International Working Group on FRBR/CIDOC CRM Harmonisation, that brings together representatives from both communities with the common goals of: a) Expressing the IFLA FRBR model with the concepts, tools, mechanisms, and notation conventions provided by the CIDOC CRM, and: b) Aligning (possibly even merging) the two object-oriented models thus obtained.

The International Working Group on FRBR/CIDOC CRM Harmonisation, formed in 2003 and chaired by Martin Doerr (ICS FORTH, Greece), Patrick Le Bœuf (BnF, France), and Pat Riva (BAnQ, Canada), is affiliated at the same time to the IFLA FRBR Review Group and the CIDOC CRM Special Interest Group (CRM-SIG). The present definition of FRBROO was developed through email exchange among members of the Working Group, and more importantly during a series of meetings.

Version 1.0 of FRBROOwas finally approved and issued in January 2010; it covered the entities and concepts from FRBR and included an appendix on identifier creation. The focus of later meetings has been to extend the model to fully encompass the published versions of the FRAD and FRSAD models. Version 2.1 is the result of this expansion.

More information on the activities of the Group, minutes of the meetings and all previous versions can be found on <http://archive.ifla.org/VII/s13/wgfrbr/FRBR-CRMdialogue_wg.htm> and on [http://cidoc.ics.forth.gr/frbr\_ inro.html](http://cidoc.ics.forth.gr/frbr_inro.html).

## 1.1. Purposes

This model represents FRBR, FRAD and FRSAD through modelling the conceptualisation of the reality behind library practice, as it is apparent from or implicit in the FRBR family of models. It is important to keep in mind that the aim is not to transform the IFLA models into something conceptually different, but to express the conceptualisation of the FRBR family within the object-oriented methodology instead of the entity-relationship methodology. Furthermore, the intention is to identify the common ground that memory institutions share and to exploit it by pursuing the following objectives.

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### 1.1.4. An Opportunity for Mutual Enrichment for the FRBR Family and CIDOC CRM

The CIDOC CRM model is influenced by the process of FRBR’s re-formulation as well. Modelling bibliographic information highlights some issues that may have been overlooked during the development of CIDOC CRM, and the way such issues are addressed in FRBROO resulted in some cases in making changes in the CIDOC CRM model. These changes are so significant that a revision of the ISO standard 21127 was required.

### 1.1.5. An Extension of the FRBR Family and the CIDOC CRM

The harmonisation between the two models is also an opportunity to extend the scope of the CIDOC CRM to bibliographic information, which paves the way for extensions to other domains and formats, such as EAD, TEI, MPEG7, just to name a few. Consequently, it also extends the scope of the FRBR family of conceptual models to cultural materials, since FRBROO inherits all concepts of the CIDOC CRM, and opens the way for the IFLA models to benefit from further extensions of the scope of CIDOC CRM, such as the scientific htage of observations and experiments.

### 1.1.6. Sources

The main source for the task of translating FRBR into the object-oriented formalism was, quite naturally, the IFLA *Final Report* that contains the complete definition of FRBRER itself:

IFLA Study Group on the functional requirements for bibliographic records. *Functional requirements for bibliographic records:* final report. Munich, Germany: K. G. Saur, 1998. Also available online from World Wide Web: <<http://www.ifla.org/en/publications/functional-requirements-for-bibliographic-records>>.

Common awareness of the *Definition of the CIDOC Conceptual Reference Model* provides the required conceptual and technical background:

ICOM/CIDOC Documentation Standards Group; CIDOC CRM Special Interest Group. Definition of the CIDOC Conceptual Reference Model: version 6.0, January 2015. [Heraklion, Greece]: [ICS-FORTH], 2014. Available online at: <<http://www.cidoc-crm.org/docs/cidoc_crm_version_6.0.doc>>, or: <<http://www.cidoc-crm.org/docs/cidoc_crm_version_6.0.pdf>>.

In the preparation of version 2.1 of FRBROO the final approved statements of the FRAD and FRSAD models were used.

IFLA Working Group on Functional Requirements and Numbering of Authority Records (FRANAR); Glenn E. Patton, ed., *Functional requirements for authority data: a conceptual model*. München: K.G. Saur, 2009. <<http://www.ifla.org/publications/functional-requirements-for-authority-data>>.

IFLA Working Group on the Functional Requirements for Subject Authority Records (FRSAR); Marcia Lei Zeng, Maja Žumer and Athena Salaba, ed., *Functional requirements for subject authority data (FRSAD): a conceptual model*. Berlin: De Gruyter Saur, 2011. Also available online from World Wide Web: <<http://www.ifla.org/node/5849>>.

### 1.1.7. Understanding the Attributes and Relationships

The methodology consisted in a thorough examination of all attributes and relationships declared in the FRBR family. During its meetings, the International Working Group on FRBR/CIDOC CRM Harmonisation strove to extract the semantics as accurately as possible, to express them as “properties” in the sense of CIDOC CRM, and to relate them to CIDOC CRM properties where possible. Entities, or classes in the terminology adopted by the CIDOC CRM, play a nearly secondary role as the maximal sets of things for which a property is applicable.

### 1.1.8. Transforming Attributes into Properties

The CIDOC CRM model declares no “attributes” at all, but regards any information element as a “property” (or “relationship”) between two classes. The semantics extracted from FRBRER, FRAD and FRSAD attributes are therefore rendered in FRBROO as properties, according to the same principles as the CIDOC CRM model.

### 1.1.9. By-Product 1: Re-Contextualising Bibliographic Entities

The process of interpreting the precise semantic value of each individual attribute declared in FRBRER and expressing that semantic value in CRM-like structures resulted also in two by-products.

The first by-product was that it proved necessary to explain and model the general context within which the bibliographic entities isolated in FRBRER come into being. FRBRER envisions bibliographic entities as static, ever-existing things that come from nowhere, and overlooks the complicated path from the initial idea for a new work in a creator’s mind to the physical item in a user’s hands through the dramatically important decision-making on behalf of publishers, as this complicated path is not explicitly reflected in data actually stored in bibliographic databases and library catalogues, which constituted the domain of reference of the FRBR Study Group. As a matter of fact, bibliographic records *do* contain some implicit information about that complicated path and the relationships it implies between and among bibliographic objects; FRBROO digs that implicit information out of bibliographic structures, e.g. the precise meaning of “date of publication”.

### 1.1.10. By-Product 2: Adding a Bibliographic Flavour to CIDOC CRM

The second by-product was that the analysis provided for bibliographic processes in FRBROO and for the processes of naming entities in FRAD and FRSAD, paved the way for the introduction of refinements in the CIDOC CRM. This enabled the museum community’s model to give a better account of mass production phenomena (such as the printing of engravings), the relation between creating immaterial content and physical carriers and the practices of identifying or naming things. Further, it introduces a basic model of intellectual conception and derivation applicable to all art forms, which the museum community had been hesitating to formally analyse.

## 1.2. Differences between FRBRER and FRBROO

### 1.2.1. Introduction of Temporal Entities, Events, and Time Processes

Temporal entities (i.e., phenomena, “perdurants” in philosophy) play a central role in the CIDOC CRM model, as they are the only means to relate objects (either conceptual or physical) to time-spans, locations, and agents. Since FRBROO borrows structures from the CIDOC CRM to express the concepts declared in FRBRER, “temporal entities” had inevitably to be introduced into FRBROO. Besides, some FRBR commentators had already made the point that time issues are insufficiently addressed in FRBRER;[[6]](#footnote-6) the task of harmonising FRBR with the CIDOC CRM was an opportunity to fix that. Temporal entities were introduced into FRBROO by declaring some of the classes of FRBROO as subclasses of the following classes from CIDOC CRM: E65 Creation, E12 Production, E7 Activity, and E13 Attribute Assignment.

Figure 1 shows how the classes F27 Work Conception and F28 Expression Creation serve to link an E39 Actor, an E52 Time-Span and an E53 Place to the F1 Work, F2 Expression and F4 Manifestation Singleton that are created by those processes. In the lower part of the figure the work elaboration process is shown along a time axis. First, the activity F27 Work Conception produces an idea, then the F28 Expression Creation activity produces simultaneously an F2 Expression and its first manifestation (in the form of a F4 Manifestation Singleton), which together realise a work (F1).

Description : work_time

Figure 1

### 1.2.2. Refinement of Group 1 Entities

The text of FRBRER in some cases admits of multiple interpretations which introduce some logical inconsistencies, in particular with regard to its “Group 1 entities,” those entities that account for the content of a catalogue record.

The Work entity such as defined in FRBRER seemed to cover various realities with distinct properties. While the main interpretation intended by the originators of FRBRER seems to have been that of a set of concepts regarded as commonly shared by a number of individual sets of signs (or “Expressions”), other interpretations were possible as well: that of the set of concepts expressed in one particular set of signs, independently of the materialisation of that set of signs; and that of the overall abstract content of a given publication. FRBROO retains the vague notion of “Work” as a superclass for the various possible ways of interpreting the FRBRER definitions: F14 Individual Work corresponds to the concepts associated to one complete set of signs (i.e., one individual instance of F2 Expression); F19 Publication Work comprises publishers’ intellectual contribution to a given publication; and F15 Complex Work is closer to what seems to have been the main interpretation intended in FRBRER. Additionally, a further subclass is declared for F1 Work: F16 Container Work, which provides a framework for conceptualising works that consist in gathering sets of signs or fragments of sets of signs, of various origins (“aggregates”). Just like any product of the human mind, a Work necessarily begins to exist in the material world at a given point in time; this is the reason why FRBROO introduces the notion of F27 Work Conception. It makes the meaning of the FRBRER attribute ‘4.2.3 date of Work’ explicit, and accounts for the relationship between a Work and its creator, which holds even in cases when that creator has no direct participation in the creation of the Expression of that Work which is being catalogued (e.g., in the case of translations).

The Expression entity is relatively clear in FRBRER, at least from a purely conceptual point of view. However, the need was felt for a distinction between expressions that convey the complete idea of the work they realise, and expressions that convey only a fragment of it: that is, between instances of F22 Self-Contained Expression and instances of F23 Expression Fragment.

The Manifestation entity was defined in FRBRER in such a way that its definition could be interpreted as covering something physical and conceptual at the same time: it was defined in turn as the “physical embodiment” of an expression of a work and as an entity that represents all the physical objects that bear the same characteristics. Discussion with members of the original FRBR Study Group[[7]](#footnote-7) showed that the Manifestation entity was actually meant as an entity all instances of which are *sets;* and sets, in the mathematical sense of the term, can have more than one member, or just one member (in which case they are called singletons). For the sake of clarification, the Working Group felt the need to split the Manifestation entity into two distinct classes, corresponding to the two possible ways of interpreting the ambiguous definition provided for Manifestation in FRBRER, namely F3 Manifestation Product Type and F4 Manifestation Singleton. Whereas F3 Manifestation Product Type is declared as a subclass of the CIDOC CRM class E55 Type, and therefore as a subclass, too, of the CIDOC CRM class E28 Conceptual Object (a merely abstract notion), F4 Manifestation Singleton is declared as a subclass of the CIDOC CRM class E24 Physical Man-Made Thing, and therefore as a subclass, too, of the CIDOC CRM class E18 Physical Thing.

The Item entity did not pose any particular problem in FRBRER; but splitting Manifestation into F3 Manifestation Product Type and F4 Manifestation Singleton obliged the Working Group to rethink the articulation between F4 Manifestation Singleton and F5 Item.

All in all, here is a picture of how original FRBRER entities relate to the classes declared in FRBROO:



Figure 2

Figure 2 shows how the original FRBRER entities relate to the classes declared in FRBROO, particularly the “split” of the FRBRER Manifestation entity into F3 Manifestation Product Type and F4 Manifestation Singleton. In addition, the figure also shows how FRBROO makes explicit the publisher’s intellectual contribution, which is not modelled in FRBRER. Manifestation Product Type embodies a Publication Expression, which in turn comprises both the author’s Expression and the realisation of a Publication Work.

In figure 3, the FRBROO model of the realisation of a work by an expression is illustrated with a specific example. We use the following convention: portions of text are introduced in each of the boxes that symbolise classes, in order to identify the specific instances that are part of the example. The overall work is Walt Whitman’s *Leaves of grass* (an instance of F15 Complex Work), which has as a member the “deathbed edition,” itself an instance of F15 Complex Work. The F14 Individual Work which corresponds to the abstract content of the French translation by Léon Bazalgette of that edition is in turn a member of the F15 Complex Work of the “deathbed edition.” The F28 Expression Creation event which produced the translation simultaneously created a realisation of that translation and created the instance of F2 Expression which is the text of that translation.



Figure 3

While it can be said that the attributes in FRBRER still reflect to a certain degree traditional cataloguing policy, this is no longer true in FRBROO. Actually, what a bibliographic record should cover, following the intentions of FRBR, depends on the nature of the thing described, and, to a lesser degree, on the cataloguing policy that was followed when creating it. Interpreting FRBR, FRBROO strictly associates attributes (or “properties”) with the entity of the bibliographic discourse they actually belong to. Only this form allows for the explanation and reconciliation of the various application dependent simplifications a particular implementation might choose. Some prominent cases are:

When a national bibliographic agency creates a single record for both hardcover and paperback presentations of the same content, that record describes an instance of F24 Publication Expression, and two distinct instances of F3 Manifestation Product Type. But if a library that only holds a copy of, say, the hardcover edition, decides to retain in the record exclusively such information elements which pertain to that edition, then the record can be said to focus on an instance of F3 Manifestation Product Type.

In the case of electronic publishing, since there is no instance of F3 Manifestation Product Type involved (see below, 1.2.3), the bibliographic record can only describe an instance of F24 Publication Expression.

In the case of serials, since the scope note for F18 Serial Work indicates that “there is in general no single Expression or Manifestation representing a complete serial work, unless the serial work has ended,” what the bibliographic record describes is actually an instance of the F18 Serial Work itself. Information elements that, in the FRBRER conceptualisation, were directly attached to the Expression and Manifestation entities, are in FRBRoo seen as being in reality part of the issuing rule for the serial work (represented as an instance of E29 Design or Procedure). It is at the very core of the definition of F18 Serial Work that it plans that issues are published by a particular publisher and contain texts in a particular form. However, those information elements may change over time while the serial work retains its identity; in that case, the instance of F18 Serial Work has several distinct issuing rules over time, a case not modelled in FRBRER. This is what is meant when a single bibliographic record shows that at a given date, the publisher and/or place of publication have changed.

Any mapping from an existing database to FRBROO should take all these notions into account.

### 1.2.3. Analysis of Creation and Production Processes

It proved necessary to analyse creation and production processes, in order to enable a better understanding of interrelations and temporal order.

In particular, the notion of “first externalisation” of a set of signs or expression (and, through the expression, the first externalisation of the individual work realised in the expression) is fully modelled in FRBROO. It is regarded at the same time as a subclass of the creation of something conceptual, and the production of something physical, because the creation of an expression inevitably also affects the physical world, as the recording of the expression causes a physical modification of the object on which it is being recorded. The spatio-temporal circumstances under which the expression is created are necessarily the same spatio-temporal circumstances under which the carrier of the newly created expression is produced. This double phenomenon of conceptual creation/physical production can be represented by the schema presented in figure 4. F28 Expression Creation, which is a subclass of E65 Creation, produces, on the conceptual level, an F14 Individual Work through the property R19 created a realisation of, and through R17 created, the F2 Expression which realises that work. Operating simultaneously on the physical level, F28 Expression Creation, a subclass of E12 Production, produces, through R18 created, the F4 Manifestation Singleton which P128 carries the F22 Self-Contained Expression.

Description : 2009-02-19_graphical_representation

Figure 4

Another topic that is modelled in FRBROO is the distinction that has to be made between the process of physical publishing and the process of electronic publishing which is illustrated in figure 5. The F5 Items created through physical publishing are the results of an industrial process. As such they are produced by an F32 Carrier Production Event and carry an F24 Publication Expression, yet are also examples of an F3 Manifestation Product Type which *CLR6 should carry* the F24 Publication Expression. In electronic publishing, in contrast, the instances of F53 Material Copy, which are copies on local carriers, still carry the F24 Publication Expression and are produced by an F32 Carrier Production Event without there being any F3 Manifestation Product Type involved in the process. The instances of E29 Design or Procedure involved in the two processes differ: for physical publishing it can be characterised as “how to produce,” while for electronic publishing as “how to download.”



Figure 5

## 1.3. Differences between FRAD/FRSAD and FRBROO

The FRAD model puts its emphasis on the separation between the bibliographic entities themselves (person, family, corporate body, work), their names as found in the non-bibliographic universe and the controlled access points constructed to represent the instances of the entities in bibliographic contexts through the use of rules as applied by bibliographic agencies.

In FRBROO the mechanism that underlies these relationships is made explicit by the introduction of classes and properties that capture the link between instances of persons, etc. and the names they use when performing different activities over time. Any activity in which one can see the use of a name in a given context is an F52 Name Use Activity. In the library domain, the F35 Nomen Use Statement records an appellation used within a KOS (Knowledge Organisation System), including specific identifiers that provide controlled access points, which are generally recorded in authority records. Name authority files, subject headings files, classification systems are all typical library examples that are modelled as F34 KOS.

Taking as an example a Library of Congress name authority record for a corporate body (selected fields shown below), the information recorded in MARC21 field 670 is modelled by means of an F52 Name Use Activity. It indicates that in the book whose title is *Lo Scavo di S. Giovanni di Ruoti ed il periodo tardoantico in Basilicata* published in 1983, the name of the centre is given in Italian on the title page (Centro accademico canadese in Italia) and in English on page 6 (Canadian Academic Centre in Italy). Thus this one book exemplifies two distinct F52 Name Use Activities which associate *(R63 named*) two different E41 Appellations (*R64 used name)* with the same instance of F11 Corporate Body by means of two instances of F35 Nomen Use Statement. These statements, created using the appropriate cataloguing rules, record the assignment of the identifiers *Canadian Academic Centre in Italy* (as the preferred form, MARC 21 field 110) and *Centro accademico canadese in Italia* (as a variant form, MARC 21 field 410) as controlled identifiers for this centre. These controlled access points (instances of F35 Nomen Use Statement within the authority record) are *R32 warranted by* the F52 Name Use Activity which took place in the 1983 book.

|  |  |
| --- | --- |
| 010 | \_\_ **|a** n 85118480 |
| 110 | 2\_ **|a** Canadian Academic Centre in Italy |
| 410 | 2\_ **|a** Centro accademico canadese in Italia |
| 670 | ***\_\_*** *|a* ***Lo Scavo di S. Giovanni di Ruoti ed il periodo tardoantico in Basilicata, 1983:*** *|b* ***t.p. (Centro accademico canadese in Italia) p. 6 (Canadian Academic Centre in Italy)*** |

The FRBROO model clarifies that multiple bibliographic identities (such as pseudonyms coexisting with real names in different publications) are to be understood as instances of multiple name use by a single F10 Person in different contexts. This permits a new interpretation of the FRAD Person (An individual or a persona or identity established or adopted by an individual or group) as different instances of F52 Name Use Activity of the same person taking place in specific contexts (R61). This insight is simpler than defining personas as classes within the model, as well as being considerably more flexible. The same modelling technique subsumes the apparently different situations of multiple pseudonyms used in different contexts, thereby creating multiple bibliographic identities, and variant forms of names used simultaneously. The cardinality of the relationships between instances of F10 Person and the names that persons use can be one-to-one, one-to-many, or many-to-many (allowing for joint pseudonyms).

For instance, FRAD deals with Eric Arthur Blair and George Orwell as two distinct instances of the Person entity, interrelated through the ‘pseudonymous relationship’. As a matter of fact, there was only one agent, and that agent used distinct identities according to context. In FRBROO, since F10=E21 Person is declared as a subclass of E39 Actor, it is impossible to regard Eric Arthur Blair and George Orwell as two distinct instances of F10=E21 Person. They are only one instance of F10=E21 Person, and that unique instance of F10=E21 Person is named by (R63i) an instance of F52 Name Use Activity that uses (R64) the name ‘Eric Arthur Blair’ in a given context (R61), and is named (R63i) a second, distinct instance of F52 Name Use Activity that uses (R64) the name ‘George Orwell’ in another given context (R61). Each of these two names can have variant forms, which are recorded through distinct instances of F35 Nomen Use Statement interrelated through the *R56 has related use (is related use for)* property.

Similarly, in FRSAD the basic model indicates that thema is distinct from the nomens used to represent it. In FRBROO this is modelled in the same way: F52 Name Use Activity links the statements found in reference sources that attest to the use of a particular name for a particular concept (each of these statements being an instance of F35 Nomen Use Statement in the context of a particular KOS).

In a typical Library of Congress Subject Headings (LCSH) authority record (selected fields shown below), the Thema, as represented by the record number (sh 8507420 in MARC 21 field 010), is associated with the nomen Lamniformes (an instance of F35 Nomen Use Statement). An instance of F52 Name Use Activity is recorded on page 51 of the book *Fishes of the world* by J.S. Nelson published in 1994 that confirms the use of this term for this thema.

A broader term relationship is stated within LCSH (an instance of a F34 KOS) between this thema and two other themas, this is encoded in the MARC 21 550 fields (code value **g** in subfield **w** indicates broader term). In other terms, the thema (an instance of E55 Type) identified by the nomen “Lamniformes” *P127 has broader term* the thema (a distinct instance of E55 Type) identified by the nomen “Sharks”. This same authority record shows the use of MARC 21 field 053 to encode the assignment of the nomen QL638.94.L36 to this thema, this time within the Library of Congress Classification (LCC).

|  |  |
| --- | --- |
| 010 | \_\_ **|a** sh 85074230 |
| 053 | \_0 **|a** QL638.94.L36 **|c** Zoology |
| 150 | \_\_ **|a** Lamniformes |
| 550 | \_\_ **|w** g **|a** Chondrichthyes |
| 550 | \_\_ **|w** g **|a** Sharks |
| 670 | \_\_ **|a** Nelson, J.S. Fishes of the world, 1994: **|b** p. 51 (Order Lamniformes (mackerel sharks). Seven families with 10 genera and 16 species) |

# 2. Description of the Model

This section explains the model in context from a functional perspective with the help of a comprehensive graphical representation of all constructs, describes the format conventions for the formal specifications, and lists the complete class and property definitions that make up the model. The graphical representation (section 2.1) serves an overall understanding, while the list of definitions (sections 2.6 and 2.7) is the reference for the individual declarations.

## 2.1. Graphic Overview of the Object-Oriented Definition of FRBR

In this section, FRBROO is presented in a sequence which follows the intellectual process from Work through Expression to Manifestation. In contrast to FRBRER, a dynamic view of the respective processes of Expression Creation and of the Publication Work is also presented. Additionally, the dimension of intellectual contributions made by incorporating parts of an Expression in another one is demonstrated using the example of the performing arts. This dimension is only marginally analysed in FRBRER. This section then contains a presentation of how FRBROO models the process of identifier creation, which does not belong to the scope of FRBRER but is an important aspect of FRAD. The section ends with a brief statement about the modelling of photographs and animated images.

### 2.1.1. Static View of the Work and Expression Classes

Figure 6 shows the relations that exist between works and expressions and the subclasses of both concepts, independently from any dynamic aspects involving the activities of creation and modification. It shows an analysis of the original FRBRER concepts Work and Expression into the more detailed ones that appear only indirectly in FRBRER via attributes that are specific to these detailed concepts rather than to Work and Expression in general. The reader may find the actual relation of these concepts to the FRBRER attributes in section 3.3 below.



Figure 6

Comments on Figure 6:

* The concepts that make up a work are realised as complete sets of signs. This fact is modelled as: F1 Work *R3 is realised in (realises)* F22 Self-Contained Expression.
* A set of signs may not convey the complete concept of a work; it may just be a fragment of a larger set of signs. This fact is modelled as: F2 Expression *R15 has fragment (is fragment of)* F23 Expression Fragment.
* A complete set of signs may be a structural part of a larger set of signs. This fact is modelled as: F2 Expression *R5 has component (is component of)* F22 Self-Contained Expression.
* A work can present itself as a “continuation” of some other work. This fact is modelled as: F1 Work *R1 is logical successor of (has successor)* F1 Work.
* A work can present itself as “derived” from another work, in many possible ways. This fact is modelled as: F1 Work *R2 is derivative of (has derivative)* F1 Work *R2.1 has type* E55 Type [of derivation].
* The notion of “work” is actually a vague one, which covers three more specific notions:
  + The sum of concepts conveyed by just one complete set of signs. This is modelled as: F14 Individual Work *is a* F1 Work, and F14 Individual Work *R9 is realised in (realises)* F22 Self-Contained Expression.
  + The concept of re-using some already existing material in order to produce some new creation. This is modelled as: F16 Container Work *is a* F1 Work, F1 Work *R3 is realised in (realises)* F22 Self-Contained Expression, and F22 Self-Contained Expression *P165 incorporates (is incorporated in)* F2 Expression.
  + The conceptual unity observed across a number of complete sets of signs, which makes it possible to organise publications into “bibliographic families.” This is modelled as: F15 Complex Work *is a* F1 Work, and F15 Complex Work *R10 has member (is member of)* F1 Work.
* Additionally, a work can be recognised as being composed of several structural parts. This is also modelled as: F15 Complex Work *is a* F1 Work, and F15 Complex Work *R10 has member (is member of)* F1 Work.[[8]](#footnote-8)
* Works that re-use some already existing material or use some event, either natural or involving human activity (i.e., instances of F16 Container Work), are further subdivided into:
  + Works that aggregate already existing expressions of other works. This is modelled as: F17 Aggregation Work *is a* F16 Container Work, F17 Aggregation Work *is a* F14 Individual Work, F14 Individual Work *R9 is realised in (realises)* F22 Self-Contained Expression, and F22 Self-Contained Expression *P165 incorporates (is incorporated in)* F2 Expression.
  + Works that consist in establishing all the features of recordings of sounds and/or images (either natural or involving human activity). This is modelled as: F21 Recording Work *is a* F1Work, F21 Recording Work *R13 is realised in (realises)* F26 Recording, and F26 Recording *is a* F22 Self-Contained Expression.
  + Works that consist in establishing all the features of a performance. This is modelled as: F20 Performance Work *is a* F16 Container Work, F20 Performance Work *R12 is realised in (realises)* F25 Performance Plan, and F25 Performance Plan *is a* F22 Self-Contained Expression.
  + Works that consist in establishing all the features of a publication. This is modelled as: F19 Publication Work *is a* F16 Container Work, F19 Publication Work *R3 is realised in (realises)* F24 Publication Expression, and F24 Publication Expression *is a* F22 Self-Contained Expression.
  + Works that consist in establishing all the features of serials are a specific case of the latter; but serials have particular constraints as to their frequency of issuance, numbering pattern, etc. This is modelled as: F18 Serial Work *is a* F19 Publication Work, and F18 Serial Work *R11 has issuing rule (is issuing rule of)* E29 Design or Procedure [a CIDOC CRM class].

### 2.1.2. Dynamic View of the Work and Expression Classes

Figure 7 shows the dynamic process through which products of the mind come into being.



Figure 7

Comments on Figure 7:

* An instance of F1 Work begins to exist from the very moment an individual has the initial idea that triggers a creative process in his or her mind. This is modelled as: F27 Work Conception *R16 initiated (was initiated by)* F1 Work.
* Unless a creator leaves at least one physical sketch for his or her work, the very existence of that instance of F1 Work goes unnoticed, and there is nothing to be catalogued. At least one instance of F2 Expression that *R3i realises* the instance of F1 Work has to be created. This is modelled as: F28 Expression Creation *R19 created a realisation of (was realised through)* F1 Work, and F28 Expression Creation *R17 created (was created by)* F2 Expression. Except for oral tradition and recording in human memory, this very first instance of the respective F2 Expression would be created ***simultaneously*** on a physical carrier, typically as a unique item or as an electronic file on a specific computer. This is modelled as: F28 Expression Creation *R18 created (was created by)* F4 Manifestation Singleton, as detailed in Figures 8 and 9.
* Sound recordings and moving images are particular cases of expressions, in that they involve both temporal entities (the “things” being recorded, either performances of works, natural events, or states) and decisions made by one or more than one individual (sound engineer, movie director…). This is modelled as: F29 Recording Event *R20 recorded (was recorded through)* E5 Event, F29 Recording Event *R22 realised (was realised through)* F21 Recording Work (i.e., the artistic and technical decisions made about the recording material to be used, the location of microphones and/or cameras, the use of filters, lighting, framing, etc.), and F29 Recording Event *R21 created (was created by)* F26 Recording (i.e., the set of either analogue or digital signs that are inevitably infixed on a carrier at the time they are produced – just like any other kind of expression – but are likely to be conveyed on any other carrier without losing their identity as a distinct expression).
* Publishers make decisions about all the features of a new product, and determine the complete set of signs that will be found on it. This is modelled as: F30 Publication Event *R23 created a realisation of (was realised through)* F19 Publication Work (i.e., a publisher’s concept of a given publication), and F30 Publication Event *R24 created (was created through)* F24 Publication Expression (i.e., the set of *all the signs* present on a given publication, including book cover, title page, page numbers, copyright statement, CD liner notes, text found on a DVD container, etc.).
* Performers make decisions about all the features their performance should display (whether it is an improvisation or it involves some pre-existing work such as a play or a musical composition), and may express these decisions as explicit instructions. This is modelled as: F31 Performance (i.e., the performing activity itself) *R25 performed (was performed in)* F25 Performance Plan (i.e., the set of instructions for a specific performance, which *P165 incorporates* the text of a play, the content of a musical score, etc.).

### 2.1.3. Dynamic View of the Manifestation and Item Classes

Figure 8 shows how products of the mind are communicated among human beings through physical carriers that eventually become part of the cultural heritage preserved in memory institutions such as libraries, archives, and museums.

**F4 Manifestation**

**Singleton**

**F28 Expression Creation**

R6 carries (is

carried by)

R18 created

(was created by)

**F24 Publication Expression**

**E12 Production**

**From Expression to Publication**

**E70 Thing**

**F2 Expression**

**F3 Manifestation**

**Product Type**

R4 carriers provided by

(comprises carriers of )

**F5 Item**

R7 is example of

(has example)

**F32 Carrier**

**Production Event**

R26 produced

things of type (was

produced by )

R27 used as source

material (was used by )

R28 produced

(was produced by)

**F33 Reproduction Event**

R17 created

(was created by)

R29 reproduced (was

reproduced by)

**E84 Information**

**Carrier**

R30 produced (was produced by)

P165 incorporates

(is incorporated in)

Figure 8

Comments on Figure 8:

Authorial output:

* A creator elaborates an expression (it can be a text, a musical score, a drawing, a map, etc.). This process is modelled as: F28 Expression Creation *R17 created (was created by)* F2 Expression.
* The creator externalises that expression by transforming bits of the physical world into physical carriers of his or her creation. This is modelled as: F28 Expression Creation *R18 created (was created by)* F4 Manifestation Singleton (e.g., a draft manuscript).

Editorial product:

* A publisher elaborates the overall content of a new publication: F30 Publication Event *R24 created (was created through)* F24 Publication Expression (see Figure 5).
* That overall content incorporates the authorial expression such as that found, for instance, on a manuscript provided by the author: F24 Publication Expression *P165 incorporates (is incorporated in)* F2 Expression.

Printing/manufacturing:

* The publisher sends to a manufacturer the overall content of the publication (a mechanical or paste-up, or, most often nowadays, desktop publishing files), along with instructions as to how exemplars of the publication should be manufactured: F32 Carrier Production Event *R27 used as source material (was used by)* F24 Publication Expression.
* As a consequence, all exemplars of the publication are supposed to be similar, i.e., can be identified as belonging to the same type: F32 Carrier Production Event *R26 produced things of type (was produced by)* F3 Manifestation Product Type.
* As a consequence, both the author’s expression and the publisher’s expression are to be found on all exemplars belonging to that type: F2 Expression *R4 carriers provided by (comprises carriers of)* F3 Manifestation Product Type.
* The manufacturing process results in physical objects, the exemplars themselves: F32 Carrier Production Event *R28 produced (was produced by)* F5 Item.
* Any exemplar is representative for the publication of which it is an exemplar: F5 Item *R7 is example of (has example)* F3 Manifestation Product Type.
* Under normal conditions, any exemplar should display the same overall content defined by the publisher: F5 Item *R6 carries (is carried by)* F24 Publication Expression.

Reproduction:

* Any information carrier can be reproduced by processes that render a similar item to the original used: F33 Reproduction Event *R29 reproduced (was reproduced by)* E84 Information Carrier. This should not be confused with resuming the actual production process itself.
* This process results in a new instance of E84 Information Carrier: F33 Reproduction Event *R30 produced (was produced by)* E84 Information Carrier.

### 2.1.4. Static View of the Manifestation and Item Classes

Figure 9 shows how FRBROO renders the meaning of the FRBRER Manifestation entity and its attributes.

Figure 9

Comments on Figure 9:

* Manifestation is split into F4 Manifestation Singleton (a unique, physical object) and F3 Manifestation Product Type (a publication, i.e., an abstract notion only recognisable through its physical exemplars).
* Every time a creator drafts a new expression on paper (or on the hard disk of a computer, etc.), that process results simultaneously in the creation of a new information object and the production of a new physical man-made thing: F28 Expression Creation *R17 created (was created by)* F2 Expression, *and* F28 Expression Creation *R18 created (was created by)* F4 Manifestation Singleton.
* Once an authorial expression has been published, the publishing process has created a *type* of physical objects that carry that authorial expression: F2 Expression *R4 carriers provided by (comprises carriers of)* F3 Manifestation Product Type.
* As an abstraction, a publication cannot be said to have such physical characteristics as the material it “consists of” or its “number of pages”; these physical characteristics are found by a cataloguer on one of its exemplars, and the cataloguer extrapolates this to all other exemplars of that publication which will normally display the same physical characteristics. This is modelled in FRBROO as a series of “CLP” properties, i.e., “class properties” or physical properties that apply to an abstract type only through the physical things that exemplify that abstract type: F3 Manifestation Product Type *CLP45 should consist of (should be incorporated in)* E57 Material, *CLP57 should have number of parts* E60 Number, etc.

### 2.1.5. Performing Arts as an Example for the Incorporation of Expressions in Expressions of Other Works

Figure 10 illustrates the way FRBROO models live performing arts. In contrast to the other figures, it makes use of a concrete example, using the same convention as in Figure 3. It demonstrates how successive intellectual processes incorporate Expressions from previous ones, add new elements of different natures, and thereby “add value” to the previous steps. In this sense, the performance adds movement and sound to a text, the recording adds points of view or ways of seeing.



Figure 10

Comments on Figure 10:

Shakespeare’s *Henry IV* is a play in 2 parts: each part is a self-contained play in its own right, but forms nevertheless parts of a larger overall F15 Complex Work.

The text of *Henry IV Part 1* is adapted in order to be performed; this process results in a new text, an instance of F22 Self-Contained Expression.

The text of this adaptation is incorporated in the stage director’s instructions for performance, which realise his or her concept of a mise-en-scène of *Henry IV*.

The play is performed on December 25, 2007.

That performance is filmed.

The resulting recording, which in turn incorporates some aspects of the stage director’s performing instructions, in addition to the adapted text of *Henry IV Part 1,* is infixed on a DVD.

Similar considerations hold for the contributions of an editor, illustrator and graphics designer to a manuscript, or the compiling of a collection of poems to the texts selected.

Figure 10 demonstrates three fundamental relationships between instances of F1 Work:

* Continuation or completion of a topic (such as *Henry IV* part 1 and part 2)
* Derivation of an existing Expression in an alternative form (such as original and adaptation)
* Incorporation of an unaltered part of the contents of an Expression (such as play text and performance recording).

### 2.1.6. Creation and Assignment of Controlled Access Points

During the cataloguing process, one important phase is the creation of what are termed controlled access points (formerly known as “headings”). Controlled access points enable a given instance of a given bibliographic entity to be consistently referred to in a given bibliographic database. Controlled access points are, in general, composed of parts, which consist of signs, and some of which are appellations in their own right. They are created to identify persons, corporate bodies, geographic areas, works, etc.

Specific sections of cataloguing rules specify the steps that have to be followed when creating a controlled access point and how to ensure its uniqueness. The steps include the choice of the preferred form of the name, the choice of qualifiers, their form, punctuation and order. During an F40 Identifier Assignment the cataloguer composes the identifier and makes informed decisions. That complex process is modelled using three distinct classes: F12 Nomen, F13 Identifier, and F50 Controlled Access Point. F13 Identifier corresponds to both standardised strings such as uniform titles (which are instances of F50 Controlled Access Point), and the notion of numeric identifiers such as international standard numbers defined in ISO standards (such as ISNI, ISBN, ISSN, ISRC, etc.). Any qualifier used in cataloguing practice to disambiguate access points is an instance of E90 Symbolic Object (or, in many cases, of its subclass E41 Appellation; e.g., dates are appellations of instances of E52 Time-Span).

Figure 11 is a representation of such an activity.



Figure 11

The model described in Figure 11 is relevant beyond library practice. It allows for the implementation of the reasoning processes involved in analysing the information encoded in the parts of an identifier. Therefore the CIDOC CRM has incorporated this model.

The process of creating controlled access points that are as specific, accurate, and as “unique” as possible is particularly interesting when applied to instances of Work and Expression, as they lack a material nature. Figure 12 shows how the instance of an F2 Expression common to some instances of F3 Manifestation Product Type or F4 Manifestation Singleton would be identified with the one manifestation of a particular expression that has been selected to be “representative” for this expression. This model does not correspond to any explicit library information. Rather, it describes an implicit process behind the appellation creation process: Thevery fact of composing an identifier for an instance of F2 Expression using the identifier of one particular manifestation makes the latter “representative” for the corresponding expression. Note that the “representative” manifestation is not necessarily the historically first or earliest one. It might be the most popular one, or the first one detected. It might be a fragment of a whole detected later. As this introduces a kind of arbitrariness, the authors found this model interesting when discussing the respective practices. Similarly, an instance of F1 Workcan only beidentified if a corresponding instance of F2 Expression is selected as “representative”.



Figure 12

### 2.1.7. Photographs and animated images

Works realised using the photographic medium have the following particularity: their essence mostly resides in the capturing of features of portions of the physical world, using automatic devices (either analogue or digital). That notion may seem close to the notions modelled in FRBROO as F21 Recording Work, F26 Recording, and F29 Recording Event. However, it is not necessary to consider all kinds of photographs as instances of F21 Recording Work; it depends on their intended functionality. Photographs that were made for the explicit purpose of documenting something are clearly instances of F21 Recording Work, while art photographs can be regarded simply as instances of F1 Work. Besides, double instantiation always makes it possible to deal with any expression of a photographic work as an instance of both F2 Expression and E38 Image, which allows one to use the CIDOC CRM property *P138 represents (has representation)* in order to record the relationship between a photograph and the sitter who can be recognized on the photograph. Additionally, that relationship is accounted for through the following statement: F28 Expression Creation (*P2 has type:* E55 Type {making a photograph}) *P14 carried out by:* E39 Actor (*P14.1 in the role of:*E55 Type {sitter}).

In the same way, not all motion pictures are instances of F21 Recording Work. Animated cartoons and computer-generated films cannot be said to “record” anything. Even though fiction movies can be said to record actors’ performances, and even though animated cartoons and computer-generated films, when they include a soundtrack, can be analysed as having a component that is an instance of F26 Recording, these should all be instantiated as F1 Work, rather than F21 Recording Work. The explicit intention to capture features of a given perdurant in order to document that perdurant is what should determine whether an animated image is to be regarded as an instance of F21 Recording Work.

### 2.1.8. Rights statements

As a subclass of E73 Information Object, F2 Expression (and all its subclasses) is an indirect subclass of the CIDOC CRM class labelled E72 Legal Object, which makes it possible to link any instance of F2 Expression (or of any of its subclasses) to an instance of E30 Right through the CIDOC CRM property labelled *P104 is subject to (applies to),* and to the instance of E39 Actor that holds that right on the expression through the CIDOC CRM property labelled *P105 right held by (has right on)*. Similarly, F4 Manifestation Singleton, F5 Item and F53 Material Copy are indirect subclasses of E72 Legal Object, which makes it possible to model specific rights that are attached to a unique carrier or to a a given exemplar of a publication. If all exemplars of a publication are assumed to be subject to the same right, this situation is modelled through the FRBROO class property labelled CLP104 subject to (applies to) from F3 Manifestation Product Type to E30 Right.

By contrast, F1 Work is not an indirect subclass of E72 Legal Object, as it is declared as a subclass of the CIDOC CRM class labelled E89 Propositional Object. This is because instances of F1 Work consist of mere concepts, and there is no evidence that the law regards mere concepts as legal objects. If such evidence vould be found, however, the class hierarchy of both FRBROO and CIDOC CRM would have to be modified.

## 2.2. Naming Conventions

All the classes declared were given both a name and an identifier constructed according to the conventions used in the CIDOC CRM model. For classes, that identifier consists of the letter F followed by a number. Resulting properties were also given a name and an identifier, constructed according to the same conventions. That identifier consists of the letter R followed by a number, which in turn is followed by the letter “i” every time the property is mentioned in its “inverted” form, i.e., from target to domain. “F” and “R” are to be understood as the first two letters of “FRBR” and do not have any other meaning. They correspond respectively to letters “E” and “P” in the CIDOC CRM naming conventions, where “E” originally meant “entity” (although the CIDOC CRM “entities” are now consistently called “classes”), and “P” means “property”. Whenever CIDOC CRM classes are used in FRBROO, they are named by the name they have in the original CIDOC CRM. Some properties are identified by the letters “CLP” and a number; “CLP” stands for “Class Property” and such properties are taken from Meta-CRM; all of them have F3 Manifestation Product Type as domain, and they indicate that all the exemplars of a given publication “are supposed to” or “should” display the features of the publication they belong to. The publication itself, being an abstract notion, cannot have physical qualities such as, for instance, a given number of pages, but meta-properties are a mechanism borrowed from CIDOC CRM and Meta-CRM that makes it possible to express that a publication is characterised by the number of pages that all of its exemplars, under “ideal” conditions, “should have.” As in CIDOC CRM, properties with the character of states are named in the present tense, such as “has validity period”, whereas properties related to events are named in the past tense, such as “created a realisation of”.

All classes and properties that were borrowed directly from the CIDOC CRM are named as in CIDOC CRM, i.e., with an identifier beginning with either “E” if it is a class, or “P” if it is a property, and with the original appellation for the class or property in CIDOC CRM.

The choice of the domain of properties, and hence the order of their names, are established in accordance with the following priority list:

* Temporal Entity and its subclasses
* Thing and its subclasses
* Actor and its subclasses
* Other

## 2.3. Property Quantifiers

Quantifiers for properties are provided for the purpose of semantic clarification only, and should **not** be treated as implementation recommendations. Therefore the term “cardinality constraints” is avoided here, as it typically pertains to implementations.

The following table lists all possible property quantifiers occurring in this document by their notation, together with an explanation in plain words. In order to provide optimal clarity, two widely accepted notations are used redundantly in this document, a verbal and a numeric one. The verbal notation uses phrases such as “one to many”, and the numeric one, expressions such as “(0,n:0,1)”. While the terms “one”, “many” and “necessary” are quite intuitive, the term “dependent” denotes a situation where a range instance cannot exist without an instance of the respective property. In other words, the property is “necessary” for its range.

|  |  |
| --- | --- |
| **many to many (0,n:0,n)** | Unconstrained: An individual domain instance and range instance of this property can have zero, one or more instances of this property. In other words, this property is optional and repeatable for its domain and range. |
| **one to many**  **(0,n:0,1)** | An individual domain instance of this property can have zero, one or more instances of this property, but an individual range instance cannot be referenced by more than one instance of this property. In other words, this property is optional for its domain and range, but repeatable for its domain only. In some contexts this situation is called a “fan-out”. |
| **many to one**  **(0,1:0,n)** | An individual domain instance of this property can have zero or one instance of this property, but an individual range instance can be referenced by zero, one or more instances of this property. In other words, this property is optional for its domain and range, but repeatable for its range only. In some contexts this situation is called a “fan-in”. |
| **many to many, necessary**  **(1,n:0,n)** | An individual domain instance of this property can have one or more instances of this property, but an individual range instance can have zero, one or more instances of this property. In other words, this property is necessary and repeatable for its domain, and optional and repeatable for its range. |
| **one to many, necessary**  **(1,n:0,1)** | An individual domain instance of this property can have one or more instances of this property, but an individual range instance cannot be referenced by more than one instance of this property. In other words, this property is necessary and repeatable for its domain, and optional but not repeatable for its range. In some contexts this situation is called a “fan-out”. |
| **many to one, necessary**  (1,1:0,n) | An individual domain instance of this property must have exactly one instance of this property, but an individual range instance can be referenced by zero, one or more instances of this property. In other words, this property is necessary and not repeatable for its domain, and optional and repeatable for its range. In some contexts this situation is called a “fan-in”. |
| **one to many, dependent**  **(0,n:1,1)** | An individual domain instance of this property can have zero, one or more instances of this property, but an individual range instance must be referenced by exactly one instance of this property. In other words, this property is optional and repeatable for its domain, but necessary and not repeatable for its range. In some contexts this situation is called a “fan-out”. |
| **one to many, necessary, dependent**  **(1,n:1,1)** | An individual domain instance of this property can have one or more instances of this property, but an individual range instance must be referenced by exactly one instance of this property. In other words, this property is necessary and repeatable for its domain, and necessary but not repeatable for its range. In some contexts this situation is called a “fan-out”. |
| **many to one, necessary, dependent**  (1,1:1,n) | An individual domain instance of this property must have exactly one instance of this property, but an individual range instance can be referenced by one or more instances of this property. In other words, this property is necessary and not repeatable for its domain, and necessary and repeatable for its range. In some contexts this situation is called a “fan-in”. |
| **many to many, necessary, dependent**  **(1,n:1,n)** | Both an individual domain instance of this property and an individual range instance can have one or more instances of this property. In other words, this property is necessary and repeatable for both its domain and its range. |
| **one to one**  **(1,1:1,1)** | An individual domain instance and range instance of this property must have exactly one instance of this property. In other words, this property is necessary and not repeatable for its domain and for its range. |
| **many to two**  **(2,n:0,n)** | An individual domain instance of this property must have at least two instances of this property, but an individual range instance can be referenced by zero, one or more instances of this property. |

Some properties are defined as being **necessary** for their **domain** or as being **dependent** from their **range,** following the definitions in the table above.Note that if such a property is not specified for an instance of the respective domain or range, it means that the property exists, but the value on one side of the property is unknown. In the case of optional properties, the methodology proposed by the FRBROO does not distinguish between a value being unknown or the property not being applicable at all.

## 2.4. Presentation Conventions

All instances of E41 Appellation are presented within single quotation marks, whether they are used for themselves or just to refer to the things they name. Any punctuation mark that follows an instance of E41 Appellation is placed outside the single quotation marks, as it does not belong to the appellation itself.

Furthermore, all references to instances of E90 Symbolic Object in the form of a content model are presented within single quotation marks, such as ‘abc’. By content model we mean the symbol sequence the symbolic object consists of.

British spelling is used throughout the original English version of this document, except for occasional quotations and examples.

Double quotation marks are used to indicate an informal name or term. E.g.: *The “lower member” consists of sandstone with minor shale.*

## 2.5. Class & Property Hierarchies

Although they do not provide comprehensive definitions, compact monohierarchical presentations of the class and property IsA hierarchies have been found to significantly aid in the comprehension and navigation of FRBROO, and are therefore provided below.

The class hierarchy presented below has the following format:

* Each line begins with a unique class identifier, consisting of a number preceded by the letter “F”.
* A series of em dashes (“—”) follows the unique class identifier, indicating the hierarchical position of the class in the IsA hierarchy.
* The English name of the class appears to the right of the em dashes.
* The index is ordered by hierarchical level, in a “depth first” manner, from the smaller to the larger subhierarchies.
* Classes that appear in more than one position in the class hierarchy as a result of multiple inheritance are shown first in roman typeface, then in italic typeface.

The property hierarchy presented below has the following format:

* Each line begins with a unique property identifier, consisting of a number preceded by the letter “R”.
* A series of em dashes (“—”) follows the unique property identifier, indicating the hierarchical position of the property in the IsA hierarchy.
* The English name of the property appears to the right of the em dashes, followed by its inverse name in parentheses for reading in the range to domain direction.
* The domain class for which the property is declared.
* The range class that the property references.
* The index is ordered by hierarchical level, in a “depth first” manner, from the smaller to the larger subhierarchies, and by property number between equal siblings.
* Properties that appear in more than one position in the property hierarchy as a result of multiple inheritance are shown in an italic typeface.

In FRBROO class and property hierarchies aligned with CIDOC CRM class and property hierarchies, distinct layouts are used for classes and properties from FRBROO, on the one hand, and for classes and properties from CIDOC CRM, on the other hand.

### 2.5.1. FRBROO Class Hierarchy

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| F1 | Work |  | | | |  |  |
| F14 | — | Individual Work | | | |  |  |
| F17 | — | — | | | | Aggregation Work |  |
| F15 | — | Complex Work | | | |  |  |
| F18 | — | — | | | | Serial Work |  |
| F16 | — | Container Work | | | |  |  |
| F17 | — | — | | | | *Aggregation Work* |  |
| F19 | — | — | | | | Publication Work |  |
| F18 | — | — | | | | — | *Serial Work* |
| F20 | — | — | | | | Performance Work |  |
| F21 | — | Recording Work | | | |  |  |
| F2 | Expression |  | | | |  |  |
| F22 | — | Self-Contained Expression | | | |  |  |
| F24 | — | — | | | | Publication Expression |  |
| F25 | — | — | | | | Performance Plan |  |
| F26 | — | — | | | | Recording |  |
| F23 | — | Expression Fragment | | | |  |  |
| F34 | — | KOS | | | |  |  |
| F35 | — | Nomen Use Statement | | | |  |  |
| F3 | Manifestation Product Type | |  | | |  |  |
| F4 | Manifestation Singleton |  | | | |  |  |
| F54 | Utilised Information Carrier | | |  | |  |  |
| F5 | — | Item | | | |  |  |
| F53 | — | Material Copy | | | |  |  |
| F6 | Concept |  | | | |  |  |
| F7 | Object |  | | | |  |  |
| F8 | Event |  | | | |  |  |
| F9 | Place |  | | | |  |  |
| F10 | Person |  | | | |  |  |
| F11 | Corporate Body |  | | | |  |  |
| F12 | Nomen |  | | | |  |  |
| F13 | — | Identifier | | | |  |  |
| F50 | — | — | | | | Controlled Access Point |  |
| F27 | Work Conception |  | | | |  |  |
| F28 | Expression Creation |  | | | |  |  |
| F29 | — | Recording Event | | | |  |  |
| F30 | — | Publication Event | | | |  |  |
| F31 | Performance |  | | | |  |  |
| F32 | Carrier Production Event |  | | | |  |  |
| F33 | Reproduction Event |  | | | |  |  |
| F36 | Script Conversion |  | | | |  |  |
| F38 | Character |  | | | |  |  |
| F39 | Family |  | | | |  |  |
| F40 | Identifier Assignment |  | | | |  |  |
| F41 | Representative Manifestation Assignment | | | |  |  |  |
| F42 | Representative Expression Assignment | | | |  |  |  |
| F43 | Identifier Rule |  | | | |  |  |
| F44 | Bibliographic Agency |  | | | |  |  |
| F51 | Pursuit |  | | | |  |  |
| F52 | Name Use Activity |  | | | |  |  |

### 2.5.2. FRBROO Class Hierarchy Aligned with (Part of) CIDOC CRM Class Hierarchy

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| E1 | CRM Entity | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E2 | — | Temporal Entity | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E3 | — | — | Condition State | | | | | | | | | | | | | | | | | | | | | | | | | |
| E4 | — | — | Period =F8 Event | | | | | | | | | | | | | | | | | | | | | | | | | |
| E5 | — | — | — | Event | | | | | | | | | | | | | | | | | | | | | | | | |
| E7 | — | — | — | — | Activity | | | | | | | | | | | | | | | | | | | | | | | |
| **F31** | — | — | — | — | — | | | Performance | | | | | | | | | | | | | | | | | | | | |
| **F51** | — | — | — | — | — | | | Pursuit | | | | | | | | | | | | | | | | | | | | |
| E11 | — | — | — | — | — | | | Modification | | | | | | | | | | | | | | | | | | | | |
| E12 | — | — | — | — | — | | | — | | | | | | | Production | | | | | | | | | | | | | |
| **F28** | — | — | — | — | — | | | — | | | | | | | — | | | | | Expression Creation | | | | | | | | |
| **F29** | — | — | — | — | — | | | — | | | | | | | — | | | | | — | | | | | Recording Event | | | |
| **F30** | — | — | — | — | — | | | — | | | | | | | — | | | | | — | | | | | Publication Event | | | |
| **F32** | — | — | — | — | — | | | — | | | | | | | — | | | | | Carrier Production Event | | | | | | | | |
| **F33** | — | — | — | — | — | | | — | | | | | | | — | | | | | Reproduction Event | | | | | | | | |
| E13 | — | — | — | — | — | | | Attribute Assignment | | | | | | | | | | | | | | | | | | | | |
| **F52** | — | — | — | — | — | | | — | | | | | | | Name Use Activity | | | | | | | | | | | | | |
| E15 | — | — | — | — | — | | | — | | | | | | | Identifier Assignment = F40 Identifier Assignment | | | | | | | | | | | | | |
| **F41** | — | — | — | — | — | | | — | | | | | | | Representative Manifestation Assignment | | | | | | | | | | | | | |
| **F42** | — | — | — | — | — | | | — | | | | | | | Representative Expression Assignment | | | | | | | | | | | | | |
| E65 | — | — | — | — | — | | | Creation | | | | | | | | | | | | | | | | | | | | |
| E83 | — | — | — | — | — | | | — | | | | | | | Type Creation | | | | | | | | | | | | | |
| **F27** | — | — | — | — | — | | | — | | | | | | | Work Conception | | | | | | | | | | | | | |
| ***F28*** | — | — | — | — | — | | | — | | | | | | | *Expression Creation* | | | | | | | | | | | | | |
| ***F29*** | — | — | — | — | — | | | — | | | | | | | — | | | | | *Recording Event* | | | | | | | | |
| **F30** | — | — | — | — | — | | | — | | | | | | | — | | | | | *Publication Event* | | | | | | | | |
| E63 | — | — | — | — | Beginning of Existence | | | | | | | | | | | | | | | | | | | | | | | |
| *E12* | — | — | — | — | — | | | *Production* | | | | | | | | | | | | | | | | | | | | |
| ***F28*** | *—* | — | *—* | *—* | *—* | | | *—* | | | | | | | *Expression Creation* | | | | | | | | | | | | | |
| ***F29*** | *—* | — | *—* | *—* | *—* | | | *—* | | | | | | | *—* | | | | | *Recording Event* | | | | | | | | |
| ***F30*** | *—* | — | *—* | — | *—* | | | *—* | | | | | | | *—* | | | | | *Publication Event* | | | | | | | | |
| ***F32*** | *—* | — | *—* | *—* | *—* | | | *—* | | | | | | | *Carrier Production Event* | | | | | | | | | | | | | |
| ***F33*** | — | — | — | — | — | | | — | | | | | | | *Reproduction Event* | | | | | | | | | | | | | |
| *E65* | — | — | — | — | — | | | *Creation* | | | | | | | | | | | | | | | | | | | | |
| *E83* | — | — | — | — | — | | | — | | | | | | | *Type Creation* | | | | | | | | | | | | | |
| ***F27*** | *—* | — | *—* | *—* | *—* | | | — | | | | | | | *Work Conception* | | | | | | | | | | | | | |
| ***F28*** | — | *—* | *—* | *—* | *—* | | | — | | | | | | | *Expression Creation* | | | | | | | | | | | | | |
| ***F29*** | *—* | *—* | *—* | *—* | *—* | | | — | | | | | | | — | | | | | *Recording Event* | | | | | | | | |
| ***F30*** | *—* | — | *—* | *—* | *—* | | | — | | | | | | | — | | | | | *Publication Event* | | | | | | | | |
| E77 | — | Persistent Item | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E70 | — | — | Thing | | | | | | | | | | | | | | | | | | | | | | | | | |
| E72 | — | — | — | Legal Object | | | | | | | | | | | | | | | | | | | | | | | | |
| **F3** | — | — | — | — | Manifestation Product Type | | | | | | | | | | | | | | | | | | | | | | | |
| E18 | — | — | — | — | Physical Thing = F7 Object | | | | | | | | | | | | | | | | | | | | | | | |
| E19 | — | — | — | — | — | | | Physical Object | | | | | | | | | | | | | | | | | | | | |
| E20 | — | — | — | — | — | | | — | | | | | | | Biological Object | | | | | | | | | | | | | |
| E21 | — | — | — | — | — | | | — | | | | | | | — | | | | | Person =F10 Person | | | | | | | | |
| E22 | — | — | — | — | — | | | — | | | | | | | Man-Made Object | | | | | | | | | | | | | |
| E84 | — | — | — | — | — | | | — | | | | | | | — | | | | | Information Carrier | | | | | | | | |
| **F54** | — | — | — | — | — | | | — | | | | | | | — | | | | | — | Utilised Information Carrier | | | | | | | |
| **F5** | — | — | — | — | — | | | — | | | | | | | — | | | | | — | | | | | — | | | Item |
| **F53** | — | — | — | — | — | | | — | | | | | | | — | | | | | — | | | | | — | | | Material Copy |
| E26 | — | — | — | — | — | | | Physical Feature | | | | | | | | | | | | | | | | | | | | |
| E25 | — | — | — | — | — | | | — | | | | | | | Man-Made Feature | | | | | | | | | | | | | |
| ***F53*** | — | — | — | — | — | | | — | | | | | | | — | | | | | *Material Copy* | | | | | | | | |
| E24 | — | — | — | — | *—* | | | Physical Man-Made Thing | | | | | | | | | | | | | | | | | | | | |
| **F4** | — | — | — | — | — | | | — | | | | Manifestation Singleton | | | | | | | | | | | | | | | | |
| *E22* | *—* | *—* | *—* | *—* | *—* | | | *—* | | | | *Man-Made Object* | | | | | | | | | | | | | | | | |
| *E84* | *—* | *—* | *—* | *—* | *—* | | | *—* | | | | — | | | | | | *Information Carrier* | | | | | | | | | | |
| ***F54*** | — | — | — | — | — | | | — | | | | | | | — | | | | | — | *Utilised Information Carrier* | | | | | | | |
| ***F5*** | — | — | — | — | — | | | — | | | | | | | — | | | | | — | | | | | — | | | *Item* |
| ***F53*** | — | — | — | — | — | | | — | | | | | | | — | | | | | — | | | | | — | | | *Material Copy* |
| *E25* | — | — | — | — | — | | | — | | | | | | | *Man-Made Feature* | | | | | | | | | | | | | |
| ***F53*** | — | — | — | — | — | | | — | | | | | | | — | | | | | *Material Copy* | | | | | | | | |
| E90 | — | — | — | — | Symbolic Object | | | | | | | | | | | | | | | | | | | | | | | |
| E73 | — | — | — | — | — | | Information Object | | | | | | | | | | | | | | | | | | | | | |
| E31 | — | — | — | — | — | | — | | | | Document | | | | | | | | | | | | | | | | | |
| E32 | — | — | — | — | — | | — | | | | — | | | | Authority Document | | | | | | | | | | | | | |
| **F34** | — | — | — | — | — | | — | | | | — | | | | — | | KOS | | | | | | | | | | | |
| **F2** | — | — | — | — | — | | — | | | Expression | | | | | | | | | | | | | | | | | | |
| **F22** | — | — | — | — | — | | — | | | — | | | | | Self-Contained Expression | | | | | | | | | | | | | |
| **F24** | — | — | — | — | — | | — | | | — | | | | | — | | Publication Expression | | | | | | | | | | | |
| **F25** | — | — | — | — | — | | — | | | — | | | | | — | | Performance Plan | | | | | | | | | | | |
| **F26** | — | — | — | — | — | | — | | | — | | | | | — | | Recording | | | | | | | | | | | |
| **F23** | — | — | — | — | — | | — | | | — | | | | | Expression Fragment | | | | | | | | | | | | | |
| ***F34*** | — | — | — | — | — | | — | | | — | | | | | *KOS* | | | | | | | | | | | | | |
| **F35** | — | — | — | — | — | | — | | | — | | | | | Nomen Use Statement | | | | | | | | | | | | | |
| **F43** | — | — | — | — | — | | — | | | — | | | | | Identifier Rule | | | | | | | | | | | | | |
| E29 | — | — | — | — | — | | — | | | Design or Procedure | | | | | | | | | | | | | | | | | | |
| ***F25*** | *—* | — | *—* | — | *—* | | *—* | | | — | | | | | *Performance Plan* | | | | | | | | | | | | | |
| **F36** | — | — | — | — | — | | — | | | — | | | | | Script Conversion | | | | | | | | | | | | | |
| ***F43*** | — | — | — | — | — | | — | | | — | | | | | *Identifier Rule* | | | | | | | | | | | | | |
| E41 | — | — | — | — | — | | Appellation | | | | | | | | | | | | | | | | | | | | | |
| **F12** | — | — | — | — | — | | — | | | Nomen | | | | | | | | | | | | | | | | | | |
| **F13** | — | — | — | — | — | | — | | | — | | | | | *Identifier =* E42 *Identifier* | | | | | | | | | | | | | |
| **F50** | — | — | — | — | — | | — | | | — | | | | | — | | Controlled Access Point | | | | | | | | | | | |
| E71 | — | — | — | Man-Made Thing | | | | | | | | | | | | | | | | | | | | | | | | |
| *E24* | — | — | — | — | *Physical Man-Made Thing* | | | | | | | | | | | | | | | | | | | | | | | |
| ***F4*** | — | — | — | — | — | *Manifestation Singleton* | | | | | | | | | | | | | | | | | | | | | | |
| *E22* | *—* | *—* | *—* | *—* | *—* | *Man-Made Object* | | | | | | | | | | | | | | | | | | | | | | |
| *E84* | *—* | *—* | *—* | *—* | *—* | — | | | | | | *Information Carrier* | | | | | | | | | | | | | | | | |
| ***F54*** | — | — | — | — | — | | | | — | | | | | — | | *Utilised Information Carrier* | | | | | | | | | | | | |
| ***F5*** | — | — | — | — | — | | | | — | | | | | — | | | | | — | | | | | *Item* | | | | |
| ***F53*** | — | — | — | — | — | | | | — | | | | | — | | | | | — | | | | | *Material Copy* | | | | |
| *E25* | — | — | — | — | — | | | | *Man-Made Feature* | | | | | | | | | | | | | | | | | | | |
| ***F53*** | — | — | — | — | — | | | | — | | | | | *Material Copy* | | | | | | | | | | | | | | |
| E28 | — | — | — | — | Conceptual Object = F6 Concept | | | | | | | | | | | | | | | | | | | | | | | |
| E55 | — | — | — | — | — | | Type | | | | | | | | | | | | | | | | | | | | | |
| **F3** | — | — | — | — | — | | — | | | | | | Manifestation Product Type | | | | | | | | | | | | | | | |
| E89 | — | — | — | — | — | | Propositional Object | | | | | | | | | | | | | | | | | | | | | |
| **F1** | — | — | — | — | — | | — | | | | | Work | | | | | | | | | | | | | | | | |
| **F14** | — | — | — | — | — | | — | | | | | — | | | | | | Individual Work | | | | | | | | | | |
| **F17** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | Aggregation Work | | | | | |
| **F15** | — | — | — | — | — | | — | | | | | — | | | | | | Complex Work | | | | | | | | | | |
| **F18** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | Serial Work | | | | | | |
| **F16** | — | — | — | — | — | | — | | | | | — | | | | | | Container Work | | | | | | | | | | |
| **F19** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | Publication Work | | | | | | |
| ***F18*** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | — | | | | | *Serial Work* | |
| **F20** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | Performance Work | | | | | | |
| **F17** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | *Aggregation Work* | | | | | |
| **F21** | — | — | — | — | — | | — | | | | | — | | | | | | Recording Work | | | | | | | | | | |
| *E73* | — | — | — | — | — | | — | | | | | *Information Object* | | | | | | | | | | | | | | | | |
| *E31* | — | — | — | — | — | | — | | | | | — | | | | | *Document* | | | | | | | | | | | |
| *E32* | — | — | — | — | — | | — | | | | | — | | | | | — | | | | *Authority Document* | | | | | | | |
| ***F34*** | — | — | — | — | — | | — | | | | | — | | | | | — | | | | — | | | | | *KOS* | | |
| ***F2*** | *—* | *—* | *—* | *—* | *—* | | *—* | | | | | *—* | | | | | | *Expression* | | | | | | | | | | |
| ***F22*** | *—* | *—* | *—* | *—* | *—* | | *—* | | | | | *—* | | | | | | *—* | | | | | *Self-Contained Expression* | | | | | |
| ***F24*** | *—* | *—* | *—* | *—* | *—* | | *—* | | | | | *—* | | | | | | *—* | | | | | *—* | | | | *Publication Expression* | |
| ***F25*** | *—* | *—* | *—* | *—* | *—* | | *—* | | | | | *—* | | | | | | *—* | | | | | *—* | | | | *Performance Plan* | |
| ***F26*** | *—* | *—* | *—* | *—* | *—* | | *—* | | | | | *—* | | | | | | *—* | | | | | *—* | | | | *Recording* | |
| ***F23*** | *—* | *—* | *—* | *—* | *—* | | *—* | | | | | *—* | | | | | | *—* | | | | | *Expression Fragment* | | | | | |
| ***F34*** | — | — | — | — | — | | — | | | | | *—* | | | | | | *—* | | | | | *KOS* | | | | | |
| ***F35*** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | *Nomen Use Statement* | | | | | |
| ***F43*** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | *Identifier Rule* | | | | | |
| *E29* | *—* | *—* | *—* | *—* | *—* | | *—* | | | | | *—* | | | | | | *Design or Procedure* | | | | | | | | | | |
| ***F25*** | *—* | *—* | *—* | *—* | *—* | | *—* | | | | | *—* | | | | | | *—* | | | | *Performance Plan* | | | | | | |
| ***F36*** | — | — | — | — | — | | — | | | | | *—* | | | | | | *—* | | | | *Script Conversion* | | | | | | |
| ***F43*** | — | — | — | — | — | | — | | | | | *—* | | | | | | — | | | | *Identifier Rule* | | | | | | |
| **F13** | — | — | — | — | — | | — | | | | | *Identifier =* E42 *Identifier* | | | | | | | | | | | | | | | | |
| ***E90*** | — | — | — | — | — | | *Symbolic Object* | | | | | | | | | | | | | | | | | | | | | |
| *E73* | — | — | — | — | — | | *—* | | | | | *Information Object* | | | | | | | | | | | | | | | | |
| **F2** | — | — | — | — | — | | — | | | | | — | | | | | | *Expression* | | | | | | | | | | |
| **F22** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | *Self-Contained Expression* | | | | | |
| **F24** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | — | | | | *Publication Expression* | |
| **F25** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | — | | | | *Performance Plan* | |
| **F26** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | — | | | | *Recording* | |
| **F23** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | *Expression Fragment* | | | | | |
| *E29* | — | — | — | — | — | | — | | | | | *—* | | | | | | *Design or Procedure* | | | | | | | | | | |
| ***F25*** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | | | *Performance Plan* | | | | | |
| E41 | — | — | — | — | — | | — | | | | | Appellation = F12 Nomen | | | | | | | | | | | | | | | | |
| ***F12*** | — | — | — | — | — | | — | | | | | — | | | | | | *Nomen* | | | | | | | | | | |
| ***F13*** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | *Identifier =* E42 *Identifier* | | | | | | | |
| ***F50*** | — | — | — | — | — | | — | | | | | — | | | | | | — | | | — | | | | | | *Controlled Access Point* | |
| **F38** | — | — | — | — | — | | Character | | | | | | | | | | | | | | | | | | | | | |
| E39 | — | — | Actor | | | | | | | | | | | | | | | | | | | | | | | | | |
| E74 | — | — | — | Group | | | | | | | | | | | | | | | | | | | | | | | | |
| **F11** | — | — | — | — | Corporate Body | | | | | | | | | | | | | | | | | | | | | | | |
| **F39** | — | — | — | — | Family | | | | | | | | | | | | | | | | | | | | | | | |
| E40 | — | — | — | — | Legal Body | | | | | | | | | | | | | | | | | | | | | | | |
| **F44** | — | — | — | — | — | | Bibliographic Agency | | | | | | | | | | | | | | | | | | | | | |
| *E21* | — | — | — | *Person* = *F10 Person* | | | | | | | | | | | | | | | | | | | | | | | | |
| E53 | — | Place | = F9 Place | | | | | | | | | | | | | | | | | | | | | | | | | |

### 2.5.3. FRBROO Property Hierarchy

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Property id** | | **Property Name** | **Entity – Domain** | **Entity – Range** |
| R1 |  | is logical successor of (has successor) | F1 Work | F1 Work |
| R2 |  | is derivative of (has derivative) | F1 Work | F1 Work |
| R3 |  | is realised in (realises) | F1 Work | F22 Self-Contained Expression |
| — | R9 | is realised in (realises) | F14 Individual Work | F22 Self-Contained Expression |
| — | R12 | is realised in (realises) | F20 Performance Work | F25 Performance Plan |
| — | R13 | is realised in (realises) | F21 Recording Work | F26 Recording |
| — | R40 | has representative expression (is representative expression for) | F1 Work | F22 Self-Contained Expression |
| R4 |  | carriers provided by (comprises carriers of) | F2 Expression | F3 Manifestation Product Type |
| — | R41 | has representative manifestation product type (is representative manifestation product type for) | F2 Expression | F3 Manifestation Product Type |
| R5 |  | has component (is component of) | F2 Expression | F22 Self-Contained Expression |
| R6 |  | carries (is carried by) | F5 Item | F24 Publication Expression |
| R7 |  | is example of (has example) | F5 Item | F3 Manifestation Product Type |
| R8 |  | consists of (forms part of) | F13 Identifier | E90 Symbolic Object |
| R10 |  | has member (is member of) | F15 Complex Work | F1 Work |
| R11 |  | has issuing rule (is issuing rule of) | F18 Serial Work | E29 Design or Procedure |
| R15 |  | has fragment (is fragment of) | F2 Expression | F23 Expression Fragment |
| R16 |  | initiated (was initiated by) | F27 Work Conception | F1 Work |
| R17 |  | created (was created by) | F28 Expression Creation | F2 Expression |
| — | R21 | created (was created through) | F29 Recording Event | F26 Recording |
| — | R24 | created (was created through) | F30 Publication Event | F24 Publication Expression |
| R18 |  | created (was created by) | F28 Expression Creation | F4 Manifestation Singleton |
| R19 |  | created a realisation of (was realised through) | F28 Expression Creation | F1 Work |
| — | R22 | created a realisation of (was realised through) | F29 Recording Event | F21 Recording Work |
|  | R23 | created a realisation of (was realised through) | F30 Publication Event | F19 Publication Work |
| R20 |  | recorded (was recorded through) | F29 Recording Event | E5 Event |
| R25 |  | performed (was performed in) | F31 Performance | F25 Performance Plan |
| R26 |  | produced things of type (was produced by) | F32 Carrier Production Event | F3 Manifestation Product Type |
| R27 |  | used as source material (was used by) | F32 Carrier Production Event | F24 Publication Expression |
| R28 |  | produced (was produced by) | F32 Carrier Production Event | F5 Item |
| R29 |  | reproduced (was reproduced by) | F33 Reproduction Event | E84 Information Carrier |
| R30 |  | produced (was produced by) | F33 Reproduction Event | E84 Information Carrier |
| R31 |  | is reproduction of (has reproduction) | E84 Information Carrier | E84 Information Carrier |
| R32 |  | is warranted by (warrants) | F35 Nomen Use Statement | F52 Name Use Activity |
| R33 |  | has content | F12 Nomen | E62 String |
| R34 |  | has validity period (is validity period of) | F34 KOS | E52 Time-Span |
| R35 |  | is specified by (specifies) | F35 Nomen Use Statement | F34 KOS |
| R36 |  | uses script conversion (is script conversion used in) | F35 Nomen Use Statement | F36 Script Conversion |
| R37 |  | states as nomen (is stated as nomen in) | F35 Nomen Use Statement | F12 Nomen |
| R38 |  | refers to thema (is thema of) | F35 Nomen Use Statement | E1 CRM Entity |
| R39 |  | is intended for (is target audience in) | F35 Nomen Use Statement | E74 Group |
| R42 |  | is representative manifestation singleton for (has representative manifestation singleton) | F4 Manifestation Singleton | F2 Expression |
| R43 |  | carried out by (performed) | F41 Representative Manifestation Assignment | F44 Bibliographic Agency |
| R44 |  | carried out by (performed) | F42 Representative Expression Assignment | F44 Bibliographic Agency |
| R45 |  | assigned to (was assigned by) | F40 Identifier Assignment | E1 CRM Entity |
| R46 |  | assigned (was assigned by) | F40 Identifier Assignment | F3 Identifier |
| R48 |  | assigned to (was assigned by) | F41 Representative Manifestation Assignment | F2 Expression |
| R49 |  | assigned (was assigned by) | F41 Representative Manifestation Assignment | F3 Manifestation Product Type |
| R50 |  | assigned to (was assigned by) | F42 Representative Expression Assignment | F15 Complex Work |
| R51 |  | assigned (was assigned by) | F42 Representative Expression Assignment | F2 Expression |
| R52 |  | used rule (was the rule used in) | F40 Identifier Assignment | F43 Identifier Rule |
| R53 |  | assigned (was assigned by) | F41 Representative Manifestation Assignment | F4 Manifestation Singleton |
| R54 |  | has nomen language (is language of nomen in) | F35 Nomen Use Statement | E56 Language |
| R55 |  | has nomen form (is nomen form in) | F35 Nomen Use Statement | E55 Type |
| R56 |  | has related use (is related use for) | F35 Nomen Use Statement | F35 Nomen Use Statement |
| R57 |  | is based on (is basis for) | F38 Character | E39 Actor |
| R58 |  | has fictional member (is fictional member of) | F38 Character | F38 Character |
| R59 |  | had typical subject (was typical subject of) | F51 Pursuit | E1 CRM Entity |
| R60 |  | used to use language (was language used by) | F51 Pursuit | E56 Language |
| R61 |  | occurred in kind of context (was kind of context for) | F52 Name Use Activity | E55 Type |
| R62 |  | was used for membership in (was context for) | F52 Name Use Activity | E74 Group |
| R63 |  | named (was named by) | F52 Name Use Activity | E1 CRM Entity |
| R64 |  | used name (was name used by) | F52 Name Use Activity | E41 Appellation |
| R65 |  | recorded aspects of (had aspects recorded through) | F29 Recording Event | E18 Physical Thing |
| R66 |  | included performed version of (had a performed version through) | F31 Performance | E89 Propositional Object |
| CLP2 |  | should have type (should be type of) | F3 Manifestation Product Type | E55 Type |
| CLP43 |  | should have dimension (should be dimension of) | F3 Manifestation Product Type | E54 Dimension |
| CLP45 |  | should consist of (should be incorporated in) | F3 Manifestation Product Type | E57 Material |
| CLP46 |  | should be composed of (may form part of) | F3 Manifestation Product Type | F3 Manifestation Product Type |
| CLP57 |  | should have number of parts | F3 Manifestation Product Type | E60 Number |
| CLP104 |  | subject to (applies to) | F3 Manifestation Product Type | E30 Right |
| CLP105 |  | right held by (right on) | F3 Manifestation Product Type | E39 Actor |
| CLR6 |  | should carry (should be carried by) | F3 Manifestation Product Type | F24 Publication Expression |

### 2.5.4. FRBROO Property Hierarchy Aligned with (Part of) CIDOC CRM Property Hierarchy

| **Property id** | **Property Name** | **Entity – Domain** | **Entity – Range** |
| --- | --- | --- | --- |
| P2 | has type (is type of) | E1 CRM Entity | E55 Type |
| R7 | — is example of (has example) | F5 Item | F3 Manifestation Product Type |
| P3 | has note | E1 CRM Entity | E62 String |
| R33 | — R33 has content | F12 Nomen | E62 String |
| P14 | carried out by (performed) | E7 Activity | E39 Actor |
| R43 | — carried out by (performed) | F41 Representative Manifestation Assignment | F44 Bibliographic Agency |
| R44 | — carried out by (performed) | F42 Representative Expression Assignment | F44 Bibliographic Agency |
| P12 | occurred in the presence of (was present at) | E5 Event | E77 Persistent Item |
| P16 | — used specific object (was used for) | E7 Activity | E70 Thing |
| R19 | — — created a realisation of (was realised through) | F28 Expression Creation | F1 Work |
| R22 | — — — created a realisation of (was realised through) | F29 Recording Event | F21 Recording Work |
| R23 | — — — created a realisation of (was realised through) | F30 Publication Event | F19 Publication Work |
| R27 | — — used as source material (was used by) | F32 Carrier Production Event | F24 Publication Expression |
| R29 | — — reproduced (was reproduced by) | F33 Reproduction Event | E84 Information Carrier |
| P33 | — — used specific technique (was used by) | E7 Activity | E29 Design or Procedure |
| R25 | — — — performed (was performed in) | F31 Performance | F25 Performance Plan |
| R52 | — — — used rule (was the rule used in) | F40 Identifier Assignment | F43 Identifier Rule |
| P142 | — — used constituent (was used in) | E15 Identifier Assignement | E90 Symbolic Object |
| R66 | — — included performed version of (had a performed version through) | F31 Performance | E89 Propositional Object |
| P25 | — moved (moved by) | E9 Move | E19 Physical Object |
| P31 | — has modified (was modified by) | E11 Modification | E24 Physical Man-Made Thing |
| P108 | — — has produced (was produced by) | E12 Production | E24 Physical Man-Made Thing |
| R18 | — — — created (was created by) | F28 Expression Creation | F4 manifestation Singleton |
| R28 | — — — produced (was produced by) | F32 Carrier Production Event | F5 Item |
| R30 | — — — produced (was produced by) | F33 Reproduction Event | E84 Information Carrier |
| P110 | — — augmented (was augmented by) | E79 Part Addition | E24 Physical Man-Made Thing |
| P112 | — — diminished (was diminished by) | E80 Part Removal | E24 Physical Man-Made Thing |
| P92 | — brought into existence (was brought into existence by) | E63 Beginning of Existence | E77 Persistent Item |
| P94 | — — has created (was created by) | E65 Creation | E28 Conceptual Object |
| R16 | — — — initiated (was initiated by) | F27 Work Conception | F1 Work |
| R17 | — — — created (was created by) | F28 Expression Creation | F2 Expression |
| R21 | — — — — created (was created by) | F29 Recording Event | F26 Recording |
| R24 | — — — — created (was created through) | F30 Publication Event | F24 Publication Expression |
| P135 | — — — created type (was created by) | E83 Type Creation | E55 Type |
| P95 | — — has formed (was formed by) | E66 Formation | E74 Group |
| P98 | — — brought into life (was born) | E67 Birth | E21 Person |
| *P108* | *— — has produced (was produced by)* | *E12 Production* | *E24 Physical Man-Made Thing* |
| R18 | — — — created (was created by) | F28 Expression Creation | F4 manifestation Singleton |
| R28 | — — — produced (was produced by) | F32 Carrier Production Event | F5 Item |
| R30 | — — — produced (was produced by) | F33 Reproduction Event | E84 Information Carrier |
| P123 | — — resulted in (resulted from) | E81 Transformation | E77 Persistent Item |
| P15 | was influenced by (influenced) | *E7 Activity* | E1 CRM Entity |
| P16 | *— used specific object (was used for)* | *E7 Activity* | *E70 Thing* |
| R19 | — — created a realisation of (was realised through) | F28 Expression Creation | F1 Work |
| R22 | — — — created a realisation of (was realised through) | F29 Recording Event | F21 Recording Work |
| R23 | — — — created a realisation of (was realised through) | F30 Publication Event | F19 Publication work |
| R27 | — — used as source material (was used by) | F32 Carrier Production Event | F24 Publication Expression |
| R29 | — — reproduced (was reproduced by) | F33 Reproduction Event | E84 Information Carrier |
| *P33* | *— — used specific technique (was used by)* | *E11 Modification* | *E29 Design or Procedure* |
| *R25* | *— — — performed (was performed in)* | *F31 Performance* | *F25 Performance Plan* |
| *R52* | *— — — used rule (was the rule used in)* | *F40 Identifier Assignment* | *F43 Identifier Rule* |
| *P142* | *— — used constituent (was used in)* | *E15 Identifier Assignement* | *E90 Symbolic Object* |
| *R66* | *— — included performed version of (had a performed version through)* | *F31 Performance* | *E89 Propositional Object* |
| P17 | — was motivated by (motivated) | E7 Activity | E1 CRM Entity |
| P134 | — continued (was continued by) | E7 Activity | E7 Activity |
| P136 | — was based on (supported type creation) | E83 Type Creation | E1 CRM Entity |
| P67 | refers to (is referred to by) | E89 Propositional Object | E1 CRM Entity |
| R32 | — is warranted by (warrants) | F35 Nomen Use Statement | F52 Name Use Activity |
| R37 | — states as nomen (is stated as nomen in) | F35 Nomen Use Statement | F12 Nomen |
| R39 | — is intended for (is target audience in) | F35 Nomen Use Statement | E74 Group |
| R54 | — has nomen language (is language of nomen in) | F35 Nomen Use Statement | E56 Language |
| R55 | — has nomen form (is nomen form in) | F35 Nomen Use Statement | E55 Type |
| P69 | has association with (is associated with) | E29 Design or Procedure | E29 Design or Procedure |
| R56 | — has related use (is related use for) | F35 Nomen Use Statement | F35 Nomen Use Statement |
| P106 | is composed of (forms part of) | E90 Symbolic Object | E90 Symbolic Object |
| R8 | — consists of (forms part of) | F13 Identifier | E90 Symbolic Object |
| R15 | — has fragment (is fragment of ) | F2 Expression | F23 Expression Fragment |
| P128 | carries (is carried by) | E24 Physical Man-Made Thing | E73 Information Object |
| R6 | — carries (is carried by) | F5 Item | F24 Publication Expression |
| R42 | — is representative manifestation singleton for (has representative manifestation singleton) | F4 Manifestation Singleton | F2 Expression |
| P65 | — shows visual item (is shown by) | E24 Physical Man-Made Thing | E36 Visual Item |
| P130 | shows features of (features are also found on) | E70 Thing | E70 Thing |
| R1 | — is logical successor of (has successor) | F1 Work | F1 Work |
| R2 | — is derivative of (has derivative) | F1 Work | F1 Work |
| R3 | — is realised in (realises) | F1 Work | F22 Self-Contained Expression |
| R9 | — — is realised in (realises) | F14 Individual Work | F22 Self-Contained Expression |
| R12 | — — is realised in (realises) | F20 Performance Work | F25 Performance Plan |
| R13 | — — is realised in (realises) | F21 Recording Work | F26 Recording |
| R40 | — — has representative expression (is representative expression for) | F1 Work | F22 Self-Contained Expression |
| R31 | — is reproduction of (has reproduction) | E84 Information Carrier | E84 Information Carrier |
| P73 | — has translation (is translation of) | E33 Linguistic Object | E33 Linguistic Object |
| P140 | assigned attribute to (was attributed by) | E13 Attribute Assignment | E1 CRM Entity |
| R45 | — assigned to (was assigned by) | F40 Identifier Assignment | E1 CRM Entity |
| R48 | — assigned to (was assigned by) | F41 Representative Manifestation Assignment | F2 Expression |
| R50 | — assigned to (was assigned by) | F42 Representative Expression Assignment | F15 Complex Work |
| R63 | — named (was named by) | F52 Name Use Activity | E1 CRM Activity |
| P141 | assigned (was assigned by) | E13 Attribute Assignment | E1 CRM Entity |
| P37 | — assigned (was assigned by) | E15 Identifier Assignment | E42 Identifier |
| R46 | — — assigned (was assigned by) | F40 Identifier Assignement | F13 Identifier |
| R49 | — assigned (was assigned by) | F41 Representative Manifestation Assignment | F3 Manifestation Product Type |
| R51 | — assigned (was assigned by) | F42 Representative Expression Assignment | F2 Expression |
| R53 | — assigned (was assigned by) | F41 Representative Manifestation Assignment | F4 Manifestation Singleton |
| R64 | — used name (was name used by) | F52 Name Use Activity | E41 Appellation |
| P148 | has component (is component of) | E89 Propositional Object | E89 Propositional Object |
| R5 | — has component (is component of) | F2 Expression | F22 Self-Contained Expression |
| R10 | — has member (is member of) | F15 Complex Work | F1 Work |
| R35 | — is specified by (specifies) | F35 Nomen Use Statement | F34 KOS |
| R4 | carriers provided by (comprises carriers of) | F2 Expression | F3 Manifestation Product Type |
| R41 | — has representative manifestation product type (is representative manifestation product type for) | F2 Expression | F3 Manifestation Product Type |
| R11 | has issuing rule (is issuing rule of) | F18 Serial Work | E29 Design or Procedure |
| R20 | recorded (was recorded through) | F29 Recording Event | E2 Temporal Entity |
| R26 | produced things of type (was produced by) | F32 Carrier Production Event | F3 Manifestation Product Type |
| R34 | has validity period (is validity period of) | F34 KOS | E52 Time-Span |
| R36 | uses script conversion (is script conversion used ni) | F35 Nomen Use Statement | F36 Script Conversion |
| R38 | refers to thema (is thema of) | F35 Nomen Use Statement | E1 CRM Entity |
| R57 | is based on (is basis for) | F38 Character | E39 Actor |
| R58 | has fictional member (is fictional member of) | F38 Character | F38 Character |
| R59 | had typical subject (was typical subject of) | F51 Pursuit | E1 CRM Entity |
| R60 | used to use language (was language used by) | F51 Pursuit | E56 Language |
| R61 | occurred in kind of context (was kind of context for) | F52 Name Use Activity | E55 Type |
| R62 | was used for membership in (was context for) | F52 Name Use Activity | E74 Group |
| CLP2 | should have type (should be type of) | F3 Manifestation Product Type | E55 Type |
| R65 | recorded aspects of (had aspects recorded through) | F29 Recording Event | E18 Physical Thing |
| CLP43 | should have dimension (should be dimension of) | F3 Manifestation Product Type | E54 Dimension |
| CLP45 | should consist of (should be incorporated in) | F3 Manifestation Product Type | E57 Material |
| CLP46 | should be composed of (may form part of) | F3 Manifestation Product Type | F3 Manifestation Product Type |
| CLP57 | should have number of parts | F3 Manifestation Product Type | E60 Number |
| CLP104 | subject to (applies to) | F3 Manifestation Product Type | E30 Right |
| CLP105 | right held by (right on) | F3 Manifestation Product Type | E39 Actor |
| CLR6 | should carry (should be carried by) | F3 Manifestation Product Type | F24 Publication Expression |

## 2.6. FRBROO Class Declaration

The classes of FRBROO are comprehensively declared in this section using the following format:

* Class names are presented as headings in bold face, preceded by the class’s unique identifier;
* The line “Equal to:” declares the CIDOC CRM class that covers the same concept as the FRBROO class;
* The line “Subclass of:” declares the superclass of the class from which it inherits properties;
* The line “Superclass of:” is a cross-reference to the subclasses of this class;
* The line “Scope note:” contains the textual definition of the concept the class represents;
* The line “Examples:” contains a list of examples of instances of this class. If the example is also instance of a subclass of this class, the unique identifier of the subclass is added in parenthesis. If the example instantiates two classes, the unique identifiers of both classes is added in parenthesis. Non-fictitious examples may be followed by an explanation in brackets.
* The line “Properties:” declares the list of the class’s properties;
* Each property is represented by its unique identifier, its forward and reverse names, and the range class that it links to, separated by colons;
* Inherited properties are not represented;
* Properties of properties are provided indented and in parentheses beneath their respective domain property.

### F1 Work

Subclass of:        [E89](https://posta.nuk.uni-lj.si/OWA/#_E1_CRM_Entity) Propositional Object

Superclass of: [F16](#_F16_Container_Work) Container Work

[F21](#_F21_Recording_Work) Recording Work

Scope note: 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.

(F1 Work may include additional original parts.”)

Examples:

* Abstract content of Giovanni Battista Piranesi’s ‘Carcere XVI: the pier with chains: 1st state’
* ‘La Porte de l’Enfer’ by Auguste Rodin conceived between 1880 and 1917
* ‘Hamlet’ by William Shakespeare

Properties**:** [R1](#_R1_is_logical_1) is logical successor of (has successor): [F1](#_F1_Work_1) Work

[R68](#_R68_is_inspiration) is inspiration for (was inspired by): F1 Work

[R2](#_R2_is_derivative) is derivative of (has derivative): [F1](#_F1_Work_1) Work (R2.1 has type: [E55](#_E55_Type_) Type)

[R3](#_R3_is_realised_1) is realised in (realises): F2 Expression

[R40](#_R40_has_representative_expression_() has representative expression (is representative expression for): [F2](#_F2_Expression_1) Expression

Rxx uses expression:F1 Work

### F2 Expression

Subclass of: [E73](#_E73_Information_Object_) Information Object

Superclass of: [F34](#_F34_Controlled_Vocabulary) Controlled Vocabulary )

[F43](#_F43_Identifier_Rule_1) Identifier Rule just check to see along with linked open data rules

[F25](#_F25_Performance_Plan) Performance Plan

[F26](#_F26_Recording) Recording

[F3](#_F3_Manifestation) Manifestation

Scope note: This classcomprises 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 that have objectively recognisable structures. 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, including human memory, but expressions cannot persist without a carrier.

The form of F2 Expression is an inherent characteristic of the F2 Expression. Differences in form implies 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.

Examples: The Italian text of Dante’s ‘Divina Commedia’ as found in the authoritative critical edition ‘*La Commedia secondo l’antica vulgata a cura di Giorgio Petrocchi’*, Milano: Mondadori, 1966-67 (= Le Opere di Dante Alighieri, Edizione Nazionale a cura della Società Dantesca Italiana, VII, 1-4) (F2 and E33)

The Italian text of Dante’s ‘Inferno’ as found in the same edition (F22 and E33)

The signs which make up Christian Morgenstern’s ‘Fisches Nachtgesang’ [a poem consisting simply of ‘—’ and ‘˘’ signs, arranged in a determined combination] (F22)

Properties**:** [R4](#_R4_carriers_provided) carriers provided by (comprises carriers of): [F3](#_F3_Manifestation_Product) Manifestation

[R5](#_R5_has_component) has component (is component of): F2 Expression

[R15](#_R15_has_fragment_) has fragment (is fragment of): E90 Symbolic Object

[R41](#_R41_has_representative_manifestatio) has representative manifestation product type (is representative manifestation product type for): [F3](#_F3_Manifestation_Product) Manifestation (it might be not needed)

Rxx incorporates external expression: F2 Expression

### F3 Manifestation

Subclass of:       [F2 Expression](#_F2_Expression_1)

Scope note: 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 carrying material 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, in particular if labour is divided between an author and a publisher. 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 hardcover and paperback editions would be two distinct instances of F3 Manifestation, even though authorial and editorial content are otherwise identical in both publications.

In 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 defines all of the features or traits that instances of F5 Item display in order to be copies of a particular publication. In 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.

Properties**:** [CLP2](#_CLP2_should_have_type_(should_be_ty) should have type (should be type of): [E55](#_E55_Type_) Type

[CLP43](#_CLP43_should_have) should have dimension (should be dimension of): [E54](#_E54_Dimension_) Dimension

[CLP45](#_CLP45_should_consist) should consist of (should be incorporated in): [E57](#_E57_Material_) Material

[CLP46](#_CLP46_should_be) should be composed of (may form part of): [F3](#_F3_Manifestation_Product) Manifestation

[CLP57](#_CLP57_should_have) should have number of parts: [E60](#_E60_Number_1) Number

### F4 Manifestation Singleton

Deprecated

### F5 Item

Subclass of: [F54](#_F54_Utilized_Information) Utilised Information Carrier

Scope note: 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.

The notion of F5 Item is only relevant with regard to the production process, from a bibliographic point of view. Cultural heritage institutions' holdings are a distinct notion: a holding 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 physically united in any other way, or when an instance of F5 Item is enhanced through the addition of manuscript annotations, or any material that was not intended by the publisher, such as press clippings, dried flowers, etc.), or "smaller" than one (e.g., when a one-volume instance of F5 Item (in the case of printed books) is interleaved and rebound as two volumes, or when pages were torn away from it, or when one CD from a two-CD set is missing, etc.). From an operational point of view, cultural heritage institutions do *not* deal with instances of F5 Item, but with storage units. However, it was not deemed necessary to declare an additional class for the notion of Storage Unit. Storage units can be easily accounted for through the E19 Physical Object class from CIDOC CRM, and the relationships between storage units and instances of F5 Item through the *P46 is composed of (forms part of)* property from CIDOC CRM. If needed, an instance of E19 Physical Object can be typed as a storage unit through the *P2 has type (is type of)* property.

Examples:

* John Smith's copy of Charles Dickens's *The* *Pickwick Papers* published in 1986 by the Oxford Clarendon Press, ISBN 0-19-812631-X
* The exemplar of Samuel Beckett's *Waiting for Godot* published in 1956 by Faber and Faber that was once possessed by Edward Gordon Craig [who pasted a press clipping on it, so that the storage unit currently held by the National Library of France and identified by shelfmark '8-EGC-2044' consists of both this instance of F5 Item and the press clipping pasted by its former owner]
* The exemplar currently held by the Library of Congress, and identified by call number 'M3.3.H13 J4 1752 Case', of George Frideric Handel's *The Choice of Hercules* published in London by J. Walsh around 1751 [*Note:* this exemplar is bound with an exemplar of *Jephtha,* by the same composer, published in London by J. Walsh in 1752; these two distinct instances of F5 Item therefore make up a single storage unit, i.e., they both *P146i forms part of* the same instance of E19 Physical Object]

Properties: [R7](#_R7_is_materialization) is materialization of (is materialized in): [F3](#_F3_Manifestation_Product) Manifestation

### Fn Storage Unit

Deprecated

### F6 Concept

Equal to: [E28](#_E28_Conceptual_Object_) Conceptual Object

Scope note: An abstract notion or idea. [FRBRER] Includes fields of knowledge, disciplines, schools of thought (philosophies, religions, political ideologies, etc.), etc. Includes theories, processes, techniques, practices, etc. *[Definition from the FRAD model, unchanged]*

This class comprises non-material products of our minds and other human produced data that have become objects of a discourse about their identity, circumstances of creation or historical implication. The production of such information may have been supported by the use of technical devices such as cameras or computers.

Characteristically, instances of this class are created, invented or thought by someone, and then may be documented or communicated between persons. Instances of E28 Conceptual Object have the ability to exist on more than one particular carrier at the same time, such as paper, electronic signals, marks, audio media, paintings, photos, human memories, etc.

They cannot be destroyed. They exist as long as they can be found on at least one carrier or in at least one human memory. Their existence ends when the last carrier and the last memory are lost. *[Scope note for E28 Conceptual Object in CIDOC CRM version 5.0.1]*

Examples: Natural history of whales

Cultural history of Wales

The appreciation of Victor Hugo’s works in Germany between 1870 and 1914

### F7 Object

Equal to: [E18](#_E18_Physical_Thing_2) Physical Thing

Scope Note: This class comprises all persistent physical items with a relatively stable form, man-made or natural.

*[This is the beginning of scope note for E18 Physical Object in CIDOC CRM version 5.0.1]*

Examples: Buckingham Palace

The *Lusitania*

*Apollo 11*

The Eiffel Tower

### F8 Event

Equal to: [E4](#_E4_Period_) Period

Scope note: This class comprises sets of coherent phenomena or cultural manifestations bounded in time and space.

It is the social or physical coherence of these phenomena that identify an E4 Period and not the associated spatio-temporal bounds. These bounds are a mere approximation of the actual process of growth, spread and retreat. Consequently, different periods can overlap and coexist in time and space, such as when a nomadic culture exists in the same area as a sedentary culture.

Typically this class is used to describe prehistoric or historic periods such as the ‘Neolithic Period’, the ‘Ming Dynasty’ or the ‘McCarthy Era’. There are however 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 E67 Birth can be seen as both an atomic E5 Event and as an E4 Period that consists of multiple activities performed by multiple instances of E39 Actor.

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 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 E4 Period, and the second defines morphological object types that fall under E55 Type.

Another specific case of an E4 Period is the set of activities and phenomena associated with a settlement, such as the populated period of Nineveh.

*[This is the Scope note for E4 Period in CIDOC CRM version 5.0.1]*

[Note that in CIDOC CRM, E12 Production, E13 Attribute Assignment, and E65 Creation are indirect subclasses of E4 Period = F8 Event; as a consequence, F8 Event is an indirect superclass of: F27 Work Conception, F28 Expression Creation, F40 Identifier Assignment, F41 Representative Manifestation Assignment, F42 Representative Expression Assignment, F32 Carrier Production Event, F33 Reproduction Event, and ~~F30 Publication Event~~]

Examples: The battle of Trafalgar

Printing for the publisher named ‘Doubleday’ in 2003 all the copies of the first print run of the novel entitled ‘Da Vinci Code’ (F32)

Having the initial idea that eventually resulted in the existence of the opera entitled ‘Der fliegende Holländer’ (F27)

Creating for Mozart’s 41st symphony the controlled access point that was thereafter consistently used to refer unambiguously to that symphony everywhere in the Library of Congress’s catalogue (F40)

### F9 Place

Deprecated

### F10 Person

Deprecated

### F11 Corporate Body

Depecated

### F12 Nomen

Subclass of: E89 Propositional Object

Superclass of: F35 Nomen Use Statement

Scope note: This class comprises associations between an instance of any class, and signs or arrangements of signs following a specific syntax (sequences of alphanumeric characters, chemical structure symbols, sound symbols, ideograms etc.) that are used or can be used to refer to and identify that instance. The scripts or type sets for the types of symbols used to compose an instance of F12 Nomen have to be explicitly specified. Spelling variants are regarded as different nomina, whereas the use of different fonts (visual representation variants) or different digital encodings does not change the identity.

An arbitrary combination of signs or symbols cannot be regarded as an appellation or designation until it is associated with something in some context. In that sense, the F12 Nomen class can be understood as the reification of a relationship between an instance of E1 CRM Entity and an instance of E41 Appellation. Two instances of F12 Nomen can happen to be associated with two identical instances of E62 String and yet remain distinct, as long as they either refer to distinct instances of E1 CRM Entity, or as long as they are associated with distinct instances of other classes through one or more than one of the other properties of the F12 Nomen class (while referring to the same instance of E1 CRM Entity).

An instance of F12 Nomen associates a combination of signs with an instance of E1 CRM Entity on the basis of a cultural or linguistic convention: by associating a nomen string with anything, the instance of F12 Nomen establishes a meaning that is not inherent in the instance of E62 String that is associated with it. Depending on context of use, nomens associated with identical strings can involve instances of different things in the real world even within the same language (polysemy and homonymy). Conversely, the same thing can be referred to through any number of nomens (synonymy). In the controlled environment of a bibliographic information system, though, synonymy is avoided and the instances of E62 String associated with a given instance of F12 Nomen would generally be disambiguated, so that each nomen string is associated with only one instance of E1 CRM Entity within the specific scheme.

The identity of an instance of F12 Nomen is determined by the combination of the thing it refers to, the choice and order of the symbols used within the instance of E62 String that represents it, and the specific instances of the various classes with which it is associated through all other properties of the F12 Nomen class. Variation in the symbols used (such as transliteration into another script) or variation in their ordering usually results in a distinct instance of F12 Nomen, but variation in the visual representation of the symbols present in the instance of E62 String that represents the instance of F12 Nomen (such as different fonts that may be used to present alpha-numeric or character strings) does not result in a different nomen string.

Instances of F12 Nomen are assigned and associated with instances of E1 CRM Entity either formally (such as by bibliographic agencies) or informally through common usage. When they are assigned formally, the construction of the instances of E62 String that represent them may follow predetermined rules.

The act of naming something may involve the combination of various symbolic objects, which may be instances of F12 Nomen in their own right, and therefore refer to distinct instances of E1 CRM Entity, or just be used as qualifiers. A frequent example is provided by the tradition consisting of naming persons by juxtaposing a given name (such as 'John'), and a last name (such as 'Smith') which is shared by all members of the same family. The given name alone can be sufficient to refer unambiguously to a given individual in a given context, but not in a wider context, in which the combination of given name plus last name proves necessary. Similarly, the combination of given name plus last name may be ambiguous in an even wider context, in which case the need for further qualifiers (such as a nickname, or, in the context of bibliographic control, dates and statement of occupation) can be felt. An instance of F12 Nomen can therefore be decomposed into further reifications that refer to distinct things through distinct strings, and/or instances of E90 Symbolic Object that serve merely as qualifiers and do not refer to anything in particular.

Examples: ‘杜甫’ [the name of a Chinese poet of the 8th century, in simplified Chinese characters]

‘Du Fu’ [Pinyin romanised form of the name of a Chinese poet of the 8th century]

‘Tu Fu’ [another romanised form of the name of a Chinese poet of the 8th century]

‘Thơ Ðô Phủ’ [Vietnamese form of the name of a Chinese poet of the 8th century]

‘**جامعة صفاقس**’ [Arabic name of the Sfax University (Tunisia), in Arabic script]

‘Ğāmi‘at̀̀ Ṣafāqis’ [Arabic name of the Sfax University (Tunisia), transliterated]

‘Université de Sfax’ [French name of the Sfax University (Tunisia)]

‘3-[(2S)-1-methylpyrrolidin-2-yl]pyridine’ [the IUPAC systematic name for nicotine]

‘Murders in the rue Morgue’ [English title of a textual work]

‘Poe, Edgar Allan, 1809-1849. Murders in the rue Morgue’ (F50) [controlled author/title access point for a textual work]

‘modelling’ [not the activity, just the written signs that represent its English name in British spelling]

‘modeling’ [not the activity, just the written signs that represent its English name in American spelling]

‘Maxwell equations’ [preferred subject access point from LCSH, http://lccn.loc.gov/sh85082387, as of 19 November 2012]

‘Equations, Maxwell’ [variant subject access point, from the same source]

‘Gončarova, Natalʹâ Sergeevna (1881-1962)’ [preferred access point for a personal name, from the authority file of the National Library of France, http://catalogue.bnf.fr/ark:/12148/cb119547494/PUBLIC, as of 15 June 2012]

‘Гончарова, Наталья Сергеевна (1881-1962)’ [parallel access point from the same source]

‘Goncharova, Natalia (1881-1962)’ [variant access point from the same source]

Properties**:** [R33](#_R33_has_content) has content: [E62](#_E62_String) String

### F13 Identifier

Deprecated

### F14 Individual Work

Deprecated

### F15 Complex Work

Deprecated, use work instead

### F16 Container Work

Deprecated, use work instead

### F17 Aggregation Work

Deprecated, use work instead

### F18 Serial Work

Subclass of: F1 Work

Scope note: This class comprises works that are, or have been, planned to result in sequences of Expressions or Manifestations with common features. Whereas a work can acquire new members during the time it evolves, Expressions and Manifestations are identified with a certain state achieved at a particular point in time. Therefore there is in general no single Expression or Manifestation representing a complete serial work, unless the serial work has ended.

Serial Works may or may not have a plan for an overall expression.

The retrospective reprinting of all issues of a Serial Work at once, in the form of a monograph, is regarded to be another member of a Complex Work, which contains the Serial Work and the Individual Work realised in the monograph. This does not make the monograph part of the Serial Work.

Examples: The periodical entitled ‘The UNESCO Courier’, ISSN ‘0041-5278’

The periodical entitled ‘Courrier de l’UNESCO’, ISSN ‘0304-3118’ [French edition of the periodical titled ‘The UNESCO Courier’, ISSN ‘0041-5278’]

The series entitled ‘L’évolution de l’humanité’, ISSN ‘0755-1843’ [a monograph series comprising volumes that were published from 1920 on, and some of which were reprinted, with different physical features and rearranged in a different order, from 1968 on, in a distinct series also entitled ‘L’évolution de l’humanité’, ISSN ‘0755-1770’]

Properties**:** [R11](#_R13_is_expressed_in) has issuing rule (is issuing rule of): [E29](#_E29_Design_or_) Design or Procedure

### F19 Publication Work

Deprecated, use instead F1 Work

### F20 Performance Work

Deprecated, use instead F1 Work

### F21 Recording Work

Deprecated, use instead F1 Work

### F22 Self-Contained Expression

Deprecated, use F2 Expression instead

### F23 Expression Fragment

Deprecated, use E90 Symbolic Object instead

### F24 Publication Expression

Deprecated (merged with F3 Manifestation)

### F25 Performance Plan

Deprecated

### F26 Recording

Deprecated, use instead F2 Expression

### F27 Work Conception

Subclass of: [E65](#_E65_Creation_1) Creation

Scope note: This class comprises beginnings of evolutions of works.

An instance of F27 Work Conception marks the initiation of the creation of an F1 Work. The work, as an intellectual construction, evolves from this point on, until the last known expression of it. The instance of E39 Actor with which a work is associated through the chain of properties F1 Work *R16i was initiated by* F27 Work Conception *P14 carried out by* E39 Actor corresponds to the notion of the “creator” of the work. In the case of commissioned works, it is not the commissioning that is regarded as the work conception, but the acceptance of the commission.

This event does not always correlate with the date assigned in common library practice to the work, which is usually a later event (such as the date of completion of the first clean draft).

In addition, F27 Work Conception can serve to document the circumstances that surrounded the appearance of the original idea for a work, when these are known.

Examples: Ludwig van Beethoven’s having the first ideas for his fifth symphony

Pablo Picasso’s acceptance, in 1930, of Ambroise Vollard’s commission for a set of 100 etchings, now known as the ‘Vollard Suite’

René Goscinny’s and Albert Uderzo’s first collaborative ideas for the comic book entitled ‘Asterix in Britain’ [*comment: Goscinny wrote the script and Uderzo made the drawings; both are regarded as co-creators of that collaborative, at the same level of creative input, and no attempt is made to ascertain whether the ideas for the script preceded the ideas for the drawings, or vice-versa*]

The combination of activities, carried out, among others, by Alfred Hitchcock, that began the process which eventually resulted in the movie entitled ‘Psycho’ coming into being

Oscar Wilde’s having by May 1897 the initial idea of writing his poem entitled ‘The ballad of the Reading gaol’, inspired by his stay in the Reading prison from November 20, 1895 to May 18, 1897, and the execution of Charles Thomas Woolridge on July 7, 1896

Properties**:** [R16](#_R16_initiated_(was) initiated (was initiated by): [F1](#_F1_Work_1) Work

### F28 Expression Creation

Subclass of: [E12](#_E12_Production_) Production

[E65](#_E65_Creation_1) Creation

Superclass of: [F29](#_F29_Recording_Event) Recording Event

[F30](#_F30_Publication_Event) Publication Event

Scope note: This class comprises activities that result in instances of F2 Expression coming into existence. This class characterises the externalisation of an F1 Work. The creation of an F1 Work is considered to occur at the time of creation (F28) of its first F2 Expression.

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 F4 Manifestation Singleton. 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 work becomes manifest by being expressed on a physical carrier other than the creator’s brain. The spatio-temporal circumstances under which the expression is created are necessarily the same spatio-temporal circumstances under which the first instance of F4 Manifestation Singleton is produced.

The mechanisms through which *oral tradition* (of myths, tales, music, etc.) operates are not further investigated in this model. As far as bibliographic practice is concerned, only those instances of F2 Expression that are externalised on physical carriers other than both the creator’s brain and the auditor’s brain are taken into account (for a discussion of the modelling of oral traditions, see: Nicolas, Yann. ‘Folklore Requirements for Bibliographic Records: oral traditions and FRBR.’ In: *Cataloging & Classification Quarterly* (2005). Vol. 39, No. 3-4. P. 179-195).

It is possible to use the *P2 has type (is type of)* property in order to specify that the creation of a given expression of a given work played a particular role with regard to the overall bibliographic history of that work (e.g., that it was the creation of the progenitor expression on which all other expressions of the same work are based; or that it was the creation of the critical edition that served as the basis for canonical references to the work).

An instance of F28 Expression Creation may use as source material a specific existing F2 Expression. The property [P16](#_P16__used_) *used specific object (was used for)* can be used to specify the source expression for the derivation. In cases such as a translation or a revised edition, etc., a new F2 Expression of the same F1 Work, a derived expression, is created. In the situation where an expression of one F1 Work serves as source material for the creation of the first expression of a new instance of F1 Work, the relationship is indicated using the property *R2 is derivative of (has derivative)* between the two instances of F1 Work. Path: F1 Work(1) *R3 is realised in* F2 Expression(1) *P16i was used for* F28 Expression Creation *R17 created* F2 Expression(2) *R3i realises* F1 Work(2) *R2 is derivative of* F1 Work(1)

Examples: The creation of the original manuscript score of ‘Uwertura tragiczna’ by Andrzej Panufnik in 1942 in Warsaw

The reconstruction from memory of the manuscript score of ‘Uwertura tragiczna’ by Andrzej Panufnik in 1945 after the original score was destroyed during the war

The creation, by Lord Byron, of the English text of his work entitled ‘Manfred’ (*P2 has type* E55 Type {major original contribution})

The creation, by Woldemar Starke, of his German translation of Lord Byron’s text entitled ‘Manfred’ (*P2 has type* E55 Type {translation})

The recording of the third alternate take of ‘Blue Hawaii’ performed by Elvis Presley in Hollywood, Calif., Radio Recorders, on March 22nd, 1961 [each individual take is a distinct instance of F2 Expression]

Properties**:** [R17](#_R17_created_(was) created (was created by): [F2](#_F2_Expression) Expression

[R18](#_R18_created_(was) created (was created by): F5 Item

### F29 Recording Event

Subclass of: [F28](#_F31_Expression_Creation) Expression Creation

Scope note: This class comprises activities that intend to convey (and preserve) the features of perdurants in a recording, such as a live recording of a performance, a documentary, or other capture of a perdurant. Such activities may follow the directions of a recording plan. They may include postproduction.

Examples: The making of the recording of the third alternate take of the musical work titled ‘Blue Hawaii’ as performed by Elvis Presley in Hollywood, Calif., Radio Recorders, on March 22nd, 1961

The making of the photograph of the three Allied leaders at Yalta in February 1945

The making of the recording of an East Australian humpback whale song in 1994 in the framework of the Oceania Project

Filming Louise Bourgeois at work in the context of the shooting of the documentary movie entitled ‘Louise Bourgeois: The Spider, the Mistress, and the Tangerine’

Properties: [R20](#_R20_recorded_(was_) recorded (was recorded through): [E2](#_E2_Temporal_Entity) Temporal Entity

[R21](#_R21_created_(was_1) created (was created through): [F26](#_F26_Recording) Recording

[R22](#_R22_created_a_) created a realisation of (was realised through): [F21](#_F21_Recording_Work) Recording Work

[R65](#_R65_recorded_aspects) recorded aspects of (had aspects recorded through): [E18](#_E18_Physical_Thing_2) Physical Thing

### F30 Manifestation Creation [=LRM-R7 manifestation creation]

Subclass of:        [F28](https://posta.nuk.uni-lj.si/owa/#_F31_Expression_Creation) Expression Creation

Scope note:         This class comprises the activities of selecting, arranging and elaborating one or more expressions to the level of the actual or intended sensory impression of a respective carrier or other persistent presentation means of it with the purpose of communicating it to some public.

Examples:          Establishing in 1972 the layout, features, and prototype for the publication of ‘The complete poems of Stephen Crane, edited with an introduction by Joseph Katz’ (ISBN ‘0-8014-9130-4’), which served for a second print run in 1978

Creating the article by Allen Renear, Christopher Phillippe, Pat Lawton, and David Dubin, entitled ‘An XML document corresponds to which FRBR Group 1 entity?’ as online available at <<http://conferences.idealliance.org/extreme/html/2003/Lawton01/EML2003Lawton01.html>>

Properties**:** [R23](https://posta.nuk.uni-lj.si/owa/#_R23_created_a) created a realisation of (was realised through): [F19](https://posta.nuk.uni-lj.si/owa/#_F19_Publication_Work) Publication Work

[R24](https://posta.nuk.uni-lj.si/owa/#_R24_created_%28was) created (was created through): F3 Manifestation

### F30 Manifestation Creation (old: publication event)

Subclass of: [F28](#_F31_Expression_Creation) Expression Creation

Scope note: This class comprises the activities of publishing. Such an event includes the creation of an F24 Publication Expression and setting up the means of production. The end of this event is regarded as the date of publication, regardless of whether the carrier production is started. Publishing can be either physical or electronic. Electronic publishing is regarded as making an instance of F24 Publication Expression available in electronic form on a public network. Electronic Publishing does not mean producing a physical instance of F5 Item by partially electronic means. Making an electronic file available on a physical carrier can be regarded as equivalent to setting up the means of production; downloading the file is regarded as the electronic equivalent of F32 Carrier Production Event.

Examples: Publishing Amerigo Vespucci’s ‘Mundus novus’ in Paris ca. 1503-1504

Establishing in 1972 the layout, features, and prototype for the publication of ‘The complete poems of Stephen Crane, edited with an introduction by Joseph Katz’ (ISBN ‘0-8014-9130-4’), which served for a second print run in 1978

Making available online the article by Allen Renear, Christopher Phillippe, Pat Lawton, and David Dubin, entitled ‘An XML document corresponds to which FRBR Group 1 entity?’ <<http://conferences.idealliance.org/extreme/html/2003/Lawton01/EML2003Lawton01.html>>

Properties**:** [R23](#_R23_created_a) created a realisation of (was realised through): [F19](#_F19_Publication_Work) Publication Work

[R24](#_R24_created_(was) created (was created through): F3 Manifestation

### F31 Performance

Subclass of: [E7](#_E7_Activity_) Activity

Scope note: This class comprises activities that follow the directions of a performance plan, such as a theatrical play, an expression of a choreographic work or a musical work; i.e., they are intended to communicate directly or indirectly to an audience.

Such activities can be identified at various levels of granularity, and can be contiguous or not. Any individual performance (with or without intermissions) is a single instance of F31 Performance. In addition, a complete run of performances can also be seen as an instance of F31 Performance, with individual performances as parts. A complete run of performances may comprise an original run plus any of its extensions and tours.

Note that a performance plan may be more or less elaborate, and may even foresee just improvisation.

Examples: Performing the first performance of a Yiddish translation of the textual work entitled ‘King Lear’*,* as directed by Sergei Radlov, in Moscow, at the Moscow State Jewish Theatre, on February 10, 1935 [individual performance]

Performing the ballet entitled ‘Rite of spring’*,* as choreographed by Pina Bausch, in Avignon, at the Popes’ Palace, on July 7, 1995 [individual performance]

Performing the operatic work entitled ‘Dido and Aeneas’, as directed by Edward Gordon Craig and conducted by Martin Shaw, in London, Hampstead Conservatoire, on May 17, 18, and 19, 1900 [run of performances]

Properties**:** [R25](#_R25_performed_(was) performed (was performed in): [F25](#_F25_Performance_Plan) Performance Plan

[R66](#_R66_included_performed) included performed version of (had a performed version through): [E89](#_E1_CRM_Entity) Propositional Object

### F32 Carrier Production Event [= LRM-R8 manufactured]

Subclass of: [E12](#_E12_Production_) Production

Scope note: This class comprises activities that result in instances of F54 Utilised Information Carrier coming into existence. Both the production of a series of physical objects (printed books, scores, CDs, DVDs, CD-ROMS, etc.) and the creation of a new copy of a file on an electronic carrier are regarded as instances of F32 Carrier Production Event.

Typically, the production of copies of a publication (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 property *R27 used as source material* F24 Publication Expression.

Examples: The printing of copies of the 3rd edition of ‘Codex Manesse: die Miniaturen der großen Heidelberger Liederhandschrift, herausgegeben und erläutert von Ingo F. Walther unter Mitarbeit von Gisela Siebert’, Insel-Verlag, 1988 [a fac-simile edition of an illuminated mediaeval manuscript]

The printing of copies of the ‘Ordnance Survey Explorer Map 213, Aberystwyth & Cwm Rheidol’, ISBN 0-319-23640-4 (folded), 1:25,000 scale, released in May 2005 [a cartographic resource]

The production of copies of the sound recording titled ‘The Glory (????) of the human voice’, RCA Victor Gold Seal GD61175, containing recordings of musical works performed by Florence Foster Jenkins [a sound recording; the question marks in parentheses belong to the original title]

My clicking now on the link <<http://cidoc.ics.forth.gr/docs/cidoc_crm_version_4.0.pdf>>, and thus downloading on my PC a reproduction of the electronic file titled ‘Definition of the CIDOC Conceptual Reference Model… version 4.0’ that is stored on the ICS FORTH’s servers in Heraklion, Crete

The second print run, in 1978, of ‘The complete poems of Stephen Crane, edited with an introduction by Joseph Katz’ (ISBN ‘0-8014-9130-4’), a publication dated 1972 [publication of a printed text]

Properties**:** [R26](#_R26_produced_things) produced things of type (was produced by): E99 Product Type

[R27](#_R27_used_as) materialized (was materialized by) F3 Manifestation

[R28](#_R28_produced_(was) produced (was produced by): [F54](#_F54_Utilized_Information) Utilised Information Carrier

### F33 Reproduction Event

Subclass of: [E12](#_E12_Production_) Production,

[F30](#_F30_Publication_Event_1) Publication Event

Scope note: This class comprises activities that consist in producing items of a new instance of Fn Manifestation that preserve both the content and layout found on items of a pre-existing instance of Fn Manifestation. The individual instance or instances of F5 Item that was or were used as a source for this process may be precisely identified or not. Such activities result in products known as facsimiles, reproductions, reprints, reissues, or new releases.

Examples: The 2014 publication of Daniel Wilson's 'Caliban: the missing link' by Cambridge University Press (a facsimile edition of the 1873 publication by Macmillan)

The 2015 publication of Harry Partch's 'Two studies on ancient Greek scales' by Schott (which reproduces Harry Partch's holograph manuscript)

Properties**:**

~~[R30](#_R30_produced_(was) produced (was produced by): Fn Manifestation~~

R29 reproduced object (was object reproduced by): F54 Utilised Information Carrier

Rn reproduced publication: Fn Manifestation

### F34 Controlled Vocabulary

Subclass of: [E32](#_E32_Authority_Document_1) Authority Document

[E29](#_E29_Design_or_) Design or Procedure

[F2](#_F2_Expression_1) Expression

Scope note: This class comprises documents that establish controlled terminology (nomina) for consistent use. They may also describe relationships between entities and controlled terminology and relationships between entities. Note that any meaningful change in a Controlled vocabulary that affects the validity status of its elements defines a new release (Expression) of the Controlled vocabulary. Note that identifiers created following a rule in a Controlled vocabulary are to be regarded as being taken from this Controlled vocabulary, even though not explicitly spelled out. This definition of Controlled vocabulary reflects current library practice and not the use of the term in general. Knowledge Organisation Systems (KOS) are regarded as special cases of F34 Controlled Vocabulary. Add example(s): Pat.

Examples: LCSH February 20 to March 19 2012

DDC 19 [19th English edition, published only in print by Forest Press in 1979]

Properties**:** [R34](#_R34_has_validity) has validity period (is validity period of): [E52](#_E52_Time-Span) Time-Span

### F35 Nomen Use Statement

Subclass of: F12 Nomen

Scope note: This class comprises statements relating an instance of E1 CRM Entity with a particular instance of F12 Nomen and its prescribed usage in a given context.

Examples: Add example from DDC or UDC.

‘010 **\_\_** |a sh 85082387’…‘450 \_\_ |aEquations, Maxwell’ [MARC 21 encoding of a variant subject access point, from the same source]

‘PTBNP|20891’…‘200 1‎‡a Whitman,‏ ‎‡b Walt,‏ ‎‡f 1819-1892‏’ [UNIMARC encoding of the preferred access point for a personal name, from the authority file of the National Library of Portugal, as found on VIAF, <http://www.viaf.org/processed/PTBNP%7C20891>, on 28 September 2015]

‘001  FRBNF119547493’…‘100  w.0..barus.$aGončarova$mNatalʹâ Sergeevna$d1881-1962’ [INTERMARC encoding of the preferred access point for a personal name, from the authority file of the National Library of France, [http://catalogue.bnf.fr/ark:/12148/cb119547494/ INTERMARC](http://catalogue.bnf.fr/ark:/12148/cb119547494/INTERMARC), as of 15 June 2012]

‘001  FRBNF119547493’…‘100  w.0..c.rus.$aГончарова$mНаталья Сергеевна$d1881-1962’ [INTERMARC encoding of a parallel access point from the same source]

‘001  FRBNF119547493’…‘400  $w....b.eng.$aGoncharova$mNatalia$d1881-1962’ [INTERMARC encoding of a variant access point from the same source]

‘<eac-cpf […]> <control> <recordId>beinecke.7h44jbj</recordId> […] </control>’ … ‘<cpfDescription> <identity> <entityType>family</entityType> <nameEntry xml:lang="eng" scriptCode="Latn"><part localType="100a">Boswell family</part> […] </nameEntry> […] </identity> </cpfDescription> […] </eac-cpf>’ [EAC encoding of the preferred access point for a family]

Properties**:** [R32](#_R32_is_warranted) is warranted by (warrants): [F52](#_F52_Name_Use_Activity) Name Use Activity

[R35](#_R35_is_specified) is specified by (specifies): [F34](#_F34_KOS) KOS

(R35.1 has status: [E55](#_E55_Type_) Type)

[R36](#_R36_uses_script) uses script conversion (is script conversion used in): [F36](#_F36_Script_Conversion) Script Conversion

[R37](#_R37_states_as) states as nomen (is stated as nomen in): [F12](#_F12_Nomen) Nomen

[R38](#_R38_refers_to_thema_(is_thema_of)) refers to thema (is thema of): [E1](#_E1_CRM_Entity_) CRM Entity

[R39](#_R39_is_intended) is intended for (is target audience in): [E74](#_E74_Group_) Group

[R54](#_R54_has_nomen) has nomen language (is language of nomen in): [E56](#_E56_Language_1) Language

[R55](#_R55_has_nomen) has nomen form (is nomen form in): [E55](#_E55_Type_) Type

[R56](#_R56_has_related) has related use (is related use for): [F35](#_F35_Nomen_Use_Statement) Nomen Use Statement

(R56.1 has type: [E55](#_E55_Type_) Type)

### F36 Script Conversion

Subclass of: [E29](#_E29_Design_or_) Design or Procedure

Scope note: This class comprises rule sets for converting signs or arrangements of signs from one script or type set to another.

Examples: ISO 9:1995

### F38 Character

Subclass of: [E28](#_E28_Conceptual_Object_) Conceptual Object

Scope note: This class comprises fictional or iconographic individuals or groups of individuals (including families) appearing in works in a way relevant as subjects. Characters may be purely fictitious or based on real persons or groups, but as characters they may exhibit properties that would be inconsistent with a real person or group. Rather than merging characters with real persons, they should be described as disjoint, but related entities.

Examples: Harry Potter [in J.K. Rowling’s series of novels and the films based on them]

Sinuhe the Egyptian [in Mika Waltari’s novel]

The Knights of the Round Table [in fiction]

Properties**:** [R57](#_R57xx_is_based) is based on (is basis for): [E39](#_E39_Actor_) Actor

[R58](#_R58_has_fictional) has fictional member (is fictional member of): [F38](#_F38_Character) Character

### F39 Family

Subclass of: [E74](#_E74_Group_) Group

Scope note: This class comprises groups of two or more persons presented as a family justified by relationships of birth, marriage, adoption, civil union, or similar social or legal status and an assumed common tradition, including examples such as royal families, dynasties, houses of nobility, etc.

Examples: House of Tudor

The Grimm brothers

### F40 Identifier Assignment

Equal to: [E15](#_E18_Physical_Thing_1) Identifier Assignment

Scope note: This class comprises activities that result in the allocation of an identifier to an instance of any subclass of E1 CRM Entity. An F40 Identifier Assignment may include the creation of the identifier from multiple constituents. Explicit reference to the used constituents can be made using the property *P142 used constituent (was used in)*. The syntax of the identifier and the kinds of constituents to be used in constructing it may be declared in a rule. The construction of controlled access points for the names of persons, families and corporate bodies following specific cataloguing rules is a typical library application of identifier assignment. F40 Identifier Assignment also includes the assignment of controlled access points for works or expressions.

Examples: Assigning the controlled access point ‘William, Prince, Duke of Cambridge, 1982-’ as a controlled access point for a personal name, using the *Anglo-American Cataloguing Rules*, 2nd edition

Assigning the controlled access point ‘Library and Archives Canada’ as an authorised controlled access point for a corporate body name, using the *Anglo-American Cataloguing Rules*, 2nd edition

Assigning the controlled access point ‘Bibliothèque et Archives Canada’ as an authorised controlled access point for a corporate body name, using the *Règles de catalogage anglo-américaines*, 2e édition

Assigning the controlled access point ‘Goethe, Johann Wolfgang von, 1749-1832. Faust. 1. Theil.’ as an authorised controlled access point for a work

Assigning the controlled access point ‘Bible. English. American Standard’ as an authorised controlled access point for an expression

Properties**:** [R45](#_R45_assigned_to_(was_assigned_by)) assigned to (was assigned by): [E1](#_E1_CRM_Entity_) CRM Entity

[R46](#_R46_assigned_(was_assigned_by)) assigned (was assigned by): [F13](#_F14_Identifier) Identifier

[R52](#_R52_used_rule_(was_the_rule_used_in_1) used rule (was the rule used in): [F43](#_F43_Identifier_Rule_1) Identifier Rule

### F42 Representative Expression Assignment

Deprecated

### F44 Bibliographic Agency

Deprecated

### F50 Controlled Access Point

Deprecated]

### F51 Pursuit

Deprecated (transferred in soc)

### F52 Name Use Activity

Deprecated (be transferred in soc)

### F53 Material Copy

Deprecated

### F54 Utilised Information Carrier

(comment: Change name?)

Subclass of: Physical object

Superclass of: [F53](#_F53_Material_Copy) Material Copy

[F5](#_F5_Item_1) Item

Scope note: This class comprises physical objects that carry one or more instances of Fn Manifestation.

Examples: The physical features created on my PC’s hard drive when I clicked on the link <<http://cidoc.ics.forth.gr/docs/cidoc_crm_version_4.0.pdf>>, and thus downloaded a reproduction of the electronic file titled ‘Definition of the CIDOC Conceptual Reference Model… version 4.0’ that is stored on the ICS FORTH’s servers in Heraklion, Crete (F53)

Any copy of the modern reprint publication of Marin Mersenne’s ‘Harmonie universelle’, Paris, 1986, ISBN ‘2-222-00835-2’ (F5)

Properties: [R6](#_R6_carries_(is) carries (is carried by): Fn Manifestation

### F55 Collective Agent

Subclass of: E74 Group

Superclass of: F11 Corporate Body

F39 Family

Scope note: This class comprises recognizable groups or organizations of persons that have the potential of acting as a unit to produce some intentional result of bibliographic interest for which they can be collectively considered responsible.

A group of people becomes a Collective Agent when it identifies itself by a name that identifies it within an appropriate context and exhibits sufficient organizational characteristics to permit it to perform actions that reflect agency. Groups that are constituted as meetings, conferences, congresses, expeditions, festivals, fairs, etc. are examples of Fxx Collective Agent as long as they self-identify by a specific name, rather than being referred to by a generic description of the gathering, and can act as a unit (such as by publishing their proceedings, or approving a report). These collective actions may be performed by representatives selected by the whole, rather than by all individual members acting together.

Instances of Collective Agent include commercial or corporate entities and other legally registered bodies, as well as organizations and associations, musical, artistic or performing groups, governments, and any of their sub-units. Collective Agents may be members of other Collective Agents, although directly or indirectly all Collective Agents are composed of persons. The membership of many types of Collective Agents will continue to evolve over time. A Collective Agent may continue to exist even if it has no members for a time (for example, a committee whose members all resign prior to the expiration of their terms but then a new complement of members is appointed).

Married couples and other concepts of family (F39) are regarded as particular examples of Fxx Collective Agent.

In the wider sense, this class also comprises holders of official positions viewed collectively, independent of the current holder of the office, such as the president of a country. In such cases, it is possible that the Fxx Collective Agent has only ever had a single member.

A group of persons known by a/ using a joint pseudonym (i.e., a name that seems indicative of an individual but that is actually adopted as a persona by two or more people acting together) is a particular case of Fxx Collective Agent.

Examples:

* International Federation of Library Associations and Institutions (F11)
* 81st World Library and Information Conference
* Bibliothèque nationale de France
* Exxon-Mobil (E40)
* The Beatles
* King Solomon and his wives (F39)
* The President of the Swiss Confederation
* Nicolas Bourbaki
* Betty Crocker
* Ellery Queen

Properties:

[P107](#_P107_has_current) has current or former member (is current or former member of): [E39](#_E39_Actor_) Actor

(P107.1 kind of member: [E55](#_E55_Type_) Type)

### F56 Externalization Event

Subclass of: E7 Activity  
Superclass of: F28 Expression Creation  
 F31 Performance

Scope note: This class comprises activities that produce signs or sensory impressions as organized and complete wholes, typically intended to be received, in this completeness, by some audience, either directly via their senses or via persistent media at some later time. It comprises in particular novel externalizations of thought- art in all forms- including rendering existing expressions such as musical scores, theatre plays, scripts or texts, in a particular manner including performing arts, writing or other methods of externalization.

Examples:

* The creation of the original manuscript score ‘Uwertura tragicna’ by Andrej Panufnik in Warsaw (F28)
* The reconstruction from memory of the manuscript score ‘Uwertura tragicna’ by Andrej Panufnik in 1945 after the original score was destroyed during the war (F28)
* Performing the ballet entitled ‘Rite of Spring’, as choreographed by Pina Bausch, in Avignon, at the Popes’ Palace, on July 7, 1995 [individual performance] (F31)
* Performing the operatic work entitled ‘Dido and Aeneas’, as direted by Edward Gordon Craig and conducted by Martin Shaw, in London, Hampstead Conservatoire, on May 17, 18, and 19, 1900 [run of performances] (F31)

Properties:

R19 created a realization (was realized through): F1 Work

### Fxx Externalization (superclass of F2 Expression)??

## 2.7. FRBR Property Declaration

The properties of FRBROO are comprehensively declared in this section using the following format:

* Property names are presented as headings in bold face, preceded by unique property identifiers;
* The line “Domain:” declares the class for which the property is defined;
* The line “Range:” declares the class to which the property points, or that provides the values for the property;
* The line “Equal to:” declares the CIDOC CRM property that covers the same concept as the FRBROO property;
* The line “Shortcut of:” declares the chain of CIDOC CRM and/or FRBROO properties of which the FRBROO property is a shortcut, whenever it cannot be simply declared as a subproperty of a pre-existing property (note however that when an FRBROO property is *both* a subproperty of a pre-existing property *and* a shortcut, the detailed path of which it is a shortcut is only mentioned in the scope note);
* The line “Is covered by shortcut:” declares the CIDOC CRM property that constitutes a shortcut for a more detailed path of which the FRBROO property is a part;
* The line “Superproperty of:” is a cross-reference to any subproperties the property may have;
* The line “Subproperty of:” is a cross-reference to any superproperties the property may have, in either CIDOC CRM or FRBROO. All FRBROO properties that fall under the scope of the CIDOC CRM are, either directly or indirectly, subproperties of at least one CIDOC CRM property. However, this line remains empty for FRBROO properties that are shortcuts of more developed paths that involve CIDOC CRM properties and/or their FRBROO subproperties;
* The line “Quantification:” declares the possible number of occurrences for domain and range class instances for the property. Possible values are enumerated in section 2.3;
* The line “Scope note:” contains the textual definition of the concept the property represents;
* The line “Examples:” contains a list of examples of instances of this property. If the example is also instance of a subproperty of this property, the unique identifier of the subclass is added in parenthesis. If the example instantiates two properties, the unique identifiers of both properties is added in parenthesis;
* The line “Properties:” introduces any properties the property may have.
* In some cases the superproperty of a property is listed as *Out of scope*. This indicates that the property that should be the superproperty is outside of the coverage of CIDOC CRM.

### R1 is logical successor of (has successor) [=LRM-R19]

Domain: [F1](#_F1_Work_1) Work

Range: [F1](#_F1_Work_1) Work

Subproperty of: [E70](#_E70_Thing_1) Thing. [P130](#_P130__shows_) shows features of (features are also found on): [E70](#_E70_Thing_1) Thing

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F1 Work which logically continues the content of another instance of F1 Work with the latter.

Examples: Albrecht Dürer’s woodcut from ‘The Large Woodcut Passion’ entitled ‘The Agony in the Garden’ (F1, conceived ca 1496-98) *R1 is logical successor of* Albrecht Dürer’s woodcut from ‘The Large Woodcut Passion’ entitled ‘The Last Supper’ (F1, dated 1510)

The first ‘Star wars’ trilogy (F15, 1977-1983) *R1 is logical successor of* The second ‘Star wars’ trilogy (F15, 1999-2005) *[Note that the* logical *order does not follow, in either of these two examples, the* chronological *order]*

### R2 is derivative of (has derivative)

Domain: [F1](#_F1_Work_1) Work

Range: [F1](#_F1_Work_1) Work

Subproperty of: [E70](#_E70_Thing_1) Thing. [P130](#_P130__shows_) shows features of (features are also found on): [E70](#_E70_Thing_1) Thing

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F1 Work which modifies the content of another instance of F1 Work with the latter. The property *R2.1 has type* of this property allows for specifying the kind of derivation, such as adaptation, summarisation etc.

Examples: William Schuman’s orchestration of Charles Ives’s ‘Variations on America’ (F15) *R2 is derivative of* Charles Ives’s ‘Variations on America’ (F15) *R2.1 has type* orchestration (E55)

Charles Ives’s musical work entitled ‘Variations on America’ (F15) *R2 is derivative of* the musical work titled ‘America’ (F15) *R2.1 has type* variations (E55)

The musical work entitled ‘America’ (F15) *R2 is derivative of* the musical work entitled ‘God save the King’ (F15) *R2.1 has type* same tune with different lyrics (E55)

Properties:R2.1 has type: [E55](#_E55_Type_) Type

### R3 is realised in (realises)

Domain: [F1](#_F1_Work_1) Work

Range: [F2](#_F22_Self-Contained_Expression) Expression

Superproperty of:

[F20](#_F20_Performance_Work) Performance Work. [R12](#_R12_is_realised_1) is realised in (realises): [F25](#_F25_Performance_Plan) Performance Plan

[F21](#_F21_Recording_Work) Recording Work. [R13](#_R13_is_realised_1) is realised in (realises): [F26](#_F26_Recording) Recording

[F1](#_F1_Work_1) Work. [R40](#_R40_has_representative_expression_() has representative expression (is representative expression for): [F22](#_F22_Self-Contained_Expression) Self-Contained Expression

Subproperty of: [E70](#_E70_Thing_1) Thing. [P130](#_P130__shows_) shows features of (features are also found on): [E70](#_E70_Thing_1) Thing

Quantification: (0,n:1, n)

Scope note: 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 instances of F2 Expression and the work it conveys without identifying the particular instances of Expression that were the source.

Examples:

Dante’s work entitled ‘Inferno’ (F1) R3 is realised in the Italian text of Dante’s ‘Inferno’ as found in the authoritative critical edition La Commedia secondo l’antica vulgata a cura di Giorgio Petrocchi, Milano: Mondadori, 1966-67 (= Le Opere di Dante Alighieri, Edizione Nazionale a cura della Società Dantesca Italiana, VII, 1-4)

Mozart’s work entitled ‘Il dissoluto punito ossia il Don Giovanni’ (F1) R3 is realised in the notated music of the Prague version, as found on manuscript Ms 1548 of the National Library of France (F2)

Properties: R3.1 has type: [E55](#_E55_Type_) Type

### R4 embodies (is embodied in)

Domain:  [F3](#_F3_Manifestation_Product) Manifestation

Range:   [F2](https://posta.nuk.uni-lj.si/owa/#_F2_Expression) Expression

Subproperty of:     [E73](https://posta.nuk.uni-lj.si/owa/#_E73_Information_Object_) Information Object. P165 incorporates (is incorporated in): [E90](https://posta.nuk.uni-lj.si/owa/#_E90_Symbolic_Object_1) Symbolic Object

Quantification:      (0,n:0,n)

Scope note:           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, in the way to be presented to users. The content of the embodied instances of F2 Expression should be defined at a symbolic level (such as a text or notated music) more abstract than the embodying instance of F3 Manifestation (such as a book or a oriented score).

Examples:

* The publication identified by ISBN ‘2-222-00835-2’ (F3) *R4 incorporates* the text of Marin Mersenne’s ‘Harmonie universelle’ (F2)
* The CD entitled ‘Musique de la Grèce antique = Ancient Greek music = Griechische Musik der Antike’, released in 2000 and identified by UPC/EAN ‘794881601622’ (F3) *R4 incorporates* A recording of the Atrium Musicæ Ensemble’s performance of a fragment of Euripides’ textual and musical work entitled ‘Orestes’ (F26)

### R5 has component (is component of)

Domain:                [F2](https://posta.nuk.uni-lj.si/OWA/#_F2_Expression) Expression

Range:                   [F2](https://posta.nuk.uni-lj.si/OWA/#_F2_Expression) Expression

Subproperty of:     [E89](https://posta.nuk.uni-lj.si/OWA/#_E89_Propositional_Object) Propositional Object. [P148](https://posta.nuk.uni-lj.si/OWA/#_P148_has_component_1) has component (is component of): [E89](https://posta.nuk.uni-lj.si/OWA/#_E89_Propositional_Object) Propositional Object

Quantification:      (0,n:0,n)

Scope note:           This property associates an F2 Expression X with a structural component Y that conveys a part of the overall work realized by X, such as volumes, chapters, paragraphs.

                              Any part of an expression that conveys complete propositions, such as a single phrase, can be documented using the more general property [*P148*](https://posta.nuk.uni-lj.si/OWA/#_P148_has_component_1) *has component (is component of)*.

                              Any part of an expression that does not completely follow meaningful boundaries, such as lines or pages of text or portions visible on images can be documented using the property *P106 is composed of (forms part of),* and not with *R5 has component (is component of)*. Fragments in particular can be documented with the more specific property *R15 has fragment (is fragment of)*.

The property does not cover the relationship that exists between pre-existing expressions that are re-used in a new, larger expression and that new, larger expression. Such a relationship is modelled by *P165 incorporates*.

Examples:             The Italian text of Dante’s textual work entitled ‘Divina Commedia’ (F2) *R5 has component* the Italian text of Dante’s textual work entitled ‘Inferno’ (F2)

The musical notation of Mozart’s Singspiel entitled ‘Die Zauberflöte’ (F2) *R5 has component* the musical notation of Mozart’s aria entitled ‘Der Hölle Rache’, also known as ‘The Queen of the Night’s Aria’ (F2)

The visual content of the map entitled ‘Wales – The Midlands – South West England’, scale 1:400,000, issued by Michelin in 2005 (F2) *R5 has component* the visual content of the inset entitled ‘Liverpool’, scale 1:200,000, set within the compass of the map titled ‘Wales – The Midlands – South West England’, scale 1:400,000, issued by Michelin in 2005 (F2)

### R6 carries (is carried by)

Deprecated

### R7 is materialization of (is materialized in)

Domain:                [F5](#_F5_Item) Item

Range:                   [F3](https://posta.nuk.uni-lj.si/owa/#_F3_Manifestation_Product) Manifestation

Subproperty of:     [E24](https://posta.nuk.uni-lj.si/owa/#_E24_Physical_Man-Made_1) Physical Man-Made Thing. [P128](https://posta.nuk.uni-lj.si/owa/#_P128_carries_%28is_1) carries (is carried by): [E73](https://posta.nuk.uni-lj.si/owa/#_E73_Information_Object_) Information Object

Quantification:      (1,1:0,n)

Scope note:           This property associates a manifestation with one of its exemplars or its only exemplar. Instances of F5 Item correspond to the kinds of physical unit(s) specified in the manifestation, regardless of possible later changes.

Even though an item may exhibit defects with respect to the intended manifestation, it is still regarded to carry the manifestation, as long as it is produced or made accessible as a functional item by its creators.

Examples:             The item held by the National Library of France and identified by shelf mark ‘Res 8 P 10’ (F5) *R7 is materialization of* the edition of Amerigo Vespucci’s textual and cartographic work entitled ‘Mundus novus’ issued in Paris ca. 1503-1504 (F3)

### R8 combines (is combined to form)

Domain: F12 Nomen

Range: [E90](#_E90_Symbolic_Object) Symbolic Object

Subproperty of: [E90](#_E90_Symbolic_Object) Symbolic Object. [P106](#_P106_is_composed_) is composed of (forms part of): [E90](#_E90_Symbolic_Object_1) Symbolic Object

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F12 Nomen with one of the non-syntactic instances of E90 Symbolic Object which are combined to form it.

Examples: The English term 'starfish' (F12) [an instance of F12 Nomen that refers to echinoderms] *R8 combines* the English term 'star' (F12) [an instance of F12 Nomen that refers to celestial bodies], and *R8 combines* the English term 'fish' (F12) [an instance of F12 Nomen that refers, in its looser sense, to animals that live exclusively in water]

Controlled access point ‘The Adoration of the Shepherds (Coventry)’ (F12) *R8 combines* ‘The Adoration of the Shepherds’ (F12) [a title, i.e., an instance of F12 Nomen that refers to a work], and *R8 combines* ‘Coventry’ (F12) [an instance of F12 Nomen that refers to a place]

Controlled access point ‘Guillaume, de Machaut, ca. 1300-1377’ (F12) *R8 combines* ‘Guillaume’ (E90) [a given name], *R8 combines* ‘Machaut’ (F12) [an instance of F12 Nomen that refers to a place], and *R8 combines* ‘ca. 1300-1377’ (F12) [an instance of F12 Nomen that refers to a time-span]

Controlled access point ‘Univerza v Ljubljani. Oddelek za bibliotekarstvo’ (F12) *R8 combines* ‘Univerza v Ljubljani’ (F12) [an instance of F12 Nomen that refers to a corporate body], and *R8 consists of* ‘Oddelek za bibliotekarstvo’ (F12) [an instance of F12 Nomen that refers to another corporate body, affiliated to the former]

ISBN ‘978-002-002-0’ (F12) *R8 combines* ‘978’ (E90) [an instance of E90 Symbolic Object indicating the Nigerian ISBN Agency], *R8 combines* ‘002’ (E90) [an instance of E90 Symbolkic Object indicating the Nigerian Institute of International Affairs], *R8 combines* ‘002’ (E90) [an instance of E90 Symbolic Object used for the publication entitled ‘Nigeria’s international economic relations’], and *R8 combines* ‘0’ (E90) [an instance of E90 Symbolic Object that constitutes the control character for this ISBN]

### R9 is realised in (realises)

Deprecated

### R10 has member (is member of)

Domain:                [F1](https://posta.nuk.uni-lj.si/OWA/#_F1_Work_1) Work

Range: [F1](https://posta.nuk.uni-lj.si/OWA/#_F1_Work_1) Work

Superproperty of: R67 has part (forms part of)

Subproperty of:     [E89](https://posta.nuk.uni-lj.si/OWA/#_E1_CRM_Entity) Propositional Object. [P148](https://posta.nuk.uni-lj.si/OWA/#_P148_has_component_1) has component (is component of): [E89](https://posta.nuk.uni-lj.si/OWA/#_E1_CRM_Entity) Propositional Object

Quantification:      (0,n:0,n)

Scope note:           This property associates an instance of F1 Work with another instance of F1 Work that forms part of it. This property is transitive. An instance of F1 Work may neither directly nor indirectly be member of itself. Instances of F1 Work that are not member of another one may not share a common member.

Examples:             Dante’s textual work entitled ‘Divina Commedia’ *R10 has member* Dante’s textual work entitled ‘Inferno’

Giovanni Battista Piranesi’s graphic work entitled ‘Carceri’ (F15) *R10 has member* Giovanni Battista Piranesi’s graphic work entitled ‘Carcere XVI: the pier with chains’

Examples: Dante’s textual work entitled ‘Divina Commedia’ (F15) *R10 has member* Dante’s textual work entitled ‘Inferno’ (F15)

Dante’s textual work entitled ‘Inferno’ (F15) *R10 has member* the abstract content of the pseudo-old French text of Émile Littré’s translation entitled ‘L’Enfer mis en vieux langage françois et en vers’ [a 19th century translation of Dante’s ‘Inferno’ into old French] published in Paris in 1879 (F14)

Giovanni Battista Piranesi’s graphic work entitled ‘Carceri’ (F15) *R10 has member* Giovanni Battista Piranesi’s graphic work entitled ‘Carcere XVI: the pier with chains’ (F15)

Giovanni Battista Piranesi’s graphic work entitled ‘Carcere XVI: the pier with chains’ (F15) *R10 has member* the abstract content of Giovanni Battista Piranesi’s graphic work entitled ‘Carcere XVI: the pier with chains: 2nd state’ (F14)

### R11 has issuing rule (is issuing rule of)

Domain: [F18](#_F18_Serial_Work) Serial Work

Range: [E29](#_E29_Design_or_) Design or Procedure

Subproperty of:

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F18 Serial Work with the instance of E29 Design or Procedure that specifies the issuing policy planned by this Work, such as sequencing pattern, expected frequency and expected regularity.

This property is a shortcut of the full path: F18 Serial Work *R23i was realised through* F30 Publication Event *P16 used specific object* E29 Design or Procedure.

Examples: The serial entitled ‘Quarterly journal of pure and applied mathematics’, identified by ISSN ‘1549-6724’ (F18) *R11 has issuing rule* to be issued every three months, on a regular basis, with each issue being numbered according to the pattern ‘Vol. 1, no. 1 (2005)’ that was observed by the Library of Congress’s cataloguers on an exemplar of the first issue (E29)

### R12 is realised in (realises)

Domain: [F20](#_F20_Performance_Work) Performance Work

Range: [F25](#_F25_Performance_Plan) Performance Plan

Subproperty of: [F1](#_F1_Work_1) Work. [R3](#_R3_is_realised_1) is realised in (realises): [F22](#_F22_Self-Contained_Expression) Self-Contained Expression

Quantification: (0,n:1,1)

Scope note: This property associates an instance of F20 Performance Work with an instance of F25 Performance Plan that consists of signs (words, figures, etc.) which express the directions the instance of F20 Performance Work consists of.

Examples: The concept of Sergei Radlov’s mise-en-scène of a Yiddish translation of the textual work entitled ‘King Lear’ in Moscow in 1935 (F20) *R12 is realised in* the set of instructions for the production of a Yiddish translation of the textual work entitled ‘King Lear’*,* as directed by Sergei Radlov in Moscow in 1935 (F25)

The concept of Pina Bausch’s choreography of the ballet entitled ‘Rite of spring’ in Wuppertal in 1975 (F20) *R12 is realised in* the set of instructions for the production of the ballet entitled ‘Rite of spring’, as choreographed by Pina Bausch in Wuppertal in 1975 (F25)

The concept of Bruno Walter’s performance of Gustav Mahler’s 9th symphony in 1961 (F20) *R12 is realised in* the set of instructions by Bruno Walter for performing Gustav Mahler’s 9th symphony, delivered by him to the Columbia Symphony Orchestra during rehearsals in Hollywood in 1961 (as partially documented in the CD entitled ‘Bruno Walter conducts and talks about Mahler symphony No. 9: rehearsal & performance’) (F25)

The concept of the “performance handbook” for Luigi Nono’s musical work entitled ‘À Pierre’ (F20) *R12 is realised in* the set of instructions contained in the performance handbook for Luigi Nono’s musical work entitled ‘À Pierre’ (F25)

### R13 is realised in (realises)

Domain: [F21](#_F21_Recording_Work) Recording Work

Range: [F26](#_F26_Recording) Recording

Subproperty of: [F1](#_F1_Work_1) Work. [R3](#_R3_is_realised_1) is realised in (realises): [F22](#_F22_Self-Contained_Expression) Self-Contained Expression

Quantification: (0,n:0,1)

Scope note: This property associates an instance of F21 Recording Work with an instance of F26 Recording realising the instance of F21 Recording Work.

This is a shortcut of the more elaborated path through R22 *was realised through*, F29 Recording Event and R21 *created*, which should be used when information about the recording event is available.

Examples: The concept of the third alternate take of the musical work entitled ‘Blue Hawaii’ as performed by Elvis Presley in Hollywood, Calif., Radio Recorders, on March 22nd, 1961 (F21) *R13 is realised in* the set of signs that make up the third alternate take of the musical work entitled ‘Blue Hawaii’ as performed by Elvis Presley in Hollywood, Calif., Radio Recorders, on March 22nd, 1961 (F26)

The concept of making a photograph of the three Allied leaders at Yalta in February 1945 (F21) *R13 is realised in* the visual content of the famous photograph of the three Allied leaders at Yalta in February 1945 (F26)

Oceania Project’s concept of making a large digital acoustic data archive dedicated to East Australian humpback whale songs (F21) *R13 is realised in* the audio content of the album entitled ‘Songlines – Songs of the East Australian Humpback Whales’ released in 2011 (F26)

The concept of recording Louise Bourgeois’s artistic activity in the documentary movie entitled ‘Louise Bourgeois: The Spider, the Mistress, and the Tangerine’ (F21) *R13 is realised in* the audiovisual content of the documentary movie entitled ‘Louise Bourgeois: The Spider, the Mistress, and the Tangerine’ (F26)

### R15 has fragment (is fragment of)

Domain: [F2](#_F2_Expression) Expression

Range: [E90](#_E90_Symbolic_Object_1) Symbolic Object

Subproperty of: [E90](#_E90_Symbolic_Object_1) Symbolic Object. [P106](#_P106_is_composed_) is composed of (forms part of): [E90](#_E90_Symbolic_Object_1) Symbolic Object

Quantification: (0,n:0,n)

Scope note: This property associates an E90 Symbolic Object with the F2 Expression of which it is a fragment. The fragment is not itself an instance of F2 Expression as it does not express any F1 Work. When the fragment consists of intelligible words it is an instance of E33 Linguistic Object.

An E90 Symbolic Object can be extracted from an F2 Expression due to an accident, such as loss of material over time, e.g. the only remaining manuscript of an ancient text being partially eaten by worms, or due to deliberate isolation, such as excerpts taken from a text by the compiler of a collection of excerpts.

An E90 Symbolic Object is only considered a fragment of an F2 Expression when related to its occurrence in a known or assumed whole by the R15 property. The size of an instance of the E90 Symbolic Object ranges from more than 99% of an instance of F2 Expression to tiny bits (a few words from a text, one bar from a musical composition, one detail from a still image, a two-second clip from a movie, etc.).

Examples:

* The ancient Greek text of the four stanzas from an ode by Sappho that were quoted by Pseudo-Longinus in his textual work entitled ‘On the sublime’ (E33) *R15 is fragment of* the complete ancient Greek text, now irremediably lost, of Sappho’s ode currently identified as Sappho’s poem #2 (F2)
* The statement ‘fasc. 111’ (abridgement for ‘fascicle no. 111’) indicating the sequential position of the publication identified by ISBN ‘2-7018-0037-4’ within the series entitled ‘Bibliothèque des Écoles françaises d’Athènes et de Rome’ and identified by ISSN ‘0257-4101’ (E33) *R15 is fragment of* the overall content of the publication identified by ISBN ‘2-7018-0037-4’ (F24) (or F3??)
* The phrase ‘Beati pauperes spiritu’ (E33) *R15 is fragment of* the Latin text of the Gospel according to St. Matthew (excerpt from Matthew 5,3)
* The stanza ‘Nel mezzo del cammin di nostra vita / mi ritrovai per una selva oscura / ché la diritta via era smarrita’ (E33) *R15 is fragment of* the Italian text of Dante’s ‘Inferno’ and ‘Divina Commedia’ (F2)
  + (add an example of an E90 that is not an E33?)
  + (add an example of a single page from a larger text—to show that the fragment breaks at symbol boundaries and not necessarily at word or sentence boundaries)

### R16 initiated (was initiated by)

Domain: [F27](#_F27_Work_Conception) Work Conception

Range: [F1](#_F1_Work_1) Work

Subproperty of: [E65](#_E65_Creation_1) Creation. [P94](#_P94_has_created_) has created (was created by): [E28](#_E28_Conceptual_Object_) Conceptual Object

Quantification: (1,n:1,1)

Scope note: This property associates the first conception of a work and the F1 Work itself that ensued from a given initial idea.

It marks the origin of the causality chain that results in a work’s coming into existence.

Examples: Ludwig van Beethoven’s decision to compose a fifth symphony (F27) *R16 initiated* Ludwig van Beethoven’s Fifth Symphony (F1)

Pablo Picasso’s acceptance, in 1930, of Ambroise Vollard’s commission for a set of 100 etchings, now known as the ‘Vollard Suite’ (F27) *R16 initiated* the ‘Vollard Suite’ (F1)

René Goscinny’s and Albert Uderzo’s decision to collaborate on the comic book entitled ‘Asterix in Britain’ (F27) *R16 initiated* the comic book entitled ‘Asterix in Britain’ (F1)

The creative spark that motivated Oscar Wilde, by May 1897, to write a poem inspired by his stay in the Reading prison in 1895-1897 (F27) *R16 initiated* Oscar Wilde’s poem entitled ‘The ballad of the Reading gaol’ (F1)

### R17 created (was created by)

Domain: [F28](#_F31_Expression_Creation) Expression Creation

Range: [F2](#_F2_Expression) Expression

Superproperty of: [F29](#_F33_Identifier_Assignment) Recording Event. [R21](#_R21_created_(was_1) created (was created by): [F26](#_F26_Recording) Recording

[F30](#_F30_Publication_Event) Publication Event. [R24](#_R24_created_(was) created (was created through): [F24](#_F24_Publication_Expression) Publication Expression

Subproperty of: [E65](#_E65_Creation_1) Creation. [P94](#_P94_has_created_) has created (was created by): [E28](#_E28_Conceptual_Object_) Conceptual Object

Quantification: (1,1:1,n)

Scope note: This property associates the F2 Expression that was first externalised during a particular F28 Expression Creation event with that particular creation event.

Examples: Richard Wagner’s writing the original manuscript of his opera entitled ‘Der fliegende Holländer’ (F28) *R17 created* the notational content of the original manuscript of Richard Wagner’s opera entitled ‘Der fliegende Holländer’ (F2)

Oscar Wilde’s writing the original manuscript of his poem entitled ‘The ballad of the Reading gaol’ (F28) *R17 created* the English text of Oscar Wilde’s poem entitled ‘The ballad of the Reading gaol’ (F2)

### R18 created (was created by)

Domain: [F28](#_F31_Expression_Creation) Expression Creation

Range: F5 Item

Subproperty of: [E12](#_E12_Production_) Production. [P108](#_P108_produced_(was_1) has produced (was produced by): [E24](#_E24_Physical_Man-Made_1) Physical Man-Made Thing

Quantification: (1,n:0,1)

Scope note: This property associates an instance of F28 Expression Creation with the first physical objects in which the resulting instance of F2 Expression was embodied.

Examples: Emily Dickinson’s creating the text of one of the several extant versions of her poem known as ‘Safe in their alabaster chambers’ (F28) *R18 created* the manuscript now identified as ‘Massachusetts Cambridge Harvard University Houghton Library bMS Am 1118.3 (203c, 203d)’ (F4)

Emily Dickinson’s creating the text of another one of the several extant versions of her poem known as ‘Safe in their alabaster chambers’ (F28) *R18 created* the manuscript now identified as ‘Massachusetts Cambridge Harvard University Houghton Library bMS Am 1118.5 (74c)’ (F4)

The recording of the third alternate take of the musical work entitled ‘Blue Hawaii’ performed by Elvis Presley in Hollywood, Calif., Radio Recorders, on March 22nd, 1961 (F28) *R18 created* the master tape of the 3rd alternate take of the musical work entitled ‘Blue Hawaii’ performed by Elvis Presley in Hollywood, Calif., Radio Recorders, on March 22nd, 1961 (F4) (each individual take is a distinct expression)

The resource (a drawing) held by the New York Public Library and identified by call number ‘\*MGZGB Far P Cop 1’ (F4) *R18i was created by* the creation, by the artist named ‘Peter Farmer’, of a costume design for the character named ‘War’ in the Act III Masque of the seasons, in the Festival Ballet of London production of the choreographic work entitled ‘Coppélia’, with choreography by Jack Carter after Petipa (F28)

### R19 created a realisation of (was realised through)

Domain: [F28](#_F31_Expression_Creation) Expression Creation

Range: [F1](#_F1_Work_1) Work

Superproperty of: [F29](#_F33_Identifier_Assignment) Recording Event. [R22](#_R22_created_a_) created a realisation of (was realised through): [F21](#_F21_Recording_Work) Recording Work

[F30](#_F30_Publication_Event) Publication Event. [R23](#_R23_created_a) created a realisation of (was realised through): [F19](#_F19_Publication_Work) Publication Work

Subproperty of: [E7](#_E7_Activity_) Activity. [P16](#_P16__used_) used specific object (was used for): [E70](#_E70_Thing_1) Thing

Quantification: (1,n:1,1)

Scope note: This property associates an instance of F28 Expression Creation with the instance of F1 Work which was externalised in the instance of F2 Expression created by this creation event.

Examples: Giovanni Battista Piranesi’s creating the image identified as ‘Carcere XVI: the pier with chains: 2nd state’ (F28) *R19 created a realisation of* the concept of Giovanni Battista Piranesi’s graphic work entitled ‘Carcere XVI: the pier with chains: 2nd state’ (F1)

Recording Glenn Gould’s performance of Johann Sebastian Bach’s musical work entitled ‘Toccata in C minor BWV 911’ on May 15 & 16, 1979, in Toronto, Eaton’s Auditorium (F29) *R19 created a realisation of* the concept of the recorded performance of Johann Sebastian Bach’s musical work entitled ‘Toccata in C minor BWV 911’ by Glenn Gould on May 15 & 16, 1979, in Toronto, Eaton’s Auditorium (F21)

### R20 recorded (was recorded through)

Domain: [F29](#_F40_Carrier_Production_Event) Recording Event

Range: [E2](#_E2_Temporal_Entity) Temporal Entity

Subproperty of: [E7](#_E7_Activity_) Activity. [P15](#_P15_was_influenced_by_(influenced)) was influenced by (influenced): [E5](#_E5_Event_) Event. [P9B](#_P9_consists_of_(forms_part_of)) forms part of: [E5](#_E5_Event_) Event. [P9](#_P9_consists_of_(forms_part_of)) consists of: [E5](#_E5_Event_) Event

Quantification: (1,n:0,n)

Scope note: This property associates an instance of F29 Recording Event with the instance of E2 Temporal Entity which was captured.

Examples: The making of the recording of the third alternate take of the musical work entitled ‘Blue Hawaii’ as performed by Elvis Presley in Hollywood, Calif., Radio Recorders, on March 22nd, 1961 (F29) *R20 recorded* Elvis Presley’s performance of the musical work entitled ‘Blue Hawaii’ in Hollywood, Calif., Radio Recorders, on March 22nd, 1961 (F31)

### R21 created (was created through)

Deprecated, use R17 created (was created by)

### R22 created a realisation of (was realised through)

Deprecated use [R19](#_R19_created_a) created a realisation of (was realised through)

### R23 created a realisation of (was realised through)

Deprecated, use [R19](#_R19_created_a) created a realisation of (was realised through)

### R24 created (was created through)

Domain: [F30](#_F30_Manifestation_Creation) Manifestation Creation

Range: F3 Manifestation

Subproperty of: [F28](#_F31_Expression_Creation) Expression Creation. [R17](#_R22_has_created) created (was created by): [F2](#_F2_Expression) Expression

Quantification: (1,n:1,n)

Scope note: This property associates the instance of F3 Manifestation that was created during a particular F30 Manifestation Creation with that F30 Publication Event.

Examples: Establishing in 1972 the layout, features, and prototype for the publication of Stephen Crane’s complete poems (F30) *R24 created* the set of signs and instructions as to manufacturing established by Cornell University Press for a publication of Stephen Crane’s complete poems (F24)

The following figure will become symmetric:

The following image becomes clear: F24 becomes F3

**F4 Manifestation**

**Singleton**

**F28 Expression Creation**

R6 carries (is

carried by)

R18 created

(was created by)

**F24 Publication Expression**

**E12 Production**

**From Expression to Publication**

**E70 Thing**

**F2 Expression**

**F3 Manifestation**

**Product Type**

R4 carriers provided by

(comprises carriers of )

**F5 Item**

R7 is example of

(has example)

**F32 Carrier**

**Production Event**

R26 produced

things of type (was

produced by )

R27 used as source

material (was used by )

R28 produced

(was produced by)

**F33 Reproduction Event**

R17 created

(was created by)

R29 reproduced (was

reproduced by)

**E84 Information**

**Carrier**

R30 produced (was produced by)

P165 incorporates

(is incorporated in)

### R25 performed (was performed in)

Domain: [F31](#_F31_Performance) Performance

Range: F2 Expression

Subproperty of: [E7](#_E7_Activity_) Activity. [P33](#_P33_used_specific_) used specific technique (was used by): [E29](#_E29_Design_or_Procedure) Design or Procedure

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F31 Performance with the instance of F25 Performance Plan to which all those participating in the performance were supposed to conform.

Examples: Performing the first performance of a Yiddish translation of ‘King Lear’*,* as directed by Sergei Radlov, in Moscow, at the Moscow State Jewish Theatre, on February 10, 1935 (F31) *R25 performed* the set of instructions for the production of a Yiddish translation of ‘King Lear’*,* directed by Sergei Radlov in Moscow in 1935 (F25)

Performing the ballet ‘Rite of spring’*,* as choreographed by Pina Bausch, in Avignon, at the Popes’ Palace, on July 7, 1995 (F31) *R25 performed* the set of instructions for the production of the ballet ‘Rite of spring’*,* as choreographed by Pina Bausch (F25)

### R26 produced things of type (was produced by)

Domain: [F32](#_F32_Carrier_Production) Carrier Production Event

Range: E99 Product Type

Subproperty of: [E12](#_E12_Production_) Production. P186 produced thing of product type (is produced by): E99 Product Type

Quantification: (1,n:0,n)

Scope note: This property associates an instance of F32 Carrier Production Event with the instance of F3 Manifestation Product Type it produced items of.

Examples: The production of copies of the publication entitled ‘Codex Manesse: die Miniaturen der großen Heidelberger Liederhandschrift, herausgegeben und erläutert von Ingo F. Walther unter Mitarbeit von Gisela Siebert’, 3rd edition, Insel-Verlag, 1988 (F32) *R26 produced things of type* the publication identified as ‘Codex Manesse: die Miniaturen der großen Heidelberger Liederhandschrift, herausgegeben und erläutert von Ingo F. Walther unter Mitarbeit von Gisela Siebert’, 3rd edition, Insel-Verlag, 1988 (F3)

The production of copies of the publication entitled ‘Ordnance Survey Explorer Map 213, Aberystwyth & Cwm Rheidol’, ISBN ‘0-319-23640-4’ (folded), 1:25,000 scale, released in May 2005 (F32) *R26 produced things of type* the publication identified by ISBN ‘0-319-23640-4’ (F3)

The production of copies of the sound recording entitled ‘The Glory (????) of the human voice’, RCA Victor Gold Seal GD61175, containing recordings of musical works performed by Florence Foster Jenkins (F32) *R26 produced things of type* the publication entitled ‘The Glory (????) of the human voice’ and identified by the label and label number ‘RCA Victor Gold Seal GD61175’ (F3)

The production of a second print run, in 1978, of the publication titled ‘The complete poems of Stephen Crane, edited with an introduction by Joseph Katz’ (identified by ISBN ‘0-8014-9130-4’) (F32) *R26 produced things of type* the publication, dated 1972, entitled ‘The complete poems of Stephen Crane, edited with an introduction by Joseph Katz’ (identified by ISBN ‘0-8014-9130-4’) (F3)

### R27 materialized (was materialized by)

Domain: [F32](#_F32_Carrier_Production) Carrier Production Event

Range: [F3](#_F3_Manifestation_Product) Manifestation

Subproperty of: [E7](#_E7_Activity_) Activity. [P16](#_P16__used_) used specific object (was used for): [E70](#_E70_Thing_1) Thing

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F32 Carrier Production Event with the set of signs provided by the publisher to be carried by all of the produced items and any other foreseen physical features.

Examples: The production of copies of the publication identified by ISBN ‘1-86197-612-7’ (F32) *R27 materialized* the final set of signs sent by the publisher named ‘Profile Books’ to their printer for the production of copies of the publication identified by ISBN ‘1-86197-612-7’ (F24)

### R28 produced (was produced by)

Domain: [F32](#_F32_Carrier_Production) Carrier Production Event

Range: [F54](#_F54_Utilized_Information) Utilised Information Carrier

Subproperty of: [E12](#_E12_Production_) Production. [P108](#_P108_produced_(was_1) has produced (was produced by): [E24](#_E24_Physical_Man-Made_1) Physical Man-Made Thing

Quantification: (0,n:1,1)

Scope note: This property associates an instance of F32 Carrier Production Event with any one of the produced items (i.e., the instances of F5 Item or F53 Material Copy).

Examples: The production of copies of the publication entitled ‘Codex Manesse: die Miniaturen der großen Heidelberger Liederhandschrift, herausgegeben und erläutert von Ingo F. Walther unter Mitarbeit von Gisela Siebert’, 3rd edition, Insel-Verlag, 1988 (F32) *R28 produced* the National Library of France’s holding identified by shelf mark ‘C-1604(2)’ (F5)

The production of copies of the publication entitled ‘Ordnance Survey Explorer Map 213, Aberystwyth & Cwm Rheidol’, ISBN 0-319-23640-4 (folded), 1:25,000 scale, released in May 2005 (F32) *R28 produced* the National Library of Wales’ holding identified by holding information ‘MAP, STORFA/STACK ; FLAT MAP, C16 (20/1), Sheet 213, c.135/5/2’ (F5)

The production of copies of the sound recording entitled ‘The Glory (????) of the human voice’, RCA Victor Gold Seal GD61175 (F32) *R28 produced* the London Public Library’s holding identified by call number ‘R J416.Gl’ (F5)

The second print run, occurring in 1978, of the publication dated of 1972 and entitled ‘The complete poems of Stephen Crane, edited with an introduction by Joseph Katz’ (identified by ISBN ‘0-8014-9130-4’) (F32) *R28 produced* Universitätsbibliothek Passau’s holding identified by call number ‘00/HT 4801.978 K2’ (F5)

### R29 reproduced object (was object reproduced by)

Domain: [F33](#_F41_Publication_Expression) Reproduction Event

Range: F54 Utilised Information Carrier

Subproperty of: [E7](#_E7_Activity_) Activity. [P16](#_P16__used_) used specific object (was used for): [E70](#_E70_Thing_1) Thing

Quantification: (1,n:0,n)

Scope note: This property associates an instance of F33 Reproduction Event with an instance of F54 Utilised Information Carrier it reproduces.

Examples: The activity performed by Schott when producing the 2015 publication of Harry Partch's 'Two studies on ancient Greek scales' *Rn reproduced object* Harry Partch's holograph manuscript of 'Two studies on ancient Greek scales'

The activity performed by Cambridge University Press when producing the 2014 publication of Daniel Wilson's 'Caliban: the missing link' *Rn reproduced publication* the 1873 publication of Daniel Wilson's 'Caliban: the missing link' by Macmillan Find a home for this, for instance R27 or R28 Produced?

### R30 produced (was produced by)

Deprecated

### R31 is reproduction of (has reproduction)

Deprecated

### R32 is warranted by (warrants)

Domain: [F35](#_F35_Nomen_Use) Nomen Use Statement

Range: [F52](#_F52_Name_Use) Name Use Activity

Subproperty of: [E89](#_E89_Propositional_Object) Propositional Object. [P67](#_P67_refers_to) refers to (is referred to by**):** [E1](#_E1_CRM_Entity_) CRM Entity

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F35 Nomen Use Statement with an instance of F52 Name Use Activity which provides evidence for the use of the particular nomen in the stated sense. The association between this name use activity and a source for it may be described by the property *P70 documents (is documented in)*.

Examples: The variant controlled access point in record n 79021736, tagged in MARC 21 format, ‘400 1\_**|a** Пруст, Марсель, **|d** 1871-1922’ found in the Library of Congress authorities as of 15 June 2012 (F35) *R32 is warranted by* the use of the name ‘Марсель Пруст’ in Cyrillic script (F52), for which evidence can be found in the publication referred to as ‘Andreev, L.G. Marselʹ Prust, 1968’ in the authority record established by the Library of Congress for Marcel Proust

The preferred access point in record sh 85109469, tagged in MARC 21 format, ‘150 \_\_**|a** Quantum theory’ found in the Library of Congress authorities as of 15 June 2012 (F35) *R32 is warranted by* the use of the phrase ‘quantum theory’ in the English language (F52), as attested to by references to the NASA and INSPEC thesauri in the authority record established by the Library of Congress

The preferred access point in record sh 85074230 in the LCSH authority file tagged in MARC 21 in the field ‘150\_\_ |a Lamniformes’ (F35) *R32 is warranted by* the use of the term ‘Lamniformes’ for mackerel sharks in the entry on page 51 of Fishes of the world by J.S. Nelson published in 1994 (F52)

The preferred access point in record n 85118480 in the Library of Congress name authority file as of 19 November 2012 tagged in MARC 21 in the field ‘110 2\_ |a Canadian Academic Centre in Italy’ (F35) *R32 is warranted by* the use of the name ‘Canadian Academic Centre in Italy’ on page 6 of the book ‘Lo Scavo di S. Giovanni di Ruoti ed il periodo tardoantico in Basilicata’ published in 1983

### R33 has content

Domain: [F12](#_F13_Name) Nomen

Range: [E62](#_E62_String) String

Subproperty of: [E1](#_E1_CRM_Entity_) CRM Entity. [P3](#_P3_has_note) has note: [E62](#_E62_String) String

Quantification: (1,1:0,n)

Scope note: This property associates an instance of F12 Nomen with a sign or arrangement of signs that is used to refer to something through that instance of F12 Nomen.

Examples: The English term ‘poison’ in written form in the Latin alphabet (F12) *R33* *has content* the letters p, o, i, s, o, n with no intervening space (E62)

The English term ‘poison’ notated in the International Phonetic Alphabet (F12) *R33 has content* the string of characters ['pɔɪzən] (E62)

The French term ‘poison’ in written form in the Latin alphabet (F12) *R33* *has content* the letters p, o, i, s, o, n with no intervening space (E62)

The French term ‘poison’ notated in the International Phonetic Alphabet (F12) *R33* *has content* the string of characters [pwa'zɔ̃] (E62)

Properties: R33.1 has encoding: [E55](#_E55_Type_) Type

### R34 has validity period (is validity period of)

Domain: [F34](#_F34_KOS) Controlled Vocabulary

Range: [E52](#_E52_Time-Span) Time-Span

Subproperty of: Out of CRM Scope.

Quantification: (1,1:0,n)

Scope note: This property associates an instance of F34 KOS with the instance of E52 Time-Span describing the period for which the particular KOS Expression was regarded as valid by its maintainers. Each change of validity status of a nomen use statement within a KOS should be associated with a release change of the KOS. The individual time-span of a validity state of a nomen would be the union of the time-spans of the KOS in which the Nomen was declared to have the particular validity status (provisional, accepted, obsolete etc...).

Examples: LCSH February 20 to March 19 2012 (F34) *R34 has validity period* February 20 to March 19 2012 (E52)

DDC 19 (F34) *R34* *has validity period* 1979 to 1989 (E52)

### R35 is specified by (specifies)

Domain: [F35](#_F35_Nomen_Use) Nomen Use Statement

Range: [F34](#_F34_KOS) KOS

Subproperty of: [E89](#_E1_CRM_Entity) Propositional Object. [P148](#_P148_has_component_1) has component (is component of): [E89](#_E1_CRM_Entity) Propositional Object

Quantification: (1,1:1,n)

Scope note: This property associates an instance of F35 Nomen Use Statement with an instance of F34 KOS in which the Nomen Use Statement has a given status. The property R35.1 allows for specifying the particular status of the nomen use statement within the KOS. An instance of *R35 is specified by* should have only one status.

Examples: ‘acoustic surface wave device’ (F35) *R35 is specified by* INSPEC Thesaurus version January 1973 (F34) *R35.1 has status* valid (E55)

‘acoustic surface wave device’ (F35) *R35 is specified by* INSPEC Thesaurus version June 1978 (F34) *R35.1 has status* obsolete (E55)

Properties: R35.1 has status: [E55](#_E55_Type_) Type

### R36 uses script conversion (is script conversion used in)

Domain: [F35](#_F35_Nomen_Use) Nomen Use Statement

Range: [F36](#_F36_Script_Conversion) Script Conversion

Quantification: (0,1:0,n)

Scope note: This property associates an instance of F35 Nomen Use Statement with the instance of F36 Script Conversion that was used to create the Nomen referred to in the Nomen Use Statement. The source of this conversion may or may not be explicitly mentioned. Is shortcut of: F35 Nomen Use Statement *R17 was created by (created)* F28 Expression Creation *P33 used specific technique (was used by)* E29 Design or Procedure.

Examples: ‘001  FRBNF120864715’…‘100  $w.0..ba....$aDu$mFu$d0712-0770’ [an instance of F35 Nomen Use Statement in INTERMARC format] (F35) *R36 uses script conversion* Pinyin (F36)

‘001  FRBNF119547493’…‘100  w.0..barus.$aGončarova$mNatalʹâ Sergeevna$d1881-1962’ [an instance of F35 Nomen Use Statement in INTERMARC format] (F35) *R36 uses script conversion* ISO 9:1995 (F36)

### R37 states as nomen (is stated as nomen in)

Domain: [F35](#_F35_Nomen_Use) Nomen Use Statement

Range: [F12](#_F13_Name) Nomen

Subproperty of: [E89](#_E89_Propositional_Object) Propositional Object. [P67](#_P67_refers_to) refers to (is referred to by**):** [E1](#_E1_CRM_Entity_) CRM Entity

Quantification: (1,1:0,n)

Scope note: This property associates an instance of F35 Nomen Use Statement with the instance of F12 Nomen for which it declares usage.

Examples: ‘Definition of 'poison' ’…‘1. variable noun: Poison is a substance that harms or kills people or animals if they swallow it or absorb it.’ [Part of the definition of the English term 'poison' from the Collins English dictionary, <https://www.collinsdictionary.com/dictionary/english/poison>, as of 2 December 2017] *R37 states as nomen* the English term 'poison' (F12)

‘PTBNP|20891’…‘200 1‎‡a Whitman,‏ ‎‡b Walt,‏ ‎‡f 1819-1892‏’ [an instance of F35 Nomen Use Statement in UNIMARC format] (F35) *R37 states as nomen* ‘Whitman, Walt (1819-1892)’ (F12)

‘001  FRBNF120864715’…‘100  $w.0..ba....$aDu$mFu$d0712-0770’ [an instance of F35 Nomen Use Statement in INTERMARC format] (F35) *R37 states as nomen* ‘Du, Fu (0712-0770)’ (F12)

‘001  FRBNF119547493’…‘100  w.0..barus.$aGončarova$mNatalʹâ Sergeevna$d1881-1962’ [an instance of F35 Nomen Use Statement in INTERMARC format] (F35) *R37 states as nomen* ‘Gončarova, Natalʹâ Sergeevna (1881-1962)’ (F12)

‘010 \_\_ |a n 79021736’…‘400 1\_**|**aПруст, Марсель, **|**d1871-1922’ [an instance of F35 Nomen Use Statement in INTERMARC format] (F35) *R37 states as nomen* ‘Пруст, Марсель, 1871-1922’ (F12)

‘010 \_\_ |a sh 85074230’…‘150\_\_ |a Lamniformes’ [an instance of F35 Nomen Use Statement in MARC 21 format] (F35) *R37 states as nomen* ‘Lamniformes’ (F12)

‘010 \_\_ |a sh 85074230’…‘053 \_0 |a QL638.94.L36 |c Zoology’ [an instance of F35 Nomen Use Statement in MARC 21 format] (F35) *R37 states as nomen* the Library of Congress classification number ‘QL638.94.L36’ (F12)

‘ID: 300024668’…‘navaja (C,U,Spanish,UF,U,SN)’ *R37 states as nomen* ‘navaja’(F12) (“used for” term, Getty Art & Architecture Thesaurus Online, retrieved 19/11/2012)

‘ID: 7010879’…‘Candia (H,V,Greek (transliterated),U) ….Venetian corruption of Arabic name, used from 13th cen.’ *R37 states as nomen* ‘Candia’ (F12) (“historical term”, Getty Thesaurus of Geographic Names Online, retrieved 19/11/2012)

‘ID: 7010879’…‘Ērakleion (NA,V,Greek (transliterated),U)’ *R37 states as nomen* ‘Ērakleion’ (F12) (“not-applicable term”, Getty Thesaurus of Geographic Names Online, retrieved 19/11/2012)

‘<eac-cpf […]> <control> <recordId>beinecke.7h44jbj</recordId> […] </control>’ … ‘<cpfDescription> <identity> <entityType>family</entityType> <nameEntry xml:lang="eng" scriptCode="Latn"><part localType="100a">Boswell family</part> […] </nameEntry> […] </identity> </cpfDescription> […] </eac-cpf>’ [an instance of F35 Nomen Use Statement in EAC] (F35) *R37 states as nomen* ‘Boswell family’ (F12)

### R38 refers to thema (is thema of)

Domain: [F35](#_F35_Nomen_Use) Nomen Use Statement

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Is covered by shortcut: [E32](#_E32_Authority_Document) Authority Document. [*P71*](#_P71_lists_(is) *lists:* [E1](#_E1_CRM_Entity_) CRM Entity is shortcut of: [F34](#_F34_KOS) KOS. [*R35B*](#_R35_is_specified_by (specifies)) *specifies:* [F35](#_F35_Nomen_Use) Nomen Use Statement.[*R38*](#_R38_refers_to) *refers to thema*: [E1](#_E1_CRM_Entity_) CRM Entity

Quantification: (1,1:0,n)

Scope note: This property associates an instance of F35 Nomen Use Statement with the instance of E1 CRM Entity for which it declares the usage of a nomen.

Examples: 'Definition of 'poison''…'1. variable noun: Poison is a substance that harms or kills people or animals if they swallow it or absorb it.' [Part of the definition of the English term 'poison' from the Collins English dictionary, <https://www.collinsdictionary.com/dictionary/english/poison>, as of 2 December 2017] *R38 refers to thema* any substance that harms or kills people or animals if they swallow it or absorb it (E18)

‘PTBNP|20891’…‘200 1‎‡a Whitman,‏ ‎‡b Walt,‏ ‎‡f 1819-1892‏’ [an instance of F35 Nomen Use Statement in UNIMARC format] (F35) *R38 refers to thema* the person who wrote the collection of poems titled ‘Leaves of Grass’ (E21=F10)

‘010 \_\_ |a sh 85109469’…‘150 \_\_**|a** Quantum theory’ [preferred subject access point from LCSH, in MARC 21 format, <http://lccn.loc.gov/sh85109469>, as of 15 June 2012] (F35) *R38 refers to thema* the branch of physics known as quantum theory (E28)

‘<eac-cpf […]> <control> <recordId>beinecke.7h44jbj</recordId> […] </control>’ … ‘<cpfDescription> <identity> <entityType>family</entityType> <nameEntry xml:lang="eng" scriptCode="Latn"><part localType="100a">Boswell family</part> […] </nameEntry> […] </identity> </cpfDescription> […] </eac-cpf>’ [an instance of F35 Nomen Use Statement in EAC] (F35) *R38 refers to thema* the family who held the barony of Auchinleck in Scotland from 1504 on (F39)

### R39 is intended for (is target audience in)

Domain: [F35](#_F35_Nomen_Use) Nomen Use Statement

Range: [E74](#_E74_Group_) Group

Subproperty of: [E89](#_E89_Propositional_Object) Propositional Object. [P67](#_P67_refers_to) refers to (is referred to by**):** [E1](#_E1_CRM_Entity_) CRM Entity

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F35 Nomen Use Statement with an instance of E74 Group which is the target audience for which the associated nomen use is intended. To indicate that the associated nomen is declared as preferred in all contexts, the instance of E74 Group is ‘mankind’.

Examples: ‘010 \_\_ |a sj 96004896’…‘150 \_\_ |a Belly button’ [an instance of F35 Nomen Use Statement in MARC 21 format] (F35) *R39 is intended for* Children (E74)

### R40 has representative expression (is representative expression for)

Deprecated

### R41 has representative manifestation product type (is representative manifestation product type for)

Deprecated

### R42 is representative manifestation singleton for (has representative manifestation singleton)

Deprecated

### R43 carried out by (performed)

Deprecated

### R44 carried out by (performed)

Deprecated

### R45 assigned to (was assigned by)

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Subproperty of: [E13](#_E18_Physical_Thing_) Attribute Assignment. [P140](#_P140_assigned_attribute_1) assigned attribute to (was attributed by): [E1](#_E1_CRM_Entity_) CRM Entity

Quantification: (1,1:0,n)

Scope note: This property identifies the entity to which an actor, such as a bibliographic agency, assigned an instance of F12 Nomen.

Examples: Assigning the controlled access point ‘The Adoration of the Shepherds (Coventry)’ (F52) *R45 assigned to* the anonymous textual work otherwise simply known as ‘The Adoration of the Shepherds’ (F12) [assignment of an Identifier to a Work]

Assigning the controlled access point ‘Rite of spring (Choreographic Work: Bausch)’ (F52) *R45 assigned to* Pina Bausch’s choreographic work entitled ‘Rite of spring’ (F12) [assignment of an Identifier to a Work]

Assigning the controlled access point ‘King Kong (1933)’ (F52) *R45 assigned to* the motion picture directed in 1933 by Merian C. Cooper and Ernest B. Schoedsack, entitled ‘King Kong’ (F12) [assignment of an Identifier to a Work]

Assigning the controlled access point ‘Guillaume, de Machaut, ca. 1300-1377’ (F52) *R45 assigned to* Guillaume de Machaut (F12) [assignment of an Identifier to a Person]

Assigning the controlled access point ‘Univerza v Ljubljani. Oddelek za bibliotekarstvo’ (F52) *R45 assigned to* the Department for library science of the University of Ljubljana (F12) [assignment of an Identifier to a Corporate Body]

### R46 assigned (was assigned by)

Deprecated, use [P37](#_P37_assigned_(was) assigned (was assigned by)

### R48 assigned to (was assigned by)

Deprecated use [P140](#_P140_assigned_attribute_1) assigned attribute to (was attributed by)

### R49 assigned (was assigned by)

Deprecated use, [P141](#_P141_assigned_(was) assigned (was assigned by)

### R50 assigned to (was assigned by)

Domain: [F42](#_F42_Representative_Expression) Representative Expression Assignment

Range: [F1](#_F1_Work_1) Work

Subproperty of: [E13](#_E18_Physical_Thing_) Attribute Assignment. [P140](#_P140_assigned_attribute_1) assigned attribute to (was attributed by): [E1](#_E1_CRM_Entity_) CRM Entity

Quantification: (1,1:0,n)

Scope note: This property associates the event of assigning a representative instance of F2 Expression with the instance of F1 Work to which it was assigned.

Examples: Selecting the text embodied in the 1775 edition of Richard Brinsley Sheridan’s textual work entitled ‘St. Patrick’s Day’ as the representative expression for Richard Brinsley Sheridan’s textual work entitled ‘St. Patrick’s Day’ (F42) *R50 assigned to* Richard Brinsley Sheridan’s textual work entitled ‘St. Patrick’s Day’ (F15)

Selecting the musical notation embodied in the 2007 edition of John Tavener’s musical work entitled ‘The Eternal Sun’ as the representative expression for John Tavener’s musical work entitled ‘The Eternal Sun’ (F42) *R50 assigned to* John Tavener’s musical work entitled ‘The Eternal Sun’ (F15)

Selecting the publication expression of the 1983 edition of Stanley Karnow’s textual work entitled ‘Vietnam, the war nobody won’ as the representative expression for the series entitled ‘Headline series’ (F42) *R50 assigned to* the series entitled ‘Headline series’ (F18)

Selecting the publication expression of the issue dated October 2002 of the periodical entitled ‘The New Courier’ as the representative expression of the periodical entitled ‘The New Courier’ (F42) *R50 assigned to* the periodical entitled ‘The New Courier’ (F18)

Selecting the content of the manuscript identified by shelfmark ‘MS-8282’ within the collections of the National Library of France, Department for Music, as the representative expression of Stanislas Champein’s musical work entitled ‘Vichnou’ (F42) *R50 assigned to* Stanislas Champein’s musical work entitled ‘Vichnou’ (F15)

### R51 assigned (was assigned by)

Deprecated use, [P141](#_P141_assigned_(was) assigned (was assigned by)

### R52 used rule (was the rule used in)

Deprecated use, [P33](#_P33_used_specific_) used specific technique

### R53 assigned (was assigned by)

Deprecated use, [P141](#_P141_assigned_(was) assigned (was assigned by)

### R54 has nomen language (is language of nomen in)

Domain: [F35](#_F35_Nomen_Use) Nomen Use Statement

Range: [E56](#_E56_Language_1) Language

Subproperty of: [E89](#_E1_CRM_Entity) Propositional Object. [P67](#_P67_refers_to) refers to (is referred to by): [E1](#_E1_CRM_Entity_) CRM Entity

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F35 Nomen Use Statement with an instance of E56 Language which is a target language for the associated nomen use.

Examples: ‘001  FRBNF119304566’…‘100  $w.0..b.spa.$aColón$mCristóbal$d1450?-1506’ (F35) *R54 has nomen language* the language referred to in subfield $w by the ISO code ‘spa,’ i.e., Spanish (E56)

‘001  FRBNF119304566’…‘400  $w....b.eng.$aColumbus$mChristopher$d1450?-1506’ (F35) *R54 has nomen language* the language referred to in subfield $w by the ISO code ‘eng,’ i.e., English (E56)

‘001  FRBNF118726828’…‘110  $w20..b.fre.$aConseil international des musées’ (F35) *R54 has nomen language* the language referred to in subfield $w by the ISO code ‘fre,’ i.e., French (E56)

‘001  FRBNF118726828’…‘110  $w20..b.ger.$aInternationaler Museumsrat’ (F35) *R54 has nomen language* the language referred to in subfield $w by the ISO code ‘ger,’ i.e., German (E56)

‘ID: 300024668’…‘navaja (C,U,Spanish,UF,U,SN)’ *R54 has nomen language* Spanish (E56) (“used for” term, Getty Art & Architecture Thesaurus Online, retrieved 19/11/2012)

### R55 has nomen form (is nomen form in)

Domain: [F35](#_F35_Nomen_Use) Nomen Use Statement

Range: [E55](#_E55_Type_) Type

Subproperty of: [E89](#_E1_CRM_Entity) Propositional Object. [P67](#_P67_refers_to) refers to (is referred to by): [E1](#_E1_CRM_Entity_) CRM Entity

Quantification: (0,1:0,n)

Scope note: This property associates an instance of F35 Nomen Use Statement with the instance of E55 Type that characterizes the Nomen referred to in the Nomen Use Statement, such as abbreviation, full name etc. In the case of abbreviations, the source of this form may or may not be explicitly mentioned.

Examples: ‘010 \_\_ |a n 78004438’…‘410 2\_ |a IFLA’ to refer to the International Federation of Library Associations and Institutions (F35) *R55 has nomen form* acronym (E55)

### R56 has related use (is related use for)

Domain: [F35](#_F35_Nomen_Use) Nomen Use Statement

Range: [F35](#_F35_Nomen_Use) Nomen Use Statement

Subproperty of: [E29](#_E29_Design_or_) Design or Procedure. [P69](#_P69_is_associated) has association with (is associated with): [E29](#_E29_Design_or_) Design or Procedure

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F35 Nomen Use Statement with another instance of F35 Nomen Use Statement which has a related use in some context, such as alternative, lexical variant, replacing former use etc. The property R56.1 allows for specifying the particular kind of the nomen use statement relationship.

Examples: ‘001  FRBNF122597517’…‘14506$w.1..b.fre.$aDu sublime’ [an instance of F35 Nomen Use Statement in INTERMARC format] (F35) *R56 has related use* ‘001  FRBNF122597517’…‘14506$w.0..g.grp $aΠερὶ ὕπσους’ [an instance of F35 Nomen Use Statement in INTERMARC format] (F35) *R56.1 has type* parallel form (E55)

‘001  FRBNF126866954’…‘100  $w.0..b.....$aTyrrell$mGeorge$d1861-1909’ [an instance of F35 Nomen Use Statement in INTERMARC format] (F35) *R56 has related use* ‘001  FRBNF126866954’…‘466  $w....b     $aTyrell$oAffaire$g1907’ [an instance of F35 Nomen Use Statement in INTERMARC format] (F35) *R56.1 has type* variant access point for a personal name, intended to be displayed in a subject index only, and not in a personal names index (E55) [Explanation: in the INTERMARC format used at the National Library of France, tag 466 in an authority record for a person serves to introduce a topical term which is displayed as a variant form for the personal name in the subject index, but is not displayed in the name index]

‘010 \_\_ |a n 78004438’…‘110 2\_ |a International Federation of Library Associations and Institutions’ [an instance of F35 Nomen Use Statement in MARC 21 format] (F35) *R56 has related use* ‘010 \_\_ |a n 78004438’…‘410 2\_ |a IFLA’ [an instance of F35 Nomen Use Statement in MARC 21 format] (F35) *R56.1 has type* acronym (E55) (in MARC 21 field 410 serves as a reference to the accepted form which appears in field 110)

‘PTBNP|20891’…‘200 1‎‡a Whitman,‏ ‎‡b Walt,‏ ‎‡f 1819-1892‏’ (F35) *R56 has related use* ‘PTBNP|20891’…‘675 ‎‡a 820(73) Whitman, Walt.09‏ ‎‡v BN‏ ‎‡z por‏’ *R56.1 has type* has associated UDC number (in UNIMARC field 675 serves to associate a UDC number with the accepted form which appears in field 200)

‘<eac-cpf […]> <control> <recordId>beinecke.7h44jbj</recordId> […] </control>’ … ‘<cpfDescription> <identity> <entityType>family</entityType> <nameEntry xml:lang="eng" scriptCode="Latn"><part localType="100a">Boswell family</part> […] </nameEntry> […] </identity> </cpfDescription> […] </eac-cpf>’ [an instance of F35 Nomen Use Statement in EAC] (F35) *R56 has related use* ‘<eac-cpf […]> <control> <recordId>beinecke.7h44jbj</recordId> […] </control>’ … ‘<cpfDescription> <identity> <entityType>family</entityType> <nameEntry xml:lang="eng" scriptCode="Latn"> <part localType="400a">Buzwell family </part> […] </nameEntry> […] </identity> </cpfDescription> […] </eac-cpf>’ [an instance of F35 Nomen Use Statement in EAC] (F35) *R56.1 has type* alternative form (E55)

Properties: R56.1 has type: [E55](#_E55_Type_) Type

### R57 is based on (is basis for)

Deprecated

### R58 has fictional member (is fictional member of)

Deprecated

### R59 had typical subject (was typical subject of)

moved to CRMsoc

### R60 used to use language (was language used by)

moved to CRMsoc

### R61 occurred in kind of context (was kind of context for)

moved to CRMsoc

### R62 was used for membership in (was context for)

moved to CRMsoc

### R63 named (was named by)

Moved to CRMsoc

### R64 used name (was name used by)

Moved to CRMsoc

### R65 recorded aspects of (had aspects recorded through)

Domain: [F29](#_F33_Identifier_Assignment) Recording Event

Range: [E18](#_E18_Physical_Thing_2) Physical Thing

Shortcut of: [F29](#_F33_Identifier_Assignment) Recording Event. [R20](#_R20_recorded_(was_) recorded: [E3](#_E3_Condition_State) Condition State. [P44i](#_P44_has_condition) is condition of: [E18](#_E18_Physical_Thing_2) Physical Thing

Subproperty of shortcut of: [F29](#_F33_Identifier_Assignment) Recording Event. [R20](#_R20_recorded_(was_) recorded: [E5](#_E5_Event_) Event. [P12](#_P12_occurred_in) occurred in the presence of: [E18](#_E18_Physical_Thing_2) Physical Thing

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F29 Recording Event with an instance of E18 Physical Thing some of whose features, at the time of recording, were recorded in that process.

Examples: The making of the photograph of the three Allied leaders at Yalta in February 1945 (F29) *R65 recorded aspects of* Stalin (E21)

Filming Louise Bourgeois at work in the context of the shooting of the documentary movie entitled ‘Louise Bourgeois: The Spider, the Mistress, and the Tangerine’ (F29) *R65 recorded aspects of* Louise Bourgeois (E21)

### R66 included performed version of (had a performed version through)

Domain: [F31](#_F31_Performance) Performance

Range: [E89](#_E1_CRM_Entity) Propositional Object

Subproperty of: [E7](#_E7_Activity_) Activity. [P16](#_P16_used_specific_object_(was_used_) used specific object (was used for): [E70](#_E70_Thing_1) Thing

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F31 Performance with a product of the mind that was performed in the course of that instance of F31 Performance.

According to the level of knowledge available about the performance, the range of this property can actually be specialised as either an instance of F1 Work (if nothing is known as to which specific expression of the work was performed), or of F2 Expression (if there is a reasonable amount of certainty as to which specific expression—e.g., a well identified translation of a play—of the work was performed).

In addition to being a subproperty of P16 used specific object (was used for), this property also is a shortcut of the fully developed path that goes from F31 Performance to F1 Work through: R25 performed F25 Performance Plan P165 incorporates F2 Expression R3i realises. In this fully developed path, the specific instance of F2 Expression can be precisely identified and described for its own sake, or it can just be known to have necessarily existed.

Examples: The performance of ‘Hamlet’ on 17 June 1909 in Berlin, Deutsches Theater, by Alexander Moissi, directed by Max Reinhardt (F31) *R66 included performed version of* William Shakespeare’s work ‘Hamlet’ (F15) [*Note:* the specific German translation that was performed is not mentioned in the documentation available from <http://www.glopad.org/pi/en/record/production/1001207>]

The performance of ‘Hamlet’ on 6 June 1964 in Zurich, Schauspielhaus, by Compagnia Proclemer-Albertazzi, directed by Franco Zeffirelli (F31) *R66 included performed version of* Gerardo Guerrieri’s Italian translation (F22) of William Shakespeare’s work ‘Hamlet’

### R67 has part (forms part of)

Domain: F1 Work

Range: F1 Work

Subproperty of: R10 has member (is member of)

Subproperty of: E89 Propositional Object. P148 has component (is component of): E89 Propositional Object

Quantification: (0,n:0,n)

Scope note: This property associates an instance of F1 Work with another instance of F1 Work that forms part of it in a complementary role to other sibling parts, conceived at some point in time to form together a logical whole, such as the parts of a trilogy. This property is transitive. In contrast, the property R10 has member may, for instance, also associate with the overall instance of F1 Work translations, adaptation and other derivative work that do not form a logical whole with sibling parts.

Examples:

* Dante’s textual work entitled ‘Divina Commedia’ *has part* Dante’s textual work entitled ‘Inferno’
* Giovanni Battista Piranesi’s graphic work entitled ‘Carceri’ (F15) *has part* Giovanni Battista Piranesi’s graphic work entitled ‘Carcere XVI: the pier with chains’

### R68 is inspiration for (was inspired by): F1 Work

Domain: [F1](#_F1_Work_1) Work

Range: [F1](#_F1_Work_1) Work

Quantification: ( )

Scope note:

Examples:

### R69 specifies physical form (is physical form of)

Domain: [F3](#_F3_Manifestation_Product) Manifestation

Range: [E55](#_E55_Type_) Type

Quantification: (0,n:0,n)

Scope note: This property associates a publication, i.e. an instance of F3 Manifestation Product Type, with an instance of E55 Type, which all exemplars of that publication should belong to, as long as they are recognised as exemplars of that publication. Typically, this property is observed on one exemplar of a publication, and extrapolated to all other exemplars of the same publication. This logical inference is an induction along the path that can be modelled as: F3 Manifestation Product Type *R7i has example* F5 Item *P41i was classified by* E17 Type Assignment *P42 assigned* E55 Type.

It can happen that a given exemplar, or subset of exemplars, originally produced, or intended to be produced, with that characteristic, accidentally lacks it. This fact should be recorded as a property of F5 Item, and not of F3 Manifestation Product Type.

Examples: The sound recording entitled ‘The Glory (????) of the human voice’, identified by label and label number ‘RCA Victor Gold Seal GD61175’, containing recordings of musical works performed by Florence Foster Jenkins (F3) *CLP2 should have type* sound recording (E55)

The sound recording entitled ‘The Glory (????) of the human voice’, identified by label and label number ‘RCA Victor Gold Seal GD61175’, containing recordings of musical works performed by Florence Foster Jenkins (F3) *CLP2 should have type* kind of sound: monaural (E55)

### R70 specifies dimension (should be dimension of)

Domain: [F3](#_F3_Manifestation_Product) Manifestation

Range: [E54](#_E54_Dimension_) Dimension

Quantification: (1,n:1,1)

Scope note: This property associates a publication, i.e. an instance of F3 Manifestation Product Type, with an instance of E54 Dimension, which all exemplars of that publication should have, as long as they are recognised as exemplars of that publication. Typically, this property is observed on one exemplar of a publication, and extrapolated to all other exemplars of the same publication. This logical inference is an induction along the path that can be modelled as: F3 Manifestation Product Type *R7i has example* F5 Item *P39i was measured by* E16 Measurement *P40 observed dimension* E54 Dimension.

It can happen that a given exemplar, or subset of exemplars, originally produced, or intended to be produced, with that characteristic, accidentally lacks it. This fact should be recorded as a property of F5 Item, and not of F3 Manifestation Product Type.

Examples: The publication entitled ‘Functional Requirements for Bibliographic Records: final report’, published by K. G. Saur in 1998, identified by ISBN ‘3-598-11382-X’ (F3) *CLP43 should have dimension* height of the individual copy of ‘Functional Requirements for Bibliographic Records: final report’ that I have at hand and that I observed while describing it (E54) *P3 has note* ‘24 cm’ (E62) [or, alternatively: *P90 has value* ‘24’ (E60) and *P91 has unit* ‘cm’ (E58)]

The jigsaw puzzle entitled ‘Map of the New York city subway system’, designed by Stephen J. Voorhies and released around 1954 by the Union Dimes Savings Bank (F3) *CLP43 should have dimension* length and height of the exemplar held and catalogued by the Library of Congress (E54) *P3 has note* ‘46 x 29 cm’ (E62)

### CLP45 should consist of (should be incorporated in)

Domain: [F3](#_F3_Manifestation_Product) Manifestation

Range: [E57](#_E57_Material_) Material

Quantification: (0,n:0,n)

Scope note: This property associates a publication, i.e. an instance of F3 Manifestation Product Type, with an instance of E57 Material, which all exemplars of that publication should consist of, as long as they are recognised as exemplars of that publication. Typically, this property is observed on one exemplar of a publication, and extrapolated to all other exemplars of the same publication. This logical inference is an induction along the path that can be modelled as: F3 Manifestation Product Type *R7i has example* F5 Item *P41i was classified by* E17 Type Assignment *P42 assigned* E57 Material.

It can happen that a given exemplar, or subset of exemplars, originally produced, or intended to be produced, with that characteristic, accidentally lacks it. This fact should be recorded as a property of F5 Item, and not of F3 Manifestation Product Type.

Examples: The jigsaw puzzle entitled ‘Map of the New York city subway system’, designed by Stephen J. Voorhies and released around 1954 by the Union Dimes Savings Bank (F3) *CLP45 should consist of* cardboard (E57)

### CLP46 should be composed of (may form part of)

Deprecated

### R71 specifies number of parts

Domain: [F3](#_F3_Manifestation_Product) Manifestation

Range: [E60](#_E60_Number_1) Number

Quantification: (1,1:0,n)

Scope note: This property associates a publication, i.e. an instance of F3 Manifestation Product Type, with an instance of E60 Number, which denotes the number of physical units all exemplars of that publication should consist of, as long as they are recognised as complete exemplars of that publication. Typically, this property is observed on one exemplar of a publication, and extrapolated to all other exemplars of the same publication. This logical inference is an induction along the path that can be modelled as: F3 Manifestation Product Type *R7i has example* F5 Item *P57 has number of parts* E60 Number.

It can happen that a given exemplar, or subset of exemplars, originally produced, or intended to be produced, with that characteristic, accidentally lacks it. This fact should be recorded as a property of F5 Item, and not of F3 Manifestation Product Type.

Examples: The jigsaw puzzle entitled ‘Map of the New York city subway system’, designed by Stephen J. Voorhies and released around 1954 by the Union Dimes Savings Bank (F3) *CLP57 should have number of parts* 76 (E60) [Number of physical units of the exemplar held by the Library of Congress, as observed by a cataloguer from the Library of Congress when he/she catalogued that particular exemplar and recorded the statement: ‘1 jigsaw puzzle (ca. 76 pieces)’]

The publication entitled ‘History of costume: in slides, notes, and commentaries’ by Jeanne Button, Patricia Quinn Stuart, and Stephen Sbarge, released by Slide Presentations (New York) ca. 1975 (F3) *CLP57 should have number of parts* 1,491 (E60) [Number of physical units of the exemplar held by the Gelman Library of the George Washington University, as observed by a cataloguer from the Gelman Library of the George Washington University when he/she catalogued that particular exemplar and recorded the statement: ‘1,491 slides in 14 slide trays + 6 ring binders in cases (30 x 29 cm.)’]

### CLP104 subject to (applies to)

Deprecated

### CLP105 right held by (right on)

Deprecated

### CLR6 should carry (should be carried by)

Deprecated

***R45 assigned to (was assigned by)***

Domain: F52 Name Use Activity

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Subproperty of: [E13](#_E18_Physical_Thing_) Attribute Assignment. [P140](#_P140_assigned_attribute_1) assigned attribute to (was attributed by): [E1](#_E1_CRM_Entity_) CRM Entity

Quantification: (1,1:0,n)

Scope note: This property identifies the entity to which an actor, such as a bibliographic agency, assigned an instance of F12 Nomen.

Examples: Assigning the controlled access point ‘The Adoration of the Shepherds (Coventry)’ (F52) *R45 assigned to* the anonymous textual work otherwise simply known as ‘The Adoration of the Shepherds’ (F12) [assignment of an Identifier to a Work]

Assigning the controlled access point ‘Rite of spring (Choreographic Work: Bausch)’ (F52) *R45 assigned to* Pina Bausch’s choreographic work entitled ‘Rite of spring’ (F12) [assignment of an Identifier to a Work]

Assigning the controlled access point ‘King Kong (1933)’ (F52) *R45 assigned to* the motion picture directed in 1933 by Merian C. Cooper and Ernest B. Schoedsack, entitled ‘King Kong’ (F12) [assignment of an Identifier to a Work]

Assigning the controlled access point ‘Guillaume, de Machaut, ca. 1300-1377’ (F52) *R45 assigned to* Guillaume de Machaut (F12) [assignment of an Identifier to a Person]

Assigning the controlled access point ‘Univerza v Ljubljani. Oddelek za bibliotekarstvo’ (F52) *R45 assigned to* the Department for library science of the University of Ljubljana (F12) [assignment of an Identifier to a Corporate Body]

# LMRer to LRMoo mapping

## Entities

| **LRM ID** | **LRM Name** | **LRM Definition** | **Mapping** | **Validation** |
| --- | --- | --- | --- | --- |
| LRM-E1 | Res | Any entity in the universe of discourse | E1 CRM Entity | CIDOC-CRM 39 |
| LRM-E2 | Work | The intellectual or artistic content of a distinct creation | F1 Work | CIDOC-CRM 39 |
| **F16 Container work** | **Discussion pending.** |
| **F18 Serial work** | **Discussion pending.** |
| LRM-E3 | Expression | A distinct combination of signs conveying intellectual or artistic content | F2 Expression | CIDOC-CRM 39/43 |
| LRM-E4 | Manifestation | A set of all carriers that are assumed to share the same characteristics as to intellectual or artistic content and aspects of physical form. That set is defined by both the overall content and the production plan for its carrier or carriers | F3 Manifestation | CIDOC-CRM 40/43 |
| LRM-E5 | Item | An object or objects carrying signs intended to convey intellectual or artistic content | F5 Item | CIDOC-CRM 41/43 |
| LRM-E6 | Agent | An entity capable of deliberate actions, of being granted rights, and of being held accountable for its actions | E39 Actor | CIDOC-CRM 39 |
| LRM-E7 | Person | An individual human being | E21 Person  F10 person in LRM is deprecated, but no mention in LRM that E21 Person of CRM is to be used instead.  so make a note: USE E21 … | CIDOC-CRM 39 |
| LRM-E8 | Collective Agent | A gathering or organization of *persons* bearing a particular name and capable of acting as a unit | F55 Collective Agent | CIDOC-CRM 41/42 |
| LRM-E9 | Nomen | An association between an entity and a designation that refers to it | F12 Nomen | CIDOC-CRM 41 |
| LRM-E10 | Place | A given extent of space | E53 Place | CIDOC-CRM 39 |
| LRM-E11 | Time-span | A temporal extent having a beginning, an end and a duration | E52 Time-span | CIDOC-CRM 39 |

## Attributes

| **LRM ID** | **LRM Entity** | **LRM Name** | **LRM Definition** | **Condition** | **Mapping** | **Validation** |
| --- | --- | --- | --- | --- | --- | --- |
| LRM-E1-A1 | Res | Category | A type to which the res belongs |  | E1 CRM Entity. P2 has type: E55 Type {Res:Category} | CIDOC-CRM 39 |
| LRM-E1-A2 | Res | Note | Any kind of information about a res that is not recorded through the use of specific attributes and/or relationships |  | E1 CRM Entity. P3 has note: E62 String | CIDOC-CRM 39 |
| LRM-E2-A1 | Work | Category | A type to which the work belongs |  | F1 Work. P2 has type: E55 Type {Work:Category} | CIDOC-CRM 39 |
| LRM-E2-A2 | Work | Representative expression attribute | An attribute which is deemed essential in characterizing the work and whose values are taken from a representative or canonical expression of the work |  | F1 Work.- **Rn declared aspect**: E55 Type {Aspect}  delete F42 | CIDOC-CRM 41/43  **Define Rn** |
| LRM-E3-A1 | Expression | Category | A type to which the expression belongs |  | F2 Expression. P2 has type: E55 Type {Expression:Category} | CIDOC-CRM 39 |
| LRM-E3-A2 | Expression | Extent | A quantification of the extent of the expression |  | F2 Expression. P43 has dimension: E54 Dimension | CIDOC-CRM 39 |
| LRM-E3-A3 | Expression | Intended audience | A class of users for which the expression is intended |  | -F2 Expression. P101 has a general use: E55 Type {Personal characteristic}  -F2 Expression. P103 was intended for: E55 Type {Personal characteristic} NOT with the current scope note, should it be expanded?  -F2 Expression. Rxx intended for: E21 Person. P2 has type: E55 Type {Personal characteristic} | CIDOC-CRM 42:  Proposal: revising scope note of P103 so that it can be used more broadly P103 was intended for (from E71 Man-Made Thing to E55 Type)  -if use of P103 is not accepted, will need a specific Rxx property  Would like to include E21 Person somehow? |
| LRM-E3-A4 | Expression | Use rights | A class of use restrictions to which the expression is submitted |  | F2 Expression. P104 is subject to: E30 Right | CIDOC-CRM 39 |
| LRM-E3-A5 | Expression | Cartographic scale | A ratio of distances in a cartographic expression to the actual distances they represent |  | -F2 Expression (instantiated as E36 Visual Item). P2 has type: E55 Type {Cartographic image}. P138 represents {P138.1 has type E55 Type = “scale”}: E52 Place  -F2 Expression (instantiated as E36 Visual Item). P2 has type: E55 Type {Cartographic scale}. | CIDOC-CRM 39  CIDOC-CRM 42 : 2nd shorter version proposed as the attribute does not directly link to place  **Pending??** |
| LRM-E3-A6 | Expression | Language | A language used in the expression |  | F2 Expression (instantiated as E33 Linguistic Object). P72 has language: E56 Language | CIDOC-CRM 39 |
| LRM-E3-A7 | Expression | Key | A pitch structure (musical scale, ecclesiastic mode, raga, maqam, etc.), that characterizes the expression |  | F2 Expression. P2 has type: E55 Type {Key} | Discussion pending. |
| LRM-E3-A8 | Expression | Medium of performance | A combination of performing tools (voices, instruments, ensembles, etc.) stated, intended, or actually used in the expression | if musical notation or recorded sound | F2 Expression. P2 has type: E55 Type {Medium of performance} | Discussion pending. |
| if recorded sound | F26 Recording. R21i was created through: F29 Recording Event. R20 recorded: F31 Performance. P125 used object of type: E55 Type {Medium of performance} | **Discussion pending.**  CIDOC-CRM 43 : deprecated F26 |
| if musical notation | F2 Expression. P103 was intended for: E55 Type {being performed on medium of performance [insert here relevant name for a type of voice or instrument]} | CIDOC-CRM 39 |
| LRM-E4-A1 | Manifestation | Category of carrier | A type of material to which all physical carriers of the manifestation are assumed to belong |  | F3 Manifestation. CLP2 should have type: E55 Type {Category of carrier}  **F3 Manifestation. Rxx has physical form: E55 Type {Category of carrier}** | CIDOC-CRM 39  **2019-06-03 : HW from MD implies option 2** |
| LRM-E4-A2 | Manifestation | Extent | A quantification of the extent observed on a physical carrier of the manifestation and assumed to be observable on all other physical carriers of the manifestation as well |  | F3 Manifestation. P3 has note {P3.1 has type: E55 Type = “Extent of the carrier”}: E62 String | CIDOC-CRM 39 |
|  | **F3 Manifestation. CLP43 should have dimension: E43 Dimension** | **2019-06 : Proposed, following map for LRM-E3-A2 Extent** |
|  | F3 Manifestation. CLP57 should have number of parts: E60 Number | CIDOC-CRM 39 |
| LRM-E4-A3 | Manifestation | Intended audience | A class of users for which the physical carriers of the manifestation are intended |  | (similar to those under Expression, if valid) |  |
| LRM-E4-A4 | Manifestation | Manifestation statement | A statement appearing in exemplars of the manifestation and deemed to be significant for users to understand how the resource represents itself |  | F3 Manifestation. P3 has note. P3.1 has type {manifestation statement} | CIDOC-CRM 40 |
| LRM-E4-A5 | Manifestation | Access conditions | Information as to how any of the carriers of the manifestation are likely to be obtained | descriptive form | F3 Manifestation. P3 has note {P3.1 has type E55 Type = “Access conditions”}: E62 String | CIDOC-CRM 40 |
| LRM-E4-A6 | Manifestation | Use rights | A class of use and/or access restrictions to which all carriers of the manifestation are assumed to be submitted |  | F3 Manifestation. P104 is subject to: E30 Right | CIDOC-CRM 39 |
| LRM-E5-A1 | Item | Location | The collection and/or institution in which the item is held, stored, or made available for access | If normal shelf location | F5 Item. P54 has permanent location: E53 Place | CIDOC-CRM 39 |
| If collection documented | F5 Item. P46i forms part of: E78 Collection | CIDOC-CRM 40 |
| If institution documented | F5 Item. P50 has current keeper: E39 Actor | CIDOC-CRM 40 |
| LRM-E5-A2 | Item | Use rights | A class of use and/or access restrictions to which the item is submitted |  | F5 Item. P104 is subject to: E30 Right | CIDOC-CRM 39 |
| LRM-E6-A1 | Agent | Contact information | Information useful for communicating with or getting in contact with the agent |  | E39 Actor. P76 has contact point: E51 Contact Point | CIDOC-CRM 39 |
| LRM-E6-A2 | Agent | Field of activity | A field of endeavour, area of expertise, etc., in which the agent is engaged or was engaged |  | E39 Actor. P14i performed: **F51 Pursuit.** P2 has type: E55 Type | CIDOC-CRM 39/43 : **Pursuit to move to CRMsoc** |
|  | E39 Actor. P14i performed: **F51 Pursuit.** **R59 had typical subject**: E1 CRM Entity | CIDOC-CRM 39/43 :  **Pursuit to move to CRMsoc. What happens to R59 ?** |
| LRM-E6-A3 | Agent | Language | A language used by the agent when creating an expression |  | E39 Actor. P14 carried out (P14.1 in the role of: E55 Type = “creator”} F28 Expression Creation. R17 created: F2 Expression (instantiated as E33 Linguistic Object). P72 has language: E56 Language | CIDOC-CRM 39/42  CIDOC-CRM 42 : A short-cut is usually implemented but this is correct |
| LRM-E7-A1 | Person | Profession / Occupation | A profession or occupation in which the person works or worked |  | E21 Person. P2 has type: E55 Type | CIDOC-CRM 39 |
|  | E21 Person. P14i performed {P14.1 in the role of: E55 Type}: **F51 Pursuit**. P2 has type: E55 Type | CIDOC-CRM 39/43 :  **Pursuit to move to CRMsoc** |
| LRM-E9-A1 | Nomen | Category | A type to which the nomen belongs  a) the type of thing named  B) the source in which the nomen is attested  c) the function of the nomen |  | F12 Nomen. P2 has type: E55 Type {Nomen:Category} | CIDOC-CRM 40 |
| LRM-E9-A2 | Nomen | Nomen string | The combination of signs that forms an appellation associated with an entity through the nomen |  | F12 Nomen. R37 states as nomen: E41 Appellation. **R33 has content {R33.1 has encoding E55 Type}**: E62 String | CIDOC-CRM 41: to be revised as R33 moving to CRMbase |
| RM-E9-A3 | Nomen | Scheme | The scheme in which the nomen is established |  | F12 Nomen. R35 is specified by: F34 Controlled Vocabulary | CIDOC-CRM 41 |
| LRM-E9-A4 | Nomen | Intended audience | A class of users for which the nomen is considered appropriate or preferred |  | F12 Nomen. R37i is stated as nomen in: F35 Nomen Use Statement. R39 is intended for: E74 Group | CIDOC-CRM 41: LRM-E9 = F12 Nomen.  PR : Problem with R39, E74 isn't good as a target audience |
| LRM-E9-A5 | Nomen | Context of use | Information as to the context(s) in which a nomen is used by the agent who is referred to through it |  | F12 Nomen. R37i is stated as nomen in: F35 Nomen Use Statement. R32 is warranted by. **F52 Name Use Activity.** R61 occurred in kind of context: E55 Type | CIDOC-CRM 40/43  **F52 to move to CRMsoc ?** |
| LRM-E9-A6 | Nomen | Reference source | A source in which there is evidence for the use of the nomen |  | F12 Nomen. R37i is stated as nomen in: F35 Nomen Use Statement. R32 is warranted by: **F52 Name Use Activity**. P70i documented in: E31 Document | CIDOC-CRM 40/43  **F52 to move to CRMsoc ?** |
| LRM-E9-A7 | Nomen | Language | The language in which the nomen is attested |  | F12 Nomen. R37i is stated as nomen in: F35 Nomen Use Statement. R37 states as nomen: E41 Appellation (instantiated as E33 Linguistic Object). R54 has nomen language: E56 Language | CIDOC-CRM 40 |
| LRM-E9-A8 | Nomen | Script | The script in which the nomen is notated |  | F12 Nomen. R37i is stated as nomen in: F35 Nomen Use Statement. R37 states as nomen. E41 Appellation. P2 has type: E55 Type | CIDOC-CRM 40 |
| LRM-E9-A9 | Nomen | Script conversion | The rule, system, or standard that was used to create a nomen that is derived on the basis of another, distinct nomen notated in another, distinct script |  | F12 Nomen. R37i is stated as nomen in: F35 Nomen Use Statement. R36 uses script conversion: F36 Script Conversion | CIDOC-CRM 40 |
| LRM-E10-A1 | Place | Category | A type to which the place belongs |  | E53 Place. P2 has type: E55 Type {Place:Category} | CIDOC-CRM 39 |
| LRM-E10-A2 | Place | Location | A delimitation of the physical territory of the place |  | E53 Place. P168 is defined by: E94 Space Primitive | CIDOC-CRM 39 |
| LRM-E11-A1 | Time-span | Beginning | A value for the time at which the time- span started, expressed in a precise way in an authoritative external system to allow temporal positioning of events |  | E52 Time-Span. P82a begin of the begin: E61 Time Primitive/xsd:DateTime | CIDOC-CRM 40 |
| LRM-E11-A2 | Time-span | Ending | A value for the time at which the time- span ended, expressed in a precise way in an authoritative external system to allow temporal positioning of events |  | E52 Time-Span. P82b end of the end: E61 Time Primitive/xsd:DateTime | CIDOC-CRM 40 |

## Relationships

| **LRM ID** | **LRM Domain** | **Name (inverse name)** | **LRM Range** | **Definition** | **Condition** | **Mapping** | **Validation** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| LRM-R1 | Res | is associated with (is associated with) | Res | This relationship links two res that have an association of any kind |  | no mapping | CIDOC-CRM 40 |
| LRM-R2 | Work | is realized through (realizes) | Expression | This relationship links a work with any of the expressions which convey the same intellectual or artistic content |  | F1 Work. R3 is realized in: F2 Expression | CIDOC-CRM 40 |
| LRM-R3 | Expression | is embodied in (embodies) | Manifestation | This relationship links an expression with a manifestation in which the expression appears |  | F2 Expression. R4i is embodied in: F3 Manifestation | CIDOC-CRM 41/43 |
| LRM-R4 | Manifestation | is exemplified by (exemplifies) | Item | This relationship connects a manifestation with any item that reflects the characteristics of that manifestation |  | F3 Manifestation. R7i is materialized in: F5 Item | CIDOC-CRM 41 |
| LRM-R5 | Work | was created by (created) | Agent | This relationship links a work to an agent responsible for the creation of the intellectual or artistic content |  | F1 Work. R16i was initiated by: F27 Work Conception. P14 carried out by {P14.1 in the role of: E55 Type = “creator”}: E39 Actor | CIDOC-CRM 39 |
| LRM-R6 | Expression | was created by (created) | Agent | This relationship links an expression to an agent responsible for the realization of a work |  | F2 Expression. R17i was created by: F28 Expression Creation. P14 carried out by {P14.1 in the role of: E55 Type = “creator”}: E39 Actor | CIDOC-CRM 39 |
| LRM-R7 | Manifestation | was created by (created) | Agent | This relationship links a manifestation to an agent responsible for creating the manifestation |  | F3 Manifestation. R24i was created through: F30 Manifestation Creation. P14 carried out by: E39 Actor | CIDOC-CRM 40 |
| LRM-R8 | Manifestation | was manufactured by (manufactured) | Agent | This relationship links a manifestation to an agent responsible for the fabrication, production or manufacture of the items of that manifestation |  | F3 Manifestation. R27i was materialized by: F32 Carrier Production Event. P14 carried out by: E39 Actor | CIDOC-CRM 40 |
| LRM-R9 | Manifestation | is distributed by (distributes) | Agent | This relationship links a manifestation to an agent responsible for making items of that manifestation available |  | F3 Manifestation. P104 is subject to: E30 Right. P2 has type: E55 Type {“distribution”} P75i is possessed by: E39 Actor | Discussion pending : Model for services. |
| LRM-R10 | Item | is owned by (owns) | Agent | This relationship links an item to an agent that is or was the owner or custodian of that item | ownership | F5 Item. P51 has former or current owner: E39 Actor | CIDOC-CRM 39 |
| custodianship | F5 Item. P50 has current keeper: E39 Actor | CIDOC CRM 39 |
| LRM-R11 | Item | was modified by (modified) | Agent | This relationship links an item to an agent that made changes to this particular item without creating a new manifestation |  | F5 Item. P31i was modified by: E11 Modification. P14 carried out by: E39 Actor. | CIDOC-CRM 40 |
| LRM-R12 | Work | has as subject (is subject of) | Res | This relationship links a work to its topic(s) |  | F1 Work. P129i is about: E1 CRM Entity | CIDOC-CRM 39 |
| LRM-R13 | Res | has appellation (is appellation of) | Nomen | This relationship links an entity with a sign or combination of signs or symbols through which that entity is referred to within a given scheme or context |  | E1 CRM Entity. P38i is thema of: F35 Nomen Use Statement. R37 states as nomen: F12 Nomen | CIDOC-CRM 40 |
| Shortcut | E1 CRM Entity. P1 is identified by: E41 Appellation | CIDOC-CRM 40 |
| LRM-R14 | Agent | assigned (was assigned by) | Nomen | This relationship links an agent with a particular nomen that was assigned by this agent |  | E39 Actor. P14i performed: E65 Creation Event. P94 created: F35 Nomen Use Statement. R37 states as nomen: F12 Nomen | CIDOC-CRM 40 |
| LRM-R15 | Nomen | is equivalent to (is equivalent to) | Nomen | This is the relationship between two nomens which are appellations of the same res |  | F12 Nomen. R56 has related use {R56.1 has type E55 Type = “equivalence”}: F12 Nomen | CIDOC-CRM 41 |
| LRM-R16 | Nomen | has part (is part of) | Nomen | This relationship indicates that one nomen is constructed using another nomen as a component |  | F12 Nomen. R8 combines: F12 Nomen | 2019-06 : proposal |
| LRM-R17 | Nomen | is derivation of (has derivation) | Nomen | This relationship indicates that one nomen was used as the basis for another nomen, both of which are appellations of the same res |  | F12 Nomen. P142 used constituent: F12 Nomen  F12 Nomen. R56 has related use {R56.1 has type E55 Type = “derivation”}: F12 Nomen | CIDOC-CRM 41: not possible to use P142 anymore. F12 ≠ subclass of E41  2019-06 : proposal |
| LRM-R18 | Work | has part (is part of) | Work | This is the relationship between two works, where the content of one is a component of the other |  | F1 Work. R67 has part: F1 Work | CIDOC-CRM 41/42/43 |
| LRM-R19 | Work | precedes (succeeds) | Work | This is the relationship of two works where the content of the second is a logical continuation of the first |  | F1 Work. R1i has successor: F1 Work | CIDOC CRM 39 |
| LRM-R20 | Work | accompanies/complements (is accompanied/complemented by) | Work | This is the relationship between two works which are independent, but can also be used in conjunction with each other as complements or companions | Related to | F1 Work. P16 used specific object: F1 Work | **Find a mapping that expresses the intention to be used together** |
| LRM-R21 | Work | is inspiration for (is inspired by) | Work | This is the relationship between two works where the content of the first served as the source of ideas for the second |  | F1 Work. R68 is inspiration for: F1 Work | CIDOC-CRM 43 |
| LRM-R22 | Work | is a transformation of (was transformed into) | Work | This relationship indicates that a new work was created by changing the scope or editorial policy (as in a serial or aggregating work), the genre or literary form (dramatization, novelization), target audience (adaptation for children), or style (paraphrase, imitation, parody) of a previous work |  | F1 Work. R2 is derivative of {R2.1 has type E55 Type = Transformation}: F1 Work | CIDOC-CRM 39 |
| LRM-R23 | Expression | has part (is part of) | Expression | This is a relationship between two expressions where one is a component of the other |  | F2 Expression. R5 has component: F2 Expression | CIDOC-CRM 40 |
| LRM-R24 | Expression | is derivation of (has derivation) | Expression | This relationship indicates that of two expressions of the same work, the second was used as the source for the other |  | F2 Expression. R17i was created by: F28 Expression Creation. P16 used specific object: F2 Expression | CIDOC-CRM 39  Derivation chain |
| LRM-R25 | Expression | was aggregated by (aggregated) | Expression | This relationship indicates that a specific expression of a work was chosen as part of the plan of an aggregating expression |  | F2 Expression. P165i is incorporated in: F2 Expression | **Discussion pending** |
| LRM-R26 | Manifestation | has part (is part of) | Manifestation | This is a relationship between two manifestations where one is a component of the other |  | F3 Manifestation. **CLP46 should be composed of**: F3 Manifestation | CIDOC CRM 39  **CIDOC-CRM 44 : CLP46 is deprecated** |
| LRM-R27 | Manifestation | has reproduction (is reproduction of) | Manifestation | This is the relationship between two manifestations providing the end-user with exactly the same content and where an earlier manifestation has provided a source for the creation of a subsequent manifestation, such as facsimiles, reproductions, reprints, and reissues | [generic case] | F3 Manifestation. P130i features are also found on {P130.1 kind of similarity: E55 Type = “Reproduction”}: F3 Manifestation | **Discussion pending** |
|  |  |  |  |  | [from F3 to F3] | F3 Manifestation. P125 was type of object used in: F33 Reproduction Event. **R30 produced**: E84 Information Carrier. P128 carries: E90 Symbolic Object. P165i is incorporated in: F3 Manifestation | Discussion pending |
| LRM-R28 | Item | has reproduction (is reproduction of) | Manifestation | This is the relationship between an item of one manifestation and another manifestation providing the end-user with exactly the same content and where a specific item has provided a source for the creation of a subsequent manifestation | From F5 to F3 | F5 Item. R29i was object reproduced by: F33 Reproduction Event. **R30 produced**: F3 Manifestation | CIDOC-CRM 39  **CIDOC-CRM 43 : R30 is deprecated** |
| Generic case | F5 Item. P130i features are also found on {P130.1 kind of similarity: E55 Type = “Reproduction”}: F3 Manifestation | Discussion pending |
| LRM-R29 | Manifestation | has alternate (has alternate) | Manifestation | This relationship involves manifestations that effectively serve as alternatives for each other |  | **PXX has alternate**  **incorporates Expression incorporated by Manifestation** | **CRM40 : needs a formulation for intended use (an equivalence relationship)** |
| LRM-R30 | Agent | is member of (has member) | Collective Agent | This a relationship between an agent and a collective agent that the agent joined as a member |  | E39 Actor. P107i is current or former member of: F55 Collective Agent | CIDOC-CRM 41 |
| LRM-R31 | Collective Agent | has part (is part of) | Collective Agent | This is a relationship between two collective agents where one is a component of the other |  | F55 Collective Agent. P107 has current or former member: F55 Collective Agent | CIDOC-CRM 41 |
| LRM-R32 | Collective Agent | precedes (succeeds) | Collective Agent | This is a relationship between two collective agents where the first was transformed into the second |  | F55 Collective Agent. P124i was transformed by: E81 Transformation. P123 resulted in: F55 Collective Agent | CIDOC-CRM 41 |
| LRM-R33 | Res | has association with (is associated with) | Place | This relationship links any entity with a given extent of space |  | no mapping | CIDOC-CRM 40 |
| LRM-R34 | Place | has part (is part of) | Place | This is a relationship between two places where one is a component of the other |  | E53 Place. P172 contains: E53 Place | CIDOC CRM 39 |
| LRM-R35 | Res | has association with (is associated with) | Time-span | This relationship links any entity with a temporal extent |  | no mapping | CIDOC-CRM 40 |
| LRM-R36 | Time-span | has part (is part of) | Time-span | This is a relationship between two time-spans where one is a component of the other |  | E52 Time-Span. P86i contains: E52 Time-Span | CIDOC CRM 39 |



# 4. Referred to CIDOC CRM Classes and Properties

Since FRBROO refers to and reuses, wherever appropriate, large parts of ISO21127, the CIDOC Conceptual Reference Model, this section provides a comprehensive list of all constructs used from ISO21127, together with their definitions following version 6.0 maintained by CIDOC. Use in this context includes: reference as immediate superclass, superproperty or element of a path expression in a mapping statement.

Some of these constructs appear only in the mapping in section 5 (above) and not in section 4, because they are generic in nature. For instance, we regarded it as better not to overload the description of FRBROO with generic notions such as carrying out activities or using things.

## 4.1. List of Referred to CIDOC CRM Classes

In this section we present the classes of the CIDOC CRM Conceptual Reference Model version 6.0 referred to by FRBROO as a list. The classes that appear indirectly in the FRBROO Model, i.e. either as superclasses of classes defined in the model, or as the domain or range of referred CRM properties are marked in bold.

|  |  |
| --- | --- |
| E1 | CRM Entity |
| E2 | Temporal Entity |
| E3 | Condition State |
| **E4** | **Period** |
| **E5** | **Event** |
| **E7** | **Activity** |
| E11 | Modification |
| **E12** | **Production** |
| **E13** | **Attribute Assignment** |
| **E15** | **Identifier Assignment** |
| **E18** | **Physical Thing** |
| E19 | Physical Object |
| **E21** | **Person** |
| E22 | Man-Made Object |
| **E24** | **Physical Man-Made Thing** |
| E26 | Physical Feature |
| E27 | Site |
| **E28** | **Conceptual Object** |
| **E29** | **Design or Procedure** |
| **E30** | **Right** |
| E31 | Document |
| **E32** | **Authority Document** |
| E33 | Linguistic Object |
| E35 | Title |
| E36 | Visual Item |
| E37 | Mark |
| **E39** | **Actor** |
| **E40** | **Legal Body** |
| **E41** | **Appellation** |
| **E42** | **Identifier** |
| E44 | Place Appellation |
| E47 | Spatial Coordinates |
| E49 | Time Appellation |
| E50 | Date |
| E52 | Time-Span |
| **E53** | **Place** |
| **E54** | **Dimension** |
| **E55** | **Type** |
| E56 | Language |
| **E57** | **Material** |
| E59 | Primitive Value |
| **E60** | **Number** |
| E61 | Time Primitive |
| E62 | String |
| E63 | Beginning of Existence |
| E64 | End of Existence |
| **E65** | **Creation** |
| E66 | Formation |
| E67 | Birth |
| E69 | Death |
| **E70** | **Thing** |
| **E71** | **Man-Made Thing** |
| **E72** | **Legal Object** |
| **E73** | **Information Object** |
| **E74** | **Group** |
| E77 | Persistent Item |
| E82 | Actor Appellation |
| **E84** | **Information Carrier** |
| **E89** | **Propositional Object** |
| **E90** | **Symbolic Object** |

## 4.2. List of Referred to CIDOC CRM Properties

In this section we present the properties of the CIDOC CRM 6.0 referred to by FRBROO as a list. The properties that appear indirectly in the FRBROO Model, i.e. as superproperties of properties defined in the model, are marked in bold.

|  |  |  |  |
| --- | --- | --- | --- |
| **Property id** | **Property Name** | **Entity – Domain** | **Entity – Range** |
| P1 | is identified by (identifies) | E1 CRM Entity | E41 Appellation |
| **P2** | **has type (is type of)** | **E1 CRM Entity** | **E55 Type** |
| **P3** | **has note** | **E1 CRM Entity** | **E62 String** |
| P4 | has time-span (is time-span of) | E2 Temporal Entity | E52 Time-Span |
| P7 | took place at (witnessed) | E4 Period | E53 Place |
| **P9** | **consists of (forms part of)** | **E4 Period** | **E4 Period** |
| P12 | occurred in the presence of (was present at) | E5 Event | E77 Persistent Item |
| **P14** | **carried out by (performed)** | **E7 Activity** | **E39 Actor** |
| **P15** | **was influenced by (influenced)** | **E7 Activity** | **E1 CRM Entity** |
| **P16** | **used specific object (was used for)** | **E7 Activity** | **E70 Thing** |
| P31 | has modified (was modified by) | E11 Modification | E24 Physical Man-Made Thing |
| **P33** | **used specific technique (was used by)** | **E7 Activity** | **E29 Design or Procedure** |
| **P37** | **assigned (was assigned by)** | **E15 Identifier Assignment** | **E42 Identifier** |
| P43 | has dimension (is dimension of) | E70 Thing | E54 Dimension |
| P44 | has condition (condition of) | E18 Physical Thing | E3 Condition State |
| P45 | consists of (is incorporated in) | E18 Physical Thing | E57 Material |
| P46 | is composed of (forms part of) | E18 Physical Thing | E18 Physical Thing |
| P49 | has former or current keeper (is former or current keeper of) | E18 Physical Thing | E39 Actor |
| P50 | has current keeper (is current keeper of) | E18 Physical Thing | E39 Actor |
| P51 | has former or current owner (is former or current owner of) | E18 Physical Thing | E39 Actor |
| P57 | has number of parts | E19 Physical Object | E60 Number |
| P59 | has section (is located on or within) | E18 Physical Thing | E53 Place |
| P65 | shows visual item (is shown by) | E24 Physical Man-Made Thing | E36 Visual Item |
| **P67** | **refers to(is referred to by)** | **E89 Propositional Object** | **E1 CRM Entity** |
| **P69** | **has association with (is associated with)** | **E29 Design or Procedure** | **E29 Design or Procedure** |
| P71 | lists (is listed in) | E32 Authority Document | E1 CRM Entity |
| **P72** | **has language (is language of)** | **E33 Linguistic Object** | **E56 Language** |
| P74 | has current or former residence (is current or former residence of) | E39 Actor | E53 Place |
| P75 | possesses (is possessed by) | E39 Actor | E30 Right |
| P78 | is identified by (identifies) | E52 Time-Span | E49 Time Appellation |
| P82 | at some time within | E52 Time-Span | E61 Time Primitive |
| P87 | is identified by (identifies) | E53 Place | E44 Place Appellation |
| **P94** | **has created (was created by)** | **E65 Creation** | **E28 Conceptual Object** |
| P95 | has formed (was formed by) | E66 Formation | E74 Group |
| P98 | brought into life (was born) | E67 Birth | E21 Person |
| P100 | was death of (died in) | E69 Death | E21 Person |
| P102 | has title (is title of) | E71 Man-Made Thing | E35 Title |
| P103 | was intended for (was intention of) | E71 Man-Made Thing | E55 Type |
| P104 | is subject to (applies to) | E72 Legal Object | E30 Right |
| P105 | right held by (has right on) | E72 Legal Object | E39 Actor |
| **P106** | **is composed of (forms part of)** | **E90 Symbolic Object** | **E90 Symbolic Object** |
| **P107** | **has current or former member (is current or former member of)** | **E74 Group** | **E39 Actor** |
| **P108** | **has produced (was produced by):** | **E12 Production** | **E24 Physical Man-Made Thing** |
| P125 | used object of type (was type of object used in) | E7 Activity | E55 Type |
| **P127** | **has broader term (has narrower term)** | **E55 Type** | **E55 Type** |
| **P128** | **carries (is carried by)** | **E24 Physical Man-Made Thing** | **E73 Information Object** |
| P129 | is about (is subject of) | E73 Information Object | E1 CRM Entity |
| **P130** | **shows features of (features are also found on)** | **E70 Thing** | **E70 Thing** |
| P131 | is identified by (identifies) | E39 Actor | E82 Actor Appellation |
| P138 | represents (has representation) | E36 Visual Item | E1 CRM Entity |
| **P140** | **assigned attribute to (was attributed by)** | **E13 Attribute Assignment** | **E1 CRM Entity** |
| **P141** | **assigned (was assigned by)** | **E13 Attribute Assignment** | **E1 CRM Entity** |
| **P142** | **used constituent (was used in)** | **E15 Identifier Assignment** | **E90 Symbolic Object** |
| **P148** | **has component (is component of)** | **E89 Propositional Object** | **E89 Propositional Object** |
| **P151** | **was formed from (participated in)** | **E66 Formation** | **E74 Group** |
| P165 | incorporates (is incorporated in) | E73 Information Object | E90 Symbolic Object |

## 4.3. Referred to CIDOC CRM Classes

This section contains the complete definitions of the classes of the CIDOC CRM Conceptual Reference Model version 6.0 referred to by FRBROO. The properties within these class definitions which are referred to in FRBROO are presented in bold face. Otherwise, we apply the same format conventions as in section 2.6.

###### E1 CRM Entity

Superclass of: [E2](#_E2_Temporal_Entity) Temporal Entity

[E52](#_E52_Time-Span) Time-Span

[E53](#_E53_Place_) Place

[E54](#_E54_Dimension_) Dimension

[E77](#_E77_Persistent_Item_1) Persistent Item

Scope note: 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:

1. Identification by name or appellation, and in particular by a preferred identifier
2. Classification by type, allowing further refinement of the specific subclass an instance belongs to
3. Attachment of free text for the expression of anything not captured by formal properties

With the exception of E59 Primitive Value, all other classes within the CRM are directly or indirectly specialisations of E1 CRM Entity.

Examples:

* the earthquake in Lisbon 1755 (E5)

Properties:

[**P1**](#_P1_is_identified) **is identified by (identifies):** [**E41**](#_E41_Appellation_3) **Appellation**

[**P2**](#_P2_has_type_) **has type (is type of):** [**E55**](#_E55_Type_) **Type**

[**P3**](#_P3_has_note) **has note:** [**E62**](#_E62_String) **String**

**(P3.1 has type:** [**E55**](#_E55_Type_) **Type)**

P48 has preferred identifier (is preferred identifier of): E42 Identifier

P137 exemplifies (is exemplified by): E55 Type

###### E2 Temporal Entity

Subclass of: [Ε1](#_E1_CRM_Entity_) CRM Entity

Superclass of: [Ε3](#_E3_Condition_State) Condition State

[E4](#_E4_Period_) Period

Scope note: This class comprises all phenomena, such as the instances of E4 Periods, E5 Events and states, which happen over a limited extent in time.

In some contexts, these are also called perdurants. This class is disjoint from E77 Persistent Item. This is an abstract class and 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.

Examples:

* Bronze Age (E4)
* the earthquake in Lisbon 1755 (E5)
* the Peterhof Palace near Saint Petersburg being in ruins from 1944 – 1946 (E3)

Properties:

[**P4**](#_P4_has_time-span) **has time-span (is time-span of):** [**E52**](#_E52_Time-Span) **Time-Span**

P114 is equal in time to: E2 Temporal Entity

P115 finishes (is finished by): E2 Temporal Entity

P116 starts (is started by): E2 Temporal Entity

P117 occurs during (includes): E2 Temporal Entity

P118 overlaps in time with (is overlapped in time by): E2 Temporal Entity

P119 meets in time with (is met in time by): E2 Temporal Entity

P120 occurs before (occurs after): E2 Temporal Entity

###### E3 Condition State

Subclass of: [E2](#_E2_Temporal_Entity) Temporal Entity

Scope note: 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 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 E3 Condition State “condition of the SS Great Britain between 22 September 1846 and 27 August 1847” can be characterized as E55 Type “wrecked”.

Examples:

* the “Amber Room” in Tsarskoje Selo being completely reconstructed from summer 2003 until now
* the Peterhof Palace near Saint Petersburg being in ruins from 1944 – 1946
* the state of my turkey in the oven at 14:30 on 25 December, 2002 (*P2* *has type: E55* *Type* “still not cooked”)

**Properties:**

P5 consists of (forms part of): E3 Condition State

###### E4 Period

Subclass of: [E2](#_E2_Temporal_Entity) Temporal Entity

Superclass of: [E5](#_E5_Event_) Event

Scope note: This class comprises sets of coherent phenomena or cultural manifestations bounded in time and space.

It is the social or physical coherence of these phenomena that identify an E4 Period and not the associated spatio-temporal bounds. These bounds are a mere approximation of the actual process of growth, spread and retreat. Consequently, different periods can overlap and coexist in time and space, such as when a nomadic culture exists in the same area as a sedentary culture.

Typically this class is used to describe prehistoric or historic periods such as the “Neolithic Period”, the “Ming Dynasty” or the “McCarthy Era”. There are however 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 E67 Birth can be seen as both an atomic E5 Event and as an E4 Period that consists of multiple activities performed by multiple instances of E39 Actor.

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 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 E4 Period, and the second defines morphological object types that fall under E55 Type.

Another specific case of an E4 Period is the set of activities and phenomena associated with a settlement, such as the populated period of Nineveh.

Examples:

* Jurassic
* European Bronze Age
* Italian Renaissance
* Thirty Years War
* Sturm und Drang
* Cubism

**Properties:**

[**P7**](#_P7_took_place) **took place at (witnessed):** [**E53**](#_E53_Place_) **Place**

P8 took place on or within (witnessed): E19 Physical Object

[**P9**](#_P9_consists_of) **consists of (forms part of):** [**E4**](#_E4_Period_) **Period**

P10 falls within (contains): E4 Period

P132 overlaps with: E4 Period

P133 is separated from: E4 Period

###### E5 Event

Subclass of: [E4](#_E4_Period_) Period

Superclass of: [E7](#_E7_Activity_) Activity

[E63](#_E65_Creation_) Beginning of Existence

[E64](#_E64_End_of) End of Existence

Scope note: This class comprises changes of states in cultural, social or physical systems, regardless of scale, brought about by a series or group of coherent physical, cultural, technological or legal phenomena. Such changes of state will affect instances of E77 Persistent Item or its subclasses.

The distinction between an E5 Event and an E4 Period is partly a question of the scale of observation. Viewed at a coarse level of detail, an E5 Event is an ‘instantaneous’ change of state. At a fine level, the E5 Event can be analysed into its component phenomena within a space and time frame, and as such can be seen as an E4 Period. The reverse is not necessarily the case: not all instances of E4 Period give rise to a noteworthy change of state.

Examples:

* the birth of Cleopatra (E67)
* the destruction of Herculaneum by volcanic eruption in 79 AD (E6)
* World War II (E7)
* the Battle of Stalingrad (E7)
* the Yalta Conference (E7)
* my birthday celebration 28-6-1995 (E7)
* the falling of a tile from my roof last Sunday
* the CIDOC Conference 2003 (E7)

**Properties:**

P11 had participant (participated in): E39 Actor

[**P12**](#_P12_occurred_in) **occurred in the presence of (was present at):** [**E77**](#_E77_Persistent_Item_1) **Persistent Item**

###### E7 Activity

Subclass of: [E5](#_E5_Event_) Event

Superclass of: E8 Acquisition

E9 Move

E10 Transfer of Custody

[E11](#_E11_Modification) Modification

[E13](#_E18_Physical_Thing_) Attribute Assignment

[E65](#_E65_Creation_1) Creation

[E66](#_E66_Formation) Formation

E85 Joining

E86 Leaving

E87 Curation Activity

Scope note: 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.

Examples:

* + - the Battle of Stalingrad
    - the Yalta Conference
    - my birthday celebration 28-6-1995
    - the writing of “Faust” by Goethe (E65)
    - the formation of the Bauhaus 1919 (E66)
    - calling the place identified by TGN ‘7017998’ ‘Quyunjig’ by the people of Iraq

Properties:

[**P14**](#_P14_carried_out) **carried out by (performed):** [**E39**](#_E39_Actor_) **Actor**

**(P14.1 in the role of:** [**E55**](#_E55_Type_) **Type)**

[**P15**](#_P15_was_influenced) **was influenced by (influenced):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

[**P16**](#_P16__used_) **used specific object (was used for):** [**E70**](#_E70_Thing_1) **Thing**

**(P16.1 mode of use:** [**E55**](#_E55_Type_) **Type)**

P17 was motivated by (motivated): E1 CRM Entity

P19 was intended use of (was made for): E71 Man-Made Thing

(P19.1 mode of use: E55 Type)

P20 had specific purpose (was purpose of): E5 Event

P21 had general purpose (was purpose of): E55 Type

P32 used general technique (was technique of): E55 Type

[**P33**](#_P33_used_specific_) **used specific technique (was used by):** [**E29**](#_E29_Design_or_) **Design or Procedure**

[**P125**](#_P125_used_object) **used object of type (was type of object used in):** [**E55**](#_E55_Type_) **Type**

P134 continued (was continued by): E7 Activity

###### E11 Modification

Subclass of: [E7](#_E7_Activity_) Activity

Superclass of: [E12](#_E12_Production_) Production

E79 Part Addition

E80 Part Removal

Scope note: This class comprises all instances of E7 Activity that create, alter or change E24 Physical Man-Made Thing.

This class includes the production of an item from raw materials, and other so far undocumented objects, and the preventive treatment or restoration of an object for conservation.

Since the distinction between modification and production is not always clear, modification is regarded as the more generally applicable concept. This implies that some items may be consumed or destroyed in a Modification, and that others may be produced as a result of it. An event should also be documented using 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.

If the instance of the E29 Design or Procedure utilized for the modification prescribes the use of specific materials, they should be documented using property *P68 foresees use of (use foreseen by):* E57 Material of E29 Design or Procedure, rather than via *P126 employed (was employed in*): E57 Material.

Examples:

* the construction of the SS Great Britain (E12)
* the impregnation of the Vasa warship in Stockholm for preservation after 1956
* the transformation of the Enola Gay into a museum exhibit by the National Air and Space Museum in Washington DC between 1993 and 1995 (E12, E81)
* the last renewal of the gold coating of the Toshogu shrine in Nikko, Japan

Properties:

[**P31**](#_P31_has_modified) **has modified (was modified by):** [**E24**](#_E24_Physical_Man-Made_1) **Physical Man-Made Thing**

P126 employed (was employed in): E57 Material

###### E12 Production

Subclass of: [E11](#_E11_Modification) Modification

[E63](#_E63_Beginning_of) Beginning of Existence

Scope note: 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 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.

Examples:

* the construction of the SS Great Britain
* the first casting of the Little Mermaid from the harbour of Copenhagen
  + - Rembrandt’s creating of the seventh state of his etching “Woman sitting half dressed beside a stove”, 1658, identified by Bartsch Number 197 (E12,E65,E81)

Properties:

[**P108**](#_P108_produced_(was_1) **has produced (was produced by):** [**E24**](#_E24_Physical_Man-Made_1) **Physical Man-Made Thing**

###### E13 Attribute Assignment

Subclass of: [E7](#_E7_Activity_) Activity

Superclass of: E14 Condition Assessment

[E15](#_E18_Physical_Thing_1) Identifier Assignment

E16 Measurement

E17 Type Assignment

Scope note: This class comprises the actions of making assertions about properties of an object or any relation between two items or concepts.

This class allows the documentation of how the respective assignment came about, and whose opinion it was. All the attributes or properties assigned in such an action can also be seen as directly attached to the respective item or concept, possibly as a collection of contradictory values. All cases of properties in this model that are also described indirectly through an action are characterised as “shortcuts” of this action. This redundant modelling of two alternative views is preferred because many implementations may have good reasons to model either the action or the shortcut, and the relation between both alternatives can be captured by simple rules.

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

Examples:

* the assessment of the current ownership of Martin Doerr’s silver cup in February 1997

Properties:

[**P140**](#_P140_assigned_attribute_1) **assigned attribute to (was attributed by):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

[**P141**](#_P141_assigned_(was) **assigned (was assigned by):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

###### E15 Identifier Assignment [= LRM-R14 Agent assigns Nomen]

Subclass of: [E13](#_E18_Physical_Thing_) Attribute Assignment

Scope note: This class comprises activities that result in the allocation of an identifier to an instance of E1 CRM Entity. An E15 Identifier Assignment may include the creation of the identifier from multiple constituents, which themselves may be instances of E41 Appellation. The syntax and kinds of constituents to be used may be declared in a rule constituting an instance of E29 Design or Procedure.

Examples of such identifiers include Find Numbers, Inventory Numbers, uniform titles in the sense of librarianship and Digital Object Identifiers (DOI). Documenting the act of identifier assignment and deassignment is especially useful when objects change custody or the identification system of an organization is changed. In order to keep track of the identity of things in such cases, it is important to document by whom, when and for what purpose an identifier is assigned to an item.

The fact that an identifier is a preferred one for an organisation can be expressed by using the property *E1 CRM Entity. P48 has preferred identifier (is preferred identifier of): E42 Identifier*. It can better be expressed in a context independent form by assigning a suitable E55 Type, such as “preferred identifier assignment”, to the respective instance of E15 Identifier Assignment via the *P2 has type* property.

Examples:

* + - Replacement of the inventory number TA959a by GE34604 for a 17th century lament cloth at the Museum Benaki, Athens
    - Assigning the author-uniform title heading “Goethe, Johann Wolfgang von, 1749-1832. Faust. 1. Theil.” for a work (E28)
    - On June 1, 2001 assigning the personal name heading “Guillaume, de Machaut, ca. 1300-1377” (E42,E82) to Guillaume de Machaut (E21)

Properties:

[**P37**](#_P37_assigned_(was) **assigned (was assigned by):** [**E42**](#_E42_Identifier_1) **Identifier**

P38 deassigned (was deassigned by): E42 Identifier

[**P142**](#_P142_used_constituent) **used constituent (was used in):** [**E90**](#_E90_Symbolic_Object_1) **Symbolic Object**

###### E18 Physical Thing

Subclass of: [E72](#_E72_Legal_Object_1) Legal Object

Superclass of: [E19](#_E21_Person_) Physical Object

[E24](#_E24_Physical_Man-Made_1) Physical Man-Made Thing

[E26](#_E26_Physical_Feature) Physical Feature

Scope Note: This class comprises all persistent physical items with a relatively stable form, man-made or natural.

Depending on the existence of natural boundaries of such things, the 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.

The CRM is generally not concerned with amounts of matter in fluid or gaseous states.

Examples:

* + - the Cullinan Diamond (E19)
    - the cave “Ideon Andron” in Crete (E26)
    - the Mona Lisa (E22)

Properties:

[**P44**](#_P44_has_condition) **has condition (condition of):** [**E3**](#_E3_Condition_State) **Condition State**

[**P45**](#_P45_consists_of) **consists of (is incorporated in):** [**E57**](#_E57_Material_) **Material**

[**P46**](#_P46_is_composed) **is composed of (forms part of):** [**E18**](#_E18_Physical_Thing_2) **Physical Thing**

[**P49**](#_P49_has_former) **has former or current keeper (is former or current keeper of):** [**E39**](#_E39_Actor_) **Actor**

[**P50**](#_P50_has_current) **has current keeper (is current keeper of):** [**E39**](#_E39_Actor_) **Actor**

[**P51**](#_P51_has_former) **has former or current owner (is former or current owner of):** [**E39**](#_E39_Actor_) **Actor**

P52 has current owner (is current owner of): E39 Actor

P53 has former or current location (is former or current location of): E53 Place

P58 has section definition (defines section): E46 Section Definition

[**P59**](#_P59_has_section) **has section (is located on or within):** [**E53**](#_E53_Place_) **Place**

###### E19 Physical Object

Subclass of: [E18](#_E18_Physical_Thing_2) Physical Thing

Superclass of: E20 Biological Object

[E22](#_E24__Physical_) Man-Made Object

Scope note: This class comprises items of a material nature that are units for documentation 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. Typically, instances of E19 Physical Object can be moved (if not too heavy).

In some contexts, such objects, except for aggregates, are also called “bona fide objects” (Smith & Varzi, 2000, pp.401-420), i.e. naturally defined objects.

The decision as to what is documented as a complete item, rather than by its parts or components, may be a purely administrative decision or may be a result of the order in which the item was acquired.

Examples:

* John Smith
* Aphrodite of Milos
* the Palace of Knossos
* the Cullinan Diamond
* Apollo 13 at the time of launch

Properties:

P54 has current permanent location (is current permanent location of): E53 Place

P55 has current location (currently holds): E53 Place

P56 bears feature (is found on): E26 Physical Feature

[**P57**](#_P57_has_number) **has number of parts:** [**E60**](#_E60_Number_1) **Number**

###### E21 Person

Subclass of: E20 Biological Object

[E39](#_E39_Actor_) Actor

Scope note: 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 CRM does not propose a specific form to support reasoning about possible identity.

Examples:

Tut-Ankh-Amun

Nelson Mandela

###### F10 Person

Equal to: [E21](#_E21_Person_1) Person

Scope note: This class comprises real persons who live or are assumed to have lived. Bibliographic identities or personae assumed by an individual or a group should be modelled as F12 Nomen and connected to the relevant person or group with an instance of F35 Nomen Use Statement, even if nothing more can be said about this person or group. 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 (F10 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 F10 Person does not imply that the concept comprises personae.

Examples: Margaret Atwood

Hans Christian Andersen

Queen Victoria

###### E22 Man-Made Object

Subclass of: [E19](#_E21_Person_) Physical Object

[E24](#_E24_Physical_Man-Made_1) Physical Man-Made Thing

Superclass of: [E84](#_E84_Information_Carrier_) Information Carrier

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

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

Examples:

* Mallard (the World’s fastest steam engine)
* the Portland Vase
* the Coliseum

###### E24 Physical Man-Made Thing

Subclass of: [E18](#_E18_Physical_Thing_2) Physical Thing

[E71](#_E72_Legal_Object_) Man-Made Thing

Superclass of: [E22](#_E22_Man-Made_Object) Man-Made Object

E25 Man-Made Feature

E78 Collection

Scope Note: This class comprises all persistent physical items that are purposely created by human activity.

This class comprises man-made objects, such as a swords, and man-made features, such as rock art. No assumptions are made as to the extent of modification required to justify regarding an object as man-made. For example, a “cup and ring” carving on bedrock is regarded as instance of E24 Physical Man-Made Thing.

Examples:

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

Properties:

P62 depicts (is depicted by): E1 CRM Entity

(P62.1 mode of depiction: E55 Type)

[**P65**](#_P65_shows_visual) **shows visual item (is shown by):** [**E36**](#_E36_Visual_Item) **Visual Item**

[**P128**](#_P128_carries_(is_1) **carries (is carried by):** [**E73**](#_E73_Information_Object_) **Information Object**

###### E25 Man-Made Feature

Subclass of: [E24](#_E24_Physical_Man-Made_Thing) Physical Man-Made Thing

[E26](#_E26_Physical_Feature) Physical Feature

Scope Note: This class comprises physical features that are purposely created by human activity, such as scratches, artificial caves, artificial water channels, etc.

No assumptions are made as to the extent of modification required to justify regarding a feature as man-made. For example, rock art or even “cup and ring” carvings on bedrock a regarded as types of E25 Man-Made Feature.

Examples:

* the Manchester Ship Canal
* Michael Jackson’s nose following plastic surgery

###### E26 Physical Feature

Subclass of: [E18](#_E18_Physical_Thing_2) Physical Thing

Superclass of: E25 Man-Made Feature

[E27](#_E27_Site) Site

Scope Note: This class comprises identifiable features that are physically attached in an integral way to particular physical objects.

Instances of E26 Physical Feature share many of the attributes of instances of E19 Physical Object. They may have a one-, two- or three-dimensional geometric extent, but there are no natural borders that separate them completely in an objective way from the carrier objects. For example, a doorway is a feature but the door itself, being attached by hinges, is not.

Instances of E26 Physical Feature can be features in a narrower sense, such as scratches, holes, reliefs, surface colours, reflection zones in an opal crystal or a density change in a piece of wood. In the wider sense, they are portions of particular objects with partially imaginary borders, such as the core of the Earth, an area of property on the surface of the Earth, a landscape or the head of a contiguous marble statue. They can be measured and dated, and it is sometimes possible to state who or what is or was responsible for them. They cannot be separated from the carrier object, but a segment of the carrier object may be identified (or sometimes removed) carrying the complete feature.

This definition coincides with the definition of “fiat objects” (Smith & Varzi, 2000, pp.401-420), with the exception of aggregates of “bona fide objects”.

Examples:

* the temple in Abu Simbel before its removal, which was carved out of solid rock
* Albrecht Duerer’s signature on his painting of Charles the Great
* the damage to the nose of the Great Sphinx in Giza
* Michael Jackson’s nose prior to plastic surgery

###### E27 Site

Subclass of: [E26](#_E26_Physical_Feature) Physical Feature

Scope Note: This class comprises pieces of land or sea floor.

In contrast to the purely geometric notion of E53 Place, this class describes constellations of matter on the surface of the Earth or other celestial body, which can be represented by photographs, paintings and maps.

Instances of E27 Site are composed of relatively immobile material items and features in a particular configuration at a particular location.

Examples:

* the Amazon river basin
* Knossos
* the Apollo 11 landing site
* Heathrow Airport
* the submerged harbour of the Minoan settlement of Gournia, Crete

###### E28 Conceptual Object

Subclass of: [E71](#_E72_Legal_Object_) Man-Made Thing

Superclass of: [E55](#_E55_Type_) Type

[E89](#_E1_CRM_Entity) Propositional Object

[E90](#_E90_Symbolic_Object_1) Symbolic Object

Scope note: This class comprises non-material products of our minds and other human produced data that have become objects of a discourse about their identity, circumstances of creation or historical implication. The production of such information may have been supported by the use of technical devices such as cameras or computers.

Characteristically, instances of this class are created, invented or thought by someone, and then may be documented or communicated between persons. Instances of E28 Conceptual Object have the ability to exist on more than one particular carrier at the same time, such as paper, electronic signals, marks, audio media, paintings, photos, human memories, etc.

They cannot be destroyed. They exist as long as they can be found on at least one carrier or in at least one human memory. Their existence ends when the last carrier and the last memory are lost.

Examples:

* Beethoven’s ‘Ode an die Freude’ (Ode to Joy), (E73)
* the definition of “ontology” in the Oxford English Dictionary
* the knowledge about the victory at Marathon carried by the famous runner

Properties: P149 is identified by (identifies): E75 Conceptual Object Appellation

###### E29 Design or Procedure

Subclass of: [E73](#_E73_Information_Object_) Information Object

Scope note: This class comprises documented plans for the execution of actions in order to achieve a result of a specific quality, form or contents. In particular it comprises plans for deliberate human activities that may result in the modification or production of instances of E24 Physical Thing.

Instances of E29 Design or Procedure can be structured in parts and sequences or depend on others. This is modelled using *P69 is associated with*.

Designs or procedures can be seen as one of the following:

1. A schema for the activities it describes
2. A schema of the products that result from their application.
3. An independent intellectual product that may have never been applied, such as Leonardo da Vinci’s famous plans for flying machines.

Because designs or procedures may never be applied or only partially executed, the CRM models a loose relationship between the plan and the respective product.

Examples:

* + - the ISO standardisation procedure
    - the musical notation for Beethoven’s “Ode to Joy”
    - the architectural drawings for the Kölner Dom in Cologne, Germany
    - the drawing on the folio 860 of the Codex Atlanticus from Leonardo da Vinci, 1486-1490, kept in the Biblioteca Ambrosiana in Milan

Properties:

P68 foresees use of (use foreseen by): E57 Material

[**P69**](#_P69_has_association) **has association with (is associated with):** [**E29**](#_E29_Design_or_) **Design or Procedure**

**(P69.1 has type:** [**E55**](#_E55_Type_) **Type)**

###### E30 Right

Subclass of: [E89](#_E1_CRM_Entity) Propositional Object

Scope Note: This class comprises legal privileges concerning material and immaterial things or their derivatives.

These include reproduction and property rights.

Examples:

* copyright held by ISO on ISO/CD 21127
* ownership of the “Mona Lisa” by the Louvre

###### E31 Document

Subclass of: [E73](#_E73_Information_Object_) Information Object

Superclass of: [E32](#_E32_Authority_Document_1) Authority Document

Scope note: This class comprises identifiable immaterial items that make propositions about reality.

These propositions may be expressed in text, graphics, images, audiograms, videograms or by other similar means. Documentation databases are regarded as a special case of E31 Document. This class should not be confused with the term “document” in Information Technology, which is compatible with E73 Information Object.

Examples:

* the Encyclopaedia Britannica (E32)
* the photo of the Allied Leaders at Yalta published by UPI, 1945
* the Doomsday Book

Properties:

P70 documents (is documented in): E1 CRM Entity

###### E32 Authority Document

Subclass of: [E31](#_E32_Authority_Document) Document

Scope note: This class comprises encyclopaedia, thesauri, authority lists and other documents that define terminology or conceptual systems for consistent use.

Examples:

* Webster’s Dictionary
* Getty Art and Architecture Thesaurus
* the CIDOC Conceptual Reference Model

Properties:

[**P71**](#_P71_lists_(is) **lists (is listed in):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

###### E33 Linguistic Object

Subclass of: [E73](#_E73_Information_Object_) Information Object

Superclass of: E34 Inscription

[E35](#_E35_Title) Title

Scope note: 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 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 CRM. These should be modelled as instances of E73 Information Object.

The text of an instance of E33 Linguistic Object can be documented in a note by P3 has note: E62 String

Examples:

* the text of the Ellesmere Chaucer manuscript
* the lyrics of the song “Blue Suede Shoes”
* the text of the Jabberwocky by Lewis Carroll
* the text of “Doktoro Jekyll kaj Sinjoro Hyde” (an Esperanto translation of Dr Jekyll and Mr Hyde)

Properties:

[**P72**](#_P72_has_language) **has language (is language of):** [**E56**](#_E56_Language_1) **Language**

**P73 has translation (is translation of): E33 Linguistic Object**

###### E35 Title

Subclass of: [E33](#_E33_Linguistic_Object) Linguistic Object

[E41](#_E41_Appellation_3) Appellation

Scope note: This class comprises the names assigned to works, such as texts, artworks or pieces 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.

Examples:

* + - “The Merchant of Venice”
    - “Mona Lisa”
    - “La Pie or The Magpie”
    - “Lucy in the Sky with Diamonds”

###### E36 Visual Item

Subclass of: [E73](#_E73_Information_Object_) Information Object

Superclass of: [E37](#_E37_Mark) Mark

E38 Image

Scope Note: This class comprises the intellectual or conceptual aspects of recognisable marks and images.

This class does not intend to describe the idiosyncratic characteristics of an individual physical embodiment of a visual item, but the underlying prototype. For example, a mark such as the ICOM logo is generally considered to be the same logo when used on any number of publications. The size, orientation and colour may change, but the logo remains uniquely identifiable. The same is true of images that are reproduced many times. This means that visual items are independent of their physical support.

The class E36 Visual Item provides a means of identifying and linking together instances of E24 Physical Man-Made Thing that carry the same visual symbols, marks or images etc. The property *P62 depicts (is depicted by)* between E24 Physical Man-Made Thing and depicted subjects (E1 CRM Entity) can be regarded as a shortcut of the more fully developed path from E24 Physical Man-Made Thing through *P65 shows visual item (is shown by)*, E36 Visual Item, *P138 represents (has representation)* to E1CRM Entity, which in addition captures the optical features of the depiction.

Examples:

* the visual appearance of Monet’s “La Pie” (E38)
* the Coca-Cola logo (E34)
* the Chi-Rho (E37)
* the communist red star (E37)

Properties:

[**P138**](#_P138_represents_(has) **represents (has representation):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

**(P138.1 mode of representation:** [**E55**](#_E55_Type_) **Type)**

###### E37 Mark

Subclass of: [E36](#_E36_Visual_Item) Visual Item

Superclass of: E34 Inscription

Scope note: This class comprises symbols, signs, signatures or short texts applied to instances of E24 Physical Man-Made Thing by arbitrary techniques in order to indicate the creator, owner, dedications, purpose, etc.

This class specifically excludes features that have no semantic significance, such as scratches or tool marks. These should be documented as instances of E25 Man-Made Feature.

Examples:

* Minoan double axe mark
* ©
* 

###### E39 Actor [=LRM-E6 Agent]

Subclass of: [E77](#_E77_Persistent_Item_1) Persistent Item

Superclass of: [E21](#_E21_Person_1) Person

[E74](#_E74_Group_) Group

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

The CRM does not attempt to model the inadvertent actions of such actors. Individual people should be documented as instances of E21 Person, whereas groups should be documented as instances of either E74 Group or its subclass E40 Legal Body.

Examples:

* London and Continental Railways (E40)
* the Governor of the Bank of England in 1975 (E21)
* Sir Ian McKellan (E21)

Properties:

[**P74**](#_P74_has_current) **has current or former residence (is current or former residence of):** [**E53**](#_E53_Place_) **Place**

[**P75**](#_P75_possesses_(is) **possesses (is possessed by):** [**E30**](#_E30_Right_1) **Right**

**P76 has contact point (provides access to): E51 Contact Point**

[**P131**](#_P131_is_identified) **is identified by (identifies):** [**E82**](#_E82_Actor_Appellation) **Actor Appellation**

ISSUE: If E74 Group is **not modified** to correspond to LRM-E8, then E40 needs to also be a subclass of LRM-E8 Collective Agent, so that F11 can be a superclass of E40 in that hierarchy.

###### E40 Legal Body

Subclass of: [E74](#_E74_Group_) Group

Scope Note: This class comprises institutions or groups of people that have obtained a legal recognition as a group and can act collectively as agents.

This means that they can perform actions, own property, create or destroy things and can be held collectively responsible for their actions like individual people. The term ‘personne morale’ is often used for this in French.

Examples:

* Greenpeace
* Paveprime Ltd
* the National Museum of Denmark

###### E41 Appellation[ =LRM-E9-A1 nomen string]

Subclass of: [E90](#_E90_Symbolic_Object_1) Symbolic Object

Superclass of: [E35](#_E35_Title) Title

[E42](#_E42_Identifier_1) Identifier

[E44](#_E44_Place_Appellation) Place Appellation (deprecated)

[E49](#_E49_Time_Appellation) Time Appellation (deprecated)

E51 Contact Point

E75 Conceptual Object Appellation

[E82](#_E82_Actor_Appellation) Actor Appellation (deprecated)

Scope note: This class comprises signs, either meaningful or not, or arrangements of signs following a specific syntax, that are used or can be used to refer to and identify a specific instance of some class 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 always regarded as equivalent independent from the thing it denotes.

Specific subclasses of E41 Appellation should be used when instances of E41 Appellation of a characteristic form are used for particular objects. Instances of E49 Time Appellation, for example, which take the form of instances of E50 Date, can be easily recognised.

E41 Appellation should not be confused with the act of naming something. *Cf.* E15 Identifier Assignment

Examples:

* “Martin”
* “the Forth Bridge”
* “the Merchant of Venice” (E35)
* “*Spigelia marilandica* (L.) L.” [not the species, just the *name*]
* “information science” [not the science itself, but the name through which we refer to it in an English-speaking context]
* “安” [Chinese “an”, meaning “peace”]

Properties:

P139 has alternative form: E41 Appellation

P139.1 has type: E55 Type

###### E42 Identifier

Subclass of: [E41](#_E41_Appellation_3) Appellation

Scope note: 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. The class E42 Identifier is not normally used for machine-generated identifiers used for automated processing unless these are also used by human agents.

Examples:

* “MM.GE.195”
* “13.45.1976”
* “OXCMS: 1997.4.1”
* ISSN “0041-5278”
* ISRC “FIFIN8900116”
* Shelf mark “Res 8 P 10”
  + - “Guillaume de Machaut (1300?-1377)” [a controlled personal name heading that follows the French rules]

###### E44 Place Appellation

Subclass of: [E41](#_E41_Appellation_3) Appellation

Superclass of E45 Address

E46 Section Definition

[E47](#_E47_Spatial_Coordinates) Spatial Coordinates

E48 Place Name

Scope Note: This class comprises any sort of identifier characteristically used to refer to an E53 Place.

Instances of E44 Place Appellation may vary in their degree of precision and their meaning may vary over time – the same instance of E44 Place Appellation may be used to refer to several places, either because of cultural shifts, or because objects used as reference points have moved around. Instances of E44 Place Appellation can be extremely varied in form: postal addresses, instances of E47 Spatial Coordinate, and parts of buildings can all be considered as instances of E44 Place Appellation.

Examples:

* “Vienna”
* “CH-1211, Genève”
* “Aquae Sulis Minerva”
* “Bath”
* “Cambridge”
* “the Other Place”
* “the City”

###### E47 Spatial Coordinates

Subclass of: [E44](#_E44_Place_Appellation) Place Appellation

Scope Note: This class comprises the textual or numeric information required to locate specific instances of E53 Place within schemes of spatial identification.

Coordinates are a specific form of E44 Place Appellation, that is, a means of referring to a particular E53 Place. Coordinates are not restricted to longitude, latitude and altitude. Any regular system of reference that maps onto an E19 Physical Object can be used to generate coordinates.

Examples:

* “6°5’29”N 45°12’13”W”
* “Black queen’s bishop 4” [chess coordinate]

###### E49 Time Appellation

Subclass of: [E41](#_E41_Appellation_3) Appellation

Superclass of [E50](#_E50_Date) Date

Scope Note: This class comprises all forms of names or codes, such as historical periods, and dates, which are characteristically used to refer to a specific E52 Time-Span.

The instances of E49 Time Appellation may vary in their degree of precision, and they may be relative to other time frames, “Before Christ” for example. Instances of E52 Time-Span are often defined by reference to a cultural period or an event e.g. ‘the duration of the Ming Dynasty’.

Examples:

* “Meiji” [Japanese term for a specific time-span]
* “1st half of the XX century”
* “Quaternary”
* “1215 Hegira” [a date in the Islamic calendar]
* “Last century”

###### E50 Date

Subclass of: [E49](#_E49_Time_Appellation) Time Appellation

Scope Note: This class comprises specific forms of E49 Time Appellation.

Dates may vary in their degree of precision.

Examples:

* “1900”
* “4-4-1959”
* “19-MAR-1922”
* “19640604”

###### E52 Time-Span

Subclass of: [E1](#_E1_CRM_Entity_) CRM Entity

Scope note: This class comprises abstract temporal extents, in the sense of Galilean physics, having a beginning, an end and a duration.

Time Span has no other semantic connotations. Time-Spans are used to define the temporal extent of instances of E4 Period, E5 Event and any other phenomena valid for a certain time. An E52 Time-Span may be identified by one or more instances of E49 Time Appellation.

Since our knowledge of history is imperfect, instances of E52 Time-Span can best be considered as approximations of the actual Time-Spans of temporal entities. The properties of E52 Time-Span are intended to allow these approximations to be expressed precisely. An extreme case of approximation, might, for example, define an E52 Time-Span having unknown beginning, end and duration. Used as a common E52 Time-Span for two events, it would nevertheless define them as being simultaneous, even if nothing else was known.

Automatic processing and querying of instances of E52 Time-Span is facilitated if data can be parsed into an E61 Time Primitive.

Examples:

* 1961
* From 12-17-1993 to 12-8-1996
* 14h30 – 16h22 4th July 1945
* 9.30 am 1.1.1999 to 2.00 pm 1.1.1999
* duration of the Ming Dynasty

Properties:

[**P78**](#_P78_is_identified) **is identified by (identifies):** [**E49**](#_E49_Time_Appellation) **Time Appellation**

**P79 beginning is qualified by: E62 String**

**P80 end is qualified by: E62 String**

**P81 ongoing throughout: E61 Time Primitive**

[**P82**](#_P82_at_some) **at some time within:** [**E61**](#_E61_Time_Primitive) **Time Primitive**

**P83 had at least duration (was minimum duration of): E54 Dimension**

**P84 had at most duration (was maximum duration of): E54 Dimension**

**P86 falls within (contains): E52 Time-Span**

###### E53 Place

Subclass of: [E1](#_E1_CRM_Entity_) CRM Entity

Scope note: This class comprises extents in space, in particular on the surface of the Earth, in the pure sense of physics: independent from temporal phenomena and matter.

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. A Place can be determined by combining a frame of reference and a location with respect to this frame. It may be identified by one or more instances of E44 Place Appellation.

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, we 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 – 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 object can serve as a frame of reference for E53 Place determination. The model foresees the notion of a “section” of an E19 Physical Object as a valid E53 Place determination.

Examples:

* the extent of the UK in the year 2003
* the position of the hallmark on the inside of my wedding ring
* the place referred to in the phrase: “Fish collected at three miles north of the confluence of the Arve and the Rhone”
* here -> <-

Properties:

[**P87**](#_P87_is_identified) **is identified by (identifies):** [**E44**](#_E44_Place_Appellation) **Place Appellation**

**P89 falls within (contains): E53 Place**

**P121 overlaps with: E53 Place**

**P122 borders with: E53 Place**

###### E54 Dimension

Subclass of: [E1](#_E1_CRM_Entity_) CRM Entity

Scope note: 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 true quantity, independent from its numerical approximation, e.g. in inches or in cm. The properties of the class E54 Dimension allow for expressing the numerical approximation of the values of an instance of E54 Dimension. If the true values belong to a non-discrete space, 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 interoperability 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.

Examples:

* currency: £26.00
* length: 3.9-4.1 cm
* diameter 26 mm
* weight 150 lbs
* density: 0.85 gm/cc
* luminescence: 56 ISO lumens
* tin content: 0.46 %
* taille au garot: 5 hands
* calibrated C14 date: 2460-2720 years, etc

Properties:

P90 has value: E60 Number

P91 has unit (is unit of): E58 Measurement Unit

###### E55 Type

Subclass of: [E28](#_E28_Conceptual_Object_) Conceptual Object

Superclass of: [E56](#_E56_Language_1) Language

[E57](#_E57_Material_) Material

E58 Measurement Unit

Scope note: This class comprises concepts denoted by terms from thesauri and controlled vocabularies used to characterize and classify instances of CRM classes. Instances of E55 Type represent concepts in contrast to instances of E41 Appellation which are used to name instances of CRM classes.

E55 Type is the CRM’s interface to domain specific ontologies and thesauri. These can be represented in the 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). Such hierarchies may be extended with additional properties.

Examples:

* weight, length, depth [types of E54]
* portrait, sketch, animation [types of E38]
* French, English, German [E56]
* excellent, good, poor [types of E3]
* Ford Model T, chop stick [types of E22]
* cave, doline, scratch [types of E26]
* poem, short story [types of E33]
* wedding, earthquake, skirmish [types of E5]

Properties:

[**P127**](#_P127_has_broader) **has broader term (has narrower term):** [**E55**](#_E55_Type_) **Type**

P150 defines typical parts of (define typical wholes for): E55 Type

###### E56 Language

Subclass of: [E55](#_E55_Type_) Type

Scope note: 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 are used to denote instances of E56 Language, such as those defined in ISO 639:1988.

Examples:

* el [Greek]
* en [English]
* eo [Esperanto]
* es [Spanish]
* fr [French]

###### E57 Material

Subclass of: [E55](#_E55_Type_) Type

Scope note: 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*).

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 are used.

Examples:

* brick
* gold
* aluminium
* polycarbonate
* resin

###### E59 Primitive Value

Superclass of: [E60](#_E60_Number_1) Number

[E61](#_E61_Time_Primitive) Time Primitive

[E62](#_E62_String) String

Scope Note: This class comprises primitive values used as documentation elements, which are not further elaborated upon within the model.

As such they are not considered as elements within our universe of discourse. No specific implementation recommendations are made. It is recommended that the primitive value system from the implementation platform be used to substitute for this class and its subclasses.

Examples:

* ABCDEFG (E62)
* 3.14 (E60)
* 0
* 1921-01-01 (E61)

###### E60 Number

Subclass of: [E59](#_E59_Primitive_Value) Primitive Value

Scope Note: This class comprises any encoding of computable (algebraic) values such as integers, real numbers, complex numbers, vectors, tensors etc., including intervals of these values to express limited precision.

Numbers are fundamentally distinct from identifiers in continua, such as instances of E50 Date and E47 Spatial Coordinate, even though their encoding may be similar. Instances of E60 Number can be combined with each other in algebraic operations to yield other instances of E60 Number, e.g., 1+1=2. Identifiers in continua may be combined with numbers expressing distances to yield new identifiers, e.g., 1924-01-31 + 2 days = 1924-02-02. Cf. E54 Dimension.

Examples:

* 5
* 3+2i
* 1.5e-04
* (0.5, - 0.7,88)

###### E61 Time Primitive

Subclass of: [E59](#_E60_Number_) Primitive Value

Scope Note: This class comprises instances of E59 Primitive Value for time that should be implemented with appropriate validation, precision and interval logic to express date ranges relevant to cultural documentation.

E61 Time Primitive is not further elaborated upon within the model.

Examples:

* 1994 – 1997
* 13 May 1768
* 2000/01/01 00:00:59.7
* 85th century BC

###### E62 String

Subclass of: [E59](#_E60_Number_) Primitive Value

Scope Note: This class comprises the instances of E59 Primitive Values used for documentation such as free text strings, bitmaps, vector graphics, etc.

E62 String is not further elaborated upon within the model.

Examples:

* the Quick Brown Fox Jumps Over the Lazy Dog
* 6F 6E 54 79 70 31 0D 9E

###### E63 Beginning of Existence

Subclass of: [E5](#_E5_Event_) Event

Superclass of: [E12](#_E12_Production_) Production

[E65](#_E65_Creation_1)Creation

[E66](#_E66_Formation) Formation

[E67](#_E67_Birth) Birth

E81 Transformation

Scope note: This class comprises events that bring into existence any E77 Persistent Item.

It may be used for temporal reasoning about things (intellectual products, physical items, groups of people, living beings) beginning to exist; it serves as a hook for determination of a terminus post quem and ante quem.

Examples:

* the birth of my child
* the birth of Snoopy, my dog
* the calving of the iceberg that sank the Titanic
* the construction of the Eiffel Tower

Properties:

P92 brought into existence (was brought into existence by): E77 Persistent Item

###### E64 End of Existence

Subclass of: [E5](#_E5_Event_) Event

Superclass of: E6 Destruction

E68 Dissolution

[E69](#_E69_Death) Death

E81 Transformation

Scope note: This class comprises events that end the existence of any E77 Persistent Item.

It may be used for temporal reasoning about things (physical items, groups of people, living beings) ceasing to exist; it serves as a hook for determination of a terminus postquem and antequem. In cases where substance from a Persistent Item continues to exist in a new form, the process would be documented by E81 Transformation.

Examples:

* the death of Snoopy, my dog
* the melting of the snowman
* the burning of the Temple of Artemis in Ephesos by Herostratos in 356BC

Properties:

P93 took out of existence (was taken out of existence by): E77 Persistent Item

###### E65 Creation

Subclass of: [E7](#_E7_Activity_) Activity

[E63](#_E65_Creation_) Beginning of Existence

Superclass of: E83 Type Creation

Scope note: This class comprises events that result in the creation of conceptual items or immaterial products, such as legends, poems, texts, music, images, movies, laws, types etc.

Examples:

* the framing of the U.S. Constitution
* the drafting of U.N. resolution 1441

Properties:

[**P94**](#_P94_has_created_) **has created (was created by):** [**E28**](#_E28_Conceptual_Object_) **Conceptual Object**

###### E66 Formation

Subclass of: [E7](#_E7_Activity_) Activity

[E63](#_E65_Creation_) Beginning of Existence

Scope note: This class comprises events that result in the formation of a formal or informal E74 Group of people, such as a club, society, association, corporation or nation.

E66 Formation does not include the arbitrary aggregation of people who do not act as a collective.

The formation of an instance of E74 Group does not mean that the group is populated with members at the time of formation. In order to express the joining of members at the time of formation, the respective activity should be simultaneously an instance of both E66 Formation and E85 Joining.

Examples:

* the formation of the CIDOC CRM Special Interest Group
* the formation of the Soviet Union
* the conspiring of the murderers of Caesar

Properties:

[**P95**](#_P95_has_formed) **has formed (was formed by):** [**E74**](#_E74_Group_) **Group**

[**P151**](#_P151_was_formed) **was formed from (participated in):** [**E74**](#_E74_Group_) **Group**

###### E67 Birth

Subclass of: [E63](#_E65_Creation_) Beginning of Existence

Scope note: 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 beings).

Twins, triplets etc. are brought into life by the same E67 Birth event. 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 with the intervention of modern medicine. In this model, the biological father is not seen as a necessary participant in the E67 Birth event.

Examples:

* the birth of Alexander the Great

Properties:

**P96 by mother (gave birth): E21 Person**

**P97 from father (was father for): E21 Person**

[**P98**](#_P98_brought_into) **brought into life (was born):** [**E21**](#_E21_Person_1) **Person**

###### E69 Death

Subclass of: [E64](#_E64_End_of) End of Existence

Scope note: 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 using E64 End of Existence.

Examples:

* the murder of Julius Caesar (E69, E7)
* the death of Senator Paul Wellstone

Properties:

[**P100**](#_P100_was_death) **was death of (died in):** [**E21**](#_E21_Person_1) **Person**

###### E70 Thing

Subclass of: [E77](#_E77_Persistent_Item_1) Persistent Item

Superclass of: [E71](#_E72_Legal_Object_) Man-Made Thing

[E72](#_E72_Legal_Object_1) Legal Object

Scope note: This general class comprises usable discrete, identifiable, instances of E77 Persistent Item that are documented as single units.

They can be either intellectual products or physical things, and are characterized by relative stability. They may for instance either have a solid physical form, an electronic encoding, or they may be logical concept or structure.

Examples:

* my photograph collection (E78)
* the bottle of milk in my refrigerator (E22)
* the plan of the Strassburger Muenster (E29)
* the thing on the top of Otto Hahn’s desk (E19)
* the form of the no-smoking sign (E36)
* the cave of Dirou, Mani, Greece (E27)

Properties:

[**P43**](#_P43_has_dimension) **has dimension (is dimension of):** [**E54**](#_E54_Dimension_) **Dimension**

P101 had as general use (was use of): E55 Type

[**P130**](#_P130_shows_features) **shows features of (features are also found on):** [**E70**](#_E70_Thing_1) **Thing**

**(P130.1 kind of similarity:** [**E55**](#_E55_Type_) **Type)**

###### E71 Man-Made Thing

Subclass of: [E70](#_E70_Thing_1) Thing

Superclass of: [E24](#_E24_Physical_Man-Made_1) Physical Man-Made Thing

[E28](#_E28_Conceptual_Object_) Conceptual Object

Scope note: This class comprises discrete, identifiable man-made items that are documented as single units.

These items are either intellectual products or man-made physical things, and are characterized by relative stability. They may for instance have a solid physical form, an electronic encoding, or they may be logical concepts or structures.

Examples:

* Beethoven’s 5th Symphony (E73)
* Michelangelo’s David
* Einstein’s Theory of General Relativity (E73)
* the taxon *‘Fringilla coelebs* Linnaeus,1758’ (E55)

Properties:

[**P102**](#_P102_has_title) **has title (is title of):** [**E35**](#_E35_Title) **Title**

**(P102.1 has type:** [**E55**](#_E55_Type_) **Type)**

[**P103**](#_P103_was_intended) **was intended for (was intention of):** [**E55**](#_E55_Type_) **Type**

###### E72 Legal Object

Subclass of: [E70](#_E70_Thing_1) Thing

Superclass of: [E18](#_E18_Physical_Thing_2) Physical Thing

[E90](#_E90_Symbolic_Object) Symbolic Object

Scope note: 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 true for all E18 Physical Thing. In the case of instances of E28 Conceptual Object, however, the identity of the 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 CRM.

Examples:

* the Cullinan diamond (E19)
* definition of the CIDOC Conceptual Reference Model Version 2.1 (E73)

Properties:

[**P104**](#_P104_is_subject) **is subject to (applies to):** [**E30**](#_E30_Right_1) **Right**

[**P105**](#_P105_right_held) **right held by (has right on):** [**E39**](#_E39_Actor_) **Actor**

###### E73 Information Object

Subclass of: [E89](#_E1_CRM_Entity) Propositional Object

[E90](#_E90_Symbolic_Object_1) Symbolic Object

Superclass of: [E29](#_E29_Design_or_) Design or Procedure

[E31](#_E31_Document) Document

[E33](#_E33_Linguistic_Object) Linguistic Object

[E36](#_E36_Visual_Item) Visual Item

Scope note: This class comprises identifiable immaterial items, such as a poems, jokes, data sets, images, texts, multimedia objects, procedural prescriptions, computer program code, algorithm or mathematical formulae, that have an objectively recognizable structure and are documented as single units.

An E73 Information Object does not depend on a specific physical carrier, which can include human memory, and it can exist on one or more carriers simultaneously.

Instances of E73 Information Object of a linguistic nature should be declared as instances of the E33 Linguistic Object subclass. Instances of E73 Information Object of a documentary nature should be declared as instances of the E31 Document subclass. Conceptual items such as types and classes are not instances of E73 Information Object, nor are ideas without a reproducible expression.

Examples:

* image BM000038850.JPG from the Clayton Herbarium in London
* E. A. Poe’s “The Raven”
* the movie “The Seven Samurai” by Akira Kurosawa
* the Maxwell Equations

Properties: P165 incorporates (is incorporated in): E90 Symbolic Object

ISSUE: Should E74 Group be made equivalent to LRM-E8 Collective Agent, or does LRMoo/CRMbase need a specific class to correspond to LRM-E8? If so, what is the structural impact?

Option a) Modify E74 Group so that it clearly corresponds to LRM-E8 Collective Agent. Do not create an additional class. To do this any groups of people not having agency, such as national, religious, cultural, ethnic groups, must be excluded from the scope of E74. In this option there is no problem with E74 as a subclass of E39 Actor or superclass of E40, F11 and F39. Nothing needs to change formally, however certain instances attributed to this class may be incorrect.

Consequence: In the mapping from LRM(er), the Intended Audience attributes cannot be mapped using only LRM-E8 as national, religious, cultural, ethnic, linguistic and age groups are valid as intended audiences. Unclear what existing constructs can be used for these attributes.

Option b) Define an LRMoo class for LRM-E8 Collective Agent, with the LRM definition and examples, but declare the equivalence with E74 so as to preserve the hierarchical structure. However, there may be instances of E74 that are not actually instances of LRM-E8. The mapping of the Intended Audience attributes can continue to use E74 (not the LRMoo class).

Option c) Define a Collective Agent/Collective Actor class in CRMbase/LRMoo to exactly match LRM-E8. Keep the new class in the hierarchy between E39 Actor and E40, F11, F39. Keep E74 Group with a broader definition, but remove E39 Actor as its superclass (E40, F11, F39 and the new Collective Agent class can all be subclasses of both E74 and E39). Make E74 a direct subclass of E77 Persistent Item. Use E74 Group in the mapping of the Intended Audience attributes.

If E74 Group is **not modified** to correspond to LRM-E8, these need to also be subclasses of LRM-E8 Collective Agent

###### E74 Group [proposed definition if made = LRM-E8 Collective Agent]

Subclass of: [E39](#_E39_Actor_) Actor

Superclass of: [E40](#_E41_Appellation_) Legal Body

Scope note: This class comprises any named gatherings or organizations of two or more people that act collectively to produce some intentional result for which they can be collectively considered responsible.

In the wider sense this class also comprises holders of official positions viewed collectively, which used to be regarded in certain contexts as one actor, independent of the current holder of the office, such as the president of a country. In such cases, it may happen that the E74 Group never had more than one member.

A joint pseudonym (i.e., a name that seems indicative of an individual but that is actually used as a persona by two or more people) is a particular case of E74 Group.

A gathering of people becomes an E74 Group when it exhibits sufficient organizational characteristics to be collectively held responsible for actions performed together. These might be communication, creating some common artefact, a common purpose such as study, worship, business, sports, etc. Occasional groups and groups that are constituted as meetings, conferences, congresses, expeditions, festivals, fairs, etc, are examples of E74 Group as long as they are identified by a specific name, rather than a generic description of the gathering, and can act as a unit (such as by publishing their proceedings, or approving a report). These collective actions may be performed by representatives selected by the whole, rather than by all individual members acting together.

Married couples and other concepts of family are regarded as particular examples of E74 Group.

* Examples:
* Exxon-Mobil (E40)
* King Solomon and his wives (F39)
* The President of the Swiss Confederation
* Nicolas Bourbaki
* Betty Crocker
* Ellery Queen

Properties:

[P107](#_P107_has_current) **has current or former member (is current or former member of):** [E39](#_E39_Actor_) **Actor**

**(P107.1 kind of member:** [E55](#_E55_Type_) **Type)**

###### E39 Actor [= LRM-E6 Agent]

Subclass of: [E77](#_E77_Persistent_Item_1) Persistent Item

Superclass of: [E21](#_E21_Person_1) Person

[E74](#_E74_Group_) Group *[only when E74 = LRM-E8 Collective Agent]*

Scope note: This class comprises people, either individually or in groups, who have the potential to perform intentional actions of kinds for which someone may be held responsible.

The CRM does not attempt to model the inadvertent actions of such actors. Individual people should be documented as instances of E21 Person, whereas groups should be documented as instances of either E74 Group or its subclass E40 Legal Body.

Examples:

* London and Continental Railways (E40)
* the Governor of the Bank of England in 1975 (E21)
* Sir Ian McKellan (E21)

Properties:

[P74](#_P74_has_current) **has current or former residence (is current or former residence of):** [E53](#_E53_Place_) **Place**

[P75](#_P75_possesses_(is) **possesses (is possessed by):** [E30](#_E30_Right_1) **Right**

**P76 has contact point (provides access to): E51 Contact Point**

[P131](#_P131_is_identified) **is identified by (identifies):** [E82](#_E82_Actor_Appellation) **Actor Appellation (NB: P131 should be deprecated as its range E82 is deprecated. The superproperty P1 is identified by (identifies): E41 Appellation is enough)**

###### E77 Persistent Item

Subclass of: [E1](#_E1_CRM_Entity_) CRM Entity

Superclass of: [E39](#_E39_Actor_) Actor

[E70](#_E70_Thing_1) Thing

Scope note: This class comprises items that have a persistent identity, sometimes known as “endurants” in philosophy.

They can be repeatedly recognized within the duration of their existence by identity criteria rather than by continuity or observation. Persistent Items can be either physical entities, such as people, animals or things, or conceptual entities such as ideas, concepts, products of the imagination or common names.

The criteria that determine the identity of an item are often difficult to establish; the decision depends largely on the judgement of the observer. For example, a building is regarded as no longer existing if it is dismantled and the materials reused in a different configuration. On the other hand, human beings go through radical and profound changes during their life-span, affecting both material composition and form, yet preserve their identity by other criteria. Similarly, inanimate objects may be subject to exchange of parts and matter. The class E77 Persistent Item does not take any position about the nature of the applicable identity criteria and if actual knowledge about identity of an instance of this class exists. There may be cases, where the identity of an E77 Persistent Item is not decidable by a certain state of knowledge.

The main classes of objects that fall outside the scope the E77 Persistent Item class are temporal objects such as periods, events and acts, and descriptive properties.

Examples:

* Leonard da Vinci
* Stonehenge
* the hole in the ozone layer
* the First Law of Thermodynamics
* the Bermuda Triangle

###### E82 Actor Appellation

Subclass of: [E41](#_E41_Appellation_3) Appellation

Scope note: This class comprises any sort of name, number, code or symbol characteristically used to identify an E39 Actor.

An E39 Actor will typically have more than one E82 Actor Appellation, and instances of E82 Actor Appellation in turn may have alternative representations. The distinction between corporate and personal names, which is particularly important in library applications, should be made by explicitly linking the E82 Actor Appellation to an instance of either E21 Person or E74 Group/E40 Legal Body. If this is not possible, the distinction can be made through the use of the *P2 has type* mechanism.

Examples:

* “John Doe”
* “Doe, J”
* “the U.S. Social Security Number 246-14-2304”
* “the Artist Formerly Known as Prince”
* “the Master of the Flemish Madonna”
* “Raphael’s Workshop”
* “the Brontë Sisters”
* “ICOM”
* “International Council of Museums”

###### E84 Information Carrier

Subclass of: [E22](#_E24__Physical_) Man-Made Object

Scope note: This class comprises all instances of E22 Man-Made Object that are explicitly designed to act as persistent physical carriers for instances of E73 Information Object.

This allows a relationship to be asserted between an E19 Physical Object and its immaterial information contents. An E84 Information Carrier may or may not contain information, e.g., a diskette. Note that any E18 Physical Thing may carry information, such as an E34 Inscription. However, unless it was specifically designed for this purpose, it is not an Information Carrier. Therefore the property *P128 carries (is carried by)* applies to E18 Physical Thing in general.

Examples:

* the Rosetta Stone
* my paperback copy of Crime & Punishment
* the computer disk at ICS-FORTH that stores the canonical Definition of the CIDOC CRM

###### E89 Propositional Object

Subclass of: [E28](#_E28_Conceptual_Object_) Conceptual Object

Superclass of: [E73](#_E73_Information_Object_) Information Object

[E30](#_E30_Right_1) Right

Scope note: 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 mental 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.

Examples:

* Maxwell’s Equations
  + - The ideational contents of Aristotle’s book entitled ‘Metaphysics’ as rendered in the Greek texts translated in … Oxford edition…
* The underlying prototype of any “no-smoking” sign (E36)
* The common ideas of the plots of the movie “The Seven Samurai” by Akira Kurosawa and the movie “The Magnificent Seven” by John Sturges
* The image content of the photo of the Allied Leaders at Yalta 1945 (E38)

Properties:

[**P67**](#_P67_refers_to) **refers to (is referred to by):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

**(P67.1 has type:** [**E55**](#_E55_Type_) **Type)**

[**P129**](#_P129_is_about) **is about (is subject of):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

**[P148](#_P148_has_component_1) has component (is component of):** [**E89**](#_E1_CRM_Entity) **Propositional Object**

###### E90 Symbolic Object

Subclass of: [E28](#_E28_Conceptual_Object_) Conceptual Object

[E72](#_E72_Legal_Object_1) Legal Object

Superclass of: [E73](#_E73_Information_Object_) Information Object

[E41](#_E41_Appellation_3) Appellation

Scope note: 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 does not depend on a specific physical carrier, which can include human memory, and it can exist on one or more carriers simultaneously. 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 content model, such.. as the property P3 has note allows for describing this content model…P3.1 has type: E55 Type to specify the encoding..

Examples:

* ‘ecognizabl’
* The “no-smoking” sign (E36)
* ‘BM000038850.JPG’ (E75)
* image BM000038850.JPG from the Clayton Herbarium in London (E38)
* The distribution of form, tone and colour found on Leonardo da Vinci’s painting named “Mona Lisa” (E38)
* The Italian text of Dante’s “Divina Commedia” as found in the authoritative critical edition *La Commedia secondo l’antica ulgate a cura di Giorgio Petrocchi*, Milano: Mondadori, 1966-67 (= Le Opere di Dante Alighieri, Edizione Nazionale a cura della Società Dantesca Italiana, VII, 1-4) (E33)

Properties:

[**P106**](#_P106_is_composed_) **is composed of (forms part of):** [**E90**](#_E90_Symbolic_Object_1) **Symbolic Object**

## 4.4. Referred to CIDOC CRM Properties

This section contains the complete definitions of the properties of the CIDOC CRM Conceptual Reference Model version 6.0 referred to by FRBROO. We apply the same format conventions as in section 2.7.

###### P1 is identified by (identifies) [+ P2 has string = LRM-R13 has appellation]

[Need to check and clean up the subproperties “is identified by” due to deprecation of the specific types of appellation classes in CRMbase]

Domain: [E1](#_E1_CRM_Entity_) CRM Entity

Range: [E41](#_E41_Appellation_3) Appellation

Superproperty of: E1 CRM Entity. P48 has preferred identifier (is preferred identifier of): E42 Identifier

[**E52**](#_E52_Time-Span) **Time-Span.** [**P78**](#_P78_is_identified) **is identified by (identifies):** [**E49**](#_E49_Time_Appellation) **Time Appellation**

[**E53**](#_E53_Place_) **Place.** [**P87**](#_P87_is_identified) **is identified by (identifies):** [**E44**](#_E44_Place_Appellation) **Place Appellation**

[**E71**](#_E72_Legal_Object_) **Man-Made Thing.** [**P102**](#_P102_has_title) **has title (is title of):** [**E35**](#_E35_Title) **Title**

[**E39**](#_E39_Actor_) **Actor.** [**P131**](#_P131_is_identified) **is identified by (identifies):** [**E82**](#_E82_Actor_Appellation) **Actor Appellation**

[E28](#_E28_Conceptual_Object) Conceptual Object. [P149](#_P149_is_identified) is identified by (identifies): [E75](#_E75_Conceptual_Object_Appellation) Conceptual Object Appellation

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

Scope note: 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.

Examples:

* the capital of Italy (E53) *is identified by “*Rome” (E48)
* text 25014–32 (E33) *is identified by* “The Decline and Fall of the Roman Empire” (E35)

###### P2 has type (is type of)

Domain: [E1](#_E1_CRM_Entity_) CRM Entity

Range: [E55](#_E55_Type_) Type

Superproperty of: E1 CRM Entity. P137 exemplifies (is exemplified by): E55 Type

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

Scope note: This property allows sub typing of CRM entities - a form of specialisation – through the use of a terminological hierarchy, or thesaurus.

The 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 CRM may by specialised into any number of sub entities, which can be defined in the E55 Type hierarchy. E51 Contact Point, for example, may be specialised into “e-mail address”, “telephone number”, “post office box”, “URL” etc. none of which figures explicitly in the CRM hierarchy. Sub typing obviously requires consistency between the meaning of the terms assigned and the more general intent of the CRM entity in question.

Examples:

* “enquiries@cidoc-crm.org” (E51) *has type* e-mail address (E55)

###### P3 has note

Domain: [E1](#_E1_CRM_Entity_) CRM Entity

Range: [E62](#_E62_String) String

Superproperty of: E52 Time-Span. P79 beginning is qualified by: E62 String

E52 Time-Span. P80 end is qualified by: E62 String

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

Scope note: This property is a container for all informal descriptions about an object that have not been expressed in terms of 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 CRM. The aim is not to capture, in a structured form, everything that can be said about an item; indeed, the 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.

Examples:

* coffee mug – OXCMS:1983.1.1 (E19) *has note* chipped at edge of handle (E62) *has type* Condition (E55)

Properties: **P3.1 has type:** [**E55**](#_E55_Type_) **Type**

###### P4 has time-span (is time-span of)

Domain: [E2](#_E2_Temporal_Entity) Temporal Entity

Range: [E52](#_E52_Time-Span) Time-Span

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

Scope note: This property describes the temporal confinement of an instance of an E2 Temporal Entity.

The related E52 Time-Span is understood as the real Time-Span during which the phenomena were active, which make up the temporal entity instance. It does not convey any other meaning than a positioning on the “time-line” of chronology. The Time-Span in turn is approximated by a set of dates (E61 Time Primitive). A temporal entity can have in reality only one Time-Span, but there may exist alternative opinions about it, which we would express by assigning multiple Time-Spans. Related temporal entities may share a Time-Span. Time-Spans may have completely unknown dates but other descriptions by which we can infer knowledge.

Examples:

* the Yalta Conference (E7) *has time-span* Yalta Conference time-span (E52)

###### P7 took place at (witnessed)

Domain: [E4](#_E4_Period_) Period

Range: [E53](#_E53_Place_) Place

Superproperty of: E9 Move. P26 moved to (was destination of): E53 Place

E9 Move. P27 moved from (was origin of): E53 Place

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

Scope note: This property describes the spatial location of an instance of E4 Period.

The related E53 Place should be seen as an approximation of the geographical area within which the phenomena that characterise the period in question occurred. *P7 took place at (witnessed)* does not convey any meaning other than spatial positioning (generally on the surface of the Earth). For example, the period “Révolution française” can be said to have taken place in “France”, the “Victorian” period, may be said to have taken place in “Britain” and its colonies, as well as other parts of Europe and north America.

A period can take place at multiple locations.

Examples:

* the period “Révolution française” (E4) *took place at* France (E53)

###### P9 consists of (forms part of)

Domain: [E4](#_E4_Period_) Period

Range: [E4](#_E4_Period_) Period

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

Scope note: This property describes the decomposition of an instance of E4 Period into discrete, subsidiary periods.

The sub-periods into which the period is decomposed form a logical whole - although the entire picture may not be completely known - and the sub-periods are constitutive of the general period.

Examples:

* Cretan Bronze Age (E4) *consists of*  Middle Minoan (E4)

###### P12 occurred in the presence of (was present at)

Domain: [E5](#_E5_Event_) Event

Range: [E77](#_E77_Persistent_Item_1) Persistent Item

Superproperty of: E5 Event. P11 had participant (participated in): E39 Actor

[**E7**](#_E7_Activity_) **Activity.** [**P16**](#_P16__used_) **used specific object (was used for):** [**E70**](#_E70_Thing_1) **Thing**

E9 Move. P25 moved (moved by): E19 Physical Object

[**E11**](#_E11_Modification) **Modification.** [**P31**](#_P31_has_modified) **has modified (was modified by):** [**E24**](#_E24_Physical_Man-Made_1) **Physical Man-Made Thing**

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

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

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

Scope note: This property describes the active or passive presence of an E77 Persistent Item in an E5 Event without implying any specific role.

It connects the history of a thing with the E53 Place and E50 Date of an event. For example, an object may be the desk, now in a museum on which a treaty was signed. The presence of an immaterial thing implies the presence of at least one of its carriers.

Examples:

* Deckchair 42 (E19) *was present at* The sinking of the Titanic (E5)

###### P14 carried out by (performed)

Domain: [E7](#_E7_Activity_) Activity

Range: [E39](#_E39_Actor_) Actor

Subproperty of: E5 Event. P11 had participant (participated in): E39 Actor

Superproperty of: E8 Acquisition. P22 transferred title to (acquired title through): E39 Actor

E8 Acquisition. P23 transferred title from (surrendered title through): E39 Actor

E10 Transfer of Custody. P28 custody surrendered by (surrendered custody through): E39 Actor

E10 Transfer of Custody. P29 custody received by (received custody through): E39 Actor

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

Scope note: This property describes the active participation of an E39 Actor in an E7 Activity.

It implies causal or legal responsibility. The *P14.1 in the role of* property of the property allows the nature of an Actor’s participation to be specified.

Examples:

* the painting of the Sistine Chapel (E7) *carried out by* Michaelangelo Buonaroti (E21) *in the role of* master craftsman (E55)

Properties: P14.1 in the role of: [E55](#_E55_Type_) Type

###### P15 was influenced by (influenced) [=LRM-R21 work inspiration, the work creation of the new work was influenced by the existing work]

Domain: [E7](#_E7_Activity_) Activity

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Superproperty of: [**E7**](#_E7_Activity_) **Activity.** [**P16**](#_P16__used_) **used specific object (was used for):** [**E70**](#_E70_Thing_1) **Thing**

E7 Activity. P17 was motivated by (motivated): E1 CRM Entity

E7 Activity. P134 continued (was continued by): E7 Activity

E83 Type Creation. P136 was based on (supported type creation): E1 CRM Entity

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

Scope note: This is a high level property, which captures the relationship between an E7 Activity and anything that may have had some bearing upon it.

The property has more specific sub properties.

Examples:

* the designing of the Sydney Harbour Bridge (E7) *was influenced by* the Tyne bridge (E22)

###### P16 used specific object (was used for)

[LRM-R20 Work accompanies /complements Work: includes the case of supplements. There is an intention in the Work Conception itself that the conceived Work will accompany the other Work

In the FRBR-to-FRBRoo mapping we wrote (p. 107 of version 2.4): Work supplements Work => F1 Work P16i was used for (P16.1 mode of use E55 Type "supplemented work") F27 Work Conception R16 initiated F1 Work.

There is a distinct mapping for Work has a complement" on tje same page]

Domain: [E7](#_E7_Activity_) Activity

Range: [E70](#_E70_Thing_1) Thing

Subproperty of: [**E5**](#_E5_Event_) **Event.** [**P12**](#_P12_occurred_in) **occurred in the presence of (was present at):** [**E77**](#_E77_Persistent_Item_1) **Persistent Item**

[**E7**](#_E7_Activity_) **Activity.** [**P15**](#_P15_was_influenced_by_(influenced)) **was influenced by (influenced):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

Superproperty of:[**E7**](#_E7_Activity_) **Activity.** [**P33**](#_P33_used_specific_) **used specific technique (was used by):** [**E29**](#_E29_Design_or_) **Design or Procedure**

[**E15**](#_E18_Physical_Thing_1) **Identifier Assignment.** [**P142**](#_P148_has_component) **used constituent (was used in):** [**E41**](#_E41_Appellation_3) **Appellation**

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

Scope note: This property describes the use of material or immaterial things in a way essential to the performance or the outcome of an 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.

Examples:

* the writing of this scope note (E7) *used specific object* Nicholas Crofts’ computer (E22) *mode of use* Typing Tool; Storage Medium (E55)
* the people of Iraq calling the place identified by TGN ‘7017998’ (E7) used specific object “Quyunjig” (E44) *mode of use Current*; Vernacular (E55)

Properties: P16.1 mode of use: [E55](#_E55_Type_) Type

###### P31 has modified (was modified by) [=LRM-R11]

Domain: [E11](#_E11_Modification) Modification

Range: [E24](#_E24_Physical_Man-Made_1) Physical Man-Made Thing

Subproperty of: [**E5**](#_E5_Event_) **Event.** [**P12**](#_P12_occurred_in) **occurred in the presence of (was present at):** [**E77**](#_E77_Persistent_Item_1) **Persistent Item**

Superproperty of:[**E12**](#_E12_Production_) **Production.** [**P108**](#_P108_produced_(was_1) **has produced (was produced by):** [**E24**](#_E24_Physical_Man-Made_1) **Physical Man-Made Thing**

E79 Part Addition. P110 augmented (was augmented by): E24 Physical Man-Made Thing

E80 Part Removal. P112 diminished (was diminished by): E24 Physical Man-Made Thing

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

Scope note: This property identifies the E24 Physical Man-Made Thing modified in an E11 Modification.

If a modification is applied to a non-man-made object, it is regarded as an E22 Man-Made Object from that time onwards.

Examples:

* rebuilding of the Reichstag (E11) *has modified* the Reichstag in Berlin (E24)

###### P33 used specific technique (was used by)

Domain: [E7](#_E7_Activity_) Activity

Range: [E29](#_E29_Design_or_) Design or Procedure

Subproperty of: [**E7**](#_E7_Activity_) **Activity.** [**P16**](#_P16__used_) **used specific object (was used for):** [**E70**](#_E70_Thing_1) **Thing**

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

Scope note: This property identifies a specific E29 Design or Procedure in order to carry out an instance of E7 Activity or parts of it.

The property differs from *P32 used general technique (was technique of)* in that the E29 Design or Procedure referred to is specific and documented rather than simply being a term in the E55 Type hierarchy. Typical examples would include intervention plans for conservation.

Typical examples would include intervention plans for conservation or the construction plans of a building.

Examples:

* Ornamentation of silver cup 232 (E11) *used specific technique* ‘Instructions for golden chase work by A N Other’ (E29)
* Rebuilding of Reichstag (E11) *used specific technique* Architectural plans by Foster and Partners (E29)

###### P37 assigned (was assigned by)

Domain: [E15](#_E18_Physical_Thing_1) Identifier Assignment

Range: [E42](#_E42_Identifier_1) Identifier

Subproperty of: [**E13**](#_E18_Physical_Thing_) **Attribute Assignment.** [**P141**](#_P141_assigned_(was) **assigned (was assigned by):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

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

Scope note: This property records the identifier that was assigned to an item in an Identifier Assignment activity.

The same identifier may be assigned on more than one occasion.

An Identifier might be created prior to an assignment.

Examples:

* 01 June 1997 Identifier Assignment of the silver cup donated by Martin Doerr (E15) *assigned* “232” (E42)

###### P43 has dimension (is dimension of)

Domain: [E70](#_E70_Thing_1) Thing

Range: [E54](#_E54_Dimension_) Dimension

Quantification: one to many, dependent (0,n:1.1)

Scope note: This property records a E54 Dimension of some E70 Thing.

It is a shortcut of the more fully developed path from E70 Thing through *P39 measured (was measured by)*, E16 Measurement *P40 observed dimension (was observed in)* to E54 Dimension. It offers no information about how and when an E54 Dimension was established, nor by whom.

An instance of E54 Dimension is specific to an instance of E70 Thing.

Examples:

* silver cup 232 (E22) *has dimension* height of silver cup 232 (E54) *has unit* mm (E58), *has value* 224 (E60)

###### P44 has condition (is condition of)

Domain: [E18](#_E18_Physical_Thing_2) Physical Thing

Range: [E3](#_E3_Condition_State) Condition State

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

Scope note: This property records an E3 Condition State for some E18 Physical Thing.

It is a shortcut of the more fully developed path from E18 Physical Thing through *P34 concerned (was assessed by)*, E14 Condition Assessment *P35 has identified (identified by)* to E3 Condition State. It offers no information about how and when the E3 Condition State was established, nor by whom.

An instance of Condition State is specific to an instance of Physical Thing.

Examples:

* silver cup 232 (E22) *has* *condition* oxidation traces were present in 1997 (E3) *has type* oxidation traces (E55)

###### P45 consists of (is incorporated in)

Domain: [E18](#_E18_Physical_Thing_2) Physical Thing

Range: [E57](#_E57_Material_) Material

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

Scope note: 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.

Examples:

* silver cup 232 (E22) *consists of* silver (E57)

###### P46 is composed of (forms part of)

Domain: [E18](#_E18_Physical_Thing_2) Physical Thing

Range: [E18](#_E18_Physical_Thing_2) Physical Thing

Superproperty of:E19 Physical Object. P56 bears feature (is found on): E26 Physical Feature

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

Scope note: This property allows instances of E18 Physical Thing to be analysed into component elements.

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 is intended to describe specific components that areindividually 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 Materials of which an item of E18 Physical Thing is composed should be documented using *P45* *consists of (is incorporated in)*.

Examples:

* the Royal carriage (E22) *forms part of* the Royal train (E22)
* the “Hog’s Back” (E24) *forms part of* the “Fosseway” (E24

###### P49 has former or current keeper (is former or current keeper of)

Domain: [E18](#_E18_Physical_Thing_2) Physical Thing

Range: [E39](#_E39_Actor_) Actor

Superproperty of: [**E18**](#_E18_Physical_Thing_2) **Physical Thing.** [**P50**](#_P50_has_current) **has current keeper (is current keeper of):** [**E39**](#_E39_Actor_) **Actor**

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

Scope note: This property identifies the E39 Actor or Actors who have or have had custody of an instance of E18 Physical Thing at some time.

The distinction with *P50 has current keeper (is current keeper of)* is that *P49 has former or current keeper (is former or current keeper of)* leaves open the question as to whether the specified keepers are current.

*P49 has former or current keeper (is former or current keeper of)* is a shortcut for the more detailed path from E18 Physical Thing through *P30 transferred custody of (custody transferred through)*, E10 Transfer of Custody, *P28 custody surrendered by (surrendered custody through)* or *P29 custody received by (received custody through)* to E39 Actor.

Examples:

* paintings from The Iveagh Bequest (E18) *has former or current keeper* Secure Deliveries Inc. (E40)

###### P50 has current keeper (is current keeper of)

Domain: [E18](#_E18_Physical_Thing_2) Physical Thing

Range: [E39](#_E39_Actor_) Actor

Subproperty of: [**E18**](#_E18_Physical_Thing_2) **Physical Thing.** [**P49**](#_P49_has_former) **has former or current keeper (is former or current keeper of):** [**E39**](#_E39_Actor_) **Actor**

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

Scope note: This property identifies the E39 Actor or Actors who had custody of an instance of E18 Physical Thing at the time this property was recorded.

*P50 has current keeper (is current keeper of)* is a shortcut for the more detailed path from E18 Physical Thing through *P30 transferred custody of (custody transferred through)*, E10 Transfer of Custody, *P29* *custody received by (received custody through)* to E39 Actor.

Examples:

* paintings from The Iveagh Bequest (E18) *has current keeper* The National Gallery (E40)

###### P51 has former or current owner (is former or current owner of) [=LRM-R10 Item ownership]

Domain: [E18](#_E18_Physical_Thing_2) Physical Thing

Range: [E39](#_E39_Actor_) Actor

Superproperty of: E18 Physical Thing. P52 has current owner (is current owner of): E39 Actor

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

Scope note: This property identifies the E39 Actor that is or has been the legal owner (i.e. title holder) of an instance of E18 Physical Thing at some time.

The distinction with *P52 has current owner (is current owner of)* is that *P51 has former or current owner (is former or current owner of)* does not indicate whether the specified owners are current. *P51 has former or current owner (is former or current owner of)* is a shortcut for the more detailed path from E18 Physical Thing through *P24 transferred title of (changed ownership through)*, E8 Acquisition, *P23* *transferred title from (surrendered title through)*, or *P22* *transferred title to (acquired title through)* to E39 Actor.

Examples:

* paintings from the Iveagh Bequest (E18) *has former or current owner* Lord Iveagh (E21)

###### P57 has number of parts

Domain: [E19](#_E19_Physical_Object) Physical Object

Range: [E60](#_E60_Number_1) Number

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

Scope note: This property documents the E60 Number of parts of which an instance of E19 Physical Object is composed.

This may be used as a method of checking inventory counts with regard to aggregate or collective objects. What constitutes a part or component depends on the context and requirements of the documentation. Normally, the parts documented in this way would not be considered as worthy of individual attention.

For a more complete description, objects may be decomposed into their components and constituents using *P46 is composed of (forms parts of)* and *P45 consists of (is incorporated in)*. This allows each element to be described individually.

Examples:

* chess set 233 (E22) *has number of* *parts* 33 (E60)

###### P59 has section (is located on or within)

Domain: [E18](#_E18_Physical_Thing_2) Physical Thing

Range: [E53](#_E53_Place_) Place

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

Scope note: This property links an area to the instance of E18 Physical Thing upon which it is found.

It is typically used when a named E46 Section Definition is not appropriate.

E18 Physical Thing may be subdivided into arbitrary regions.

*P59 has section (is located on or within)* is a shortcut. If the E53 Place is identified by a Section Definition, a more detailed representation can make use of the fully developed (i.e. indirect) path from E18 Physical Thing through *P58 has section definition (defines section)*, E46 Section Definition, *P87 is identified by (identifies)* to E53 Place. A Place can only be located on or within one Physical Object.

Examples:

* HMS Victory (E22) *has section* HMS Victory section B347.6 (E53)

###### P65 shows visual item (is shown by)

Domain: [E24](#_E24_Physical_Man-Made_1) Physical Man-Made Thing

Range: [E36](#_E36_Visual_Item) Visual Item

Subproperty of: [**E24**](#_E24_Physical_Man-Made_1) **Physical Man-Made Thing.** [**P128**](#_P128_carries_(is_1) **carries (is carried by):** [**E73**](#_E73_Information_Object_) **Information Object**

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

Scope note: This property documents an E36 Visual Item shown by an instance of E24 Physical Man-Made Thing.

This property is similar to *P62 depicts (is depicted by)* in that it associates an item of E24 Physical Man-Made Thing with a visual representation. However, *P65 shows visual item (is shown by)* differs from the *P62 depicts (is depicted by)* property in that it makes no claims about what the E36 Visual Item is deemed to represent. E36 Visual Item identifies a recognisable image or visual symbol, regardless of what this image may or may not represent.

For example, all recent British coins bear a portrait of Queen Elizabeth II, a fact that is correctly documented using *P62 depicts (is depicted by)*. Different portraits have been used at different periods, however. *P65 shows visual item (is shown by)* can be used to refer to a particular portrait.

*P65 shows visual item (is shown by)* may also be used for Visual Items such as signs, marks and symbols, for example the 'Maltese Cross' or the 'copyright symbol’ that have no particular representational content.

This property is part of the fully developed path from E24 Physical Man-Made Thing through *P65 shows visual item (is shown by)*, E36 Visual Item, *P138 represents (has representation)* to E1 CRM Entity which is shortcut by*, P62* *depicts (is depicted by)*.

Examples:

* My T-Shirt (E22) *shows visual item* Mona Lisa (E38)

###### P67 refers to (is referred to by)

Domain: [E89](#_E89_Propositional_Object) Propositional Object

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Superproperty of: E31 Document. P70 documents (is documented in): E1 CRM Entity

[**E32**](#_E32_Authority_Document_1) **Authority Document.** [**P71**](#_P71_lists_(is) **lists (is listed in):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

[**E89**](#_E1_CRM_Entity) **Propositional Object.** [**P129**](#_P129_is_about) **is about (is subject of):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

[**E36**](#_E36_Visual_Item) **Visual Item.** [**P138**](#_P138_represents_(has) **represents (has representation):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

E29 Design or Procedure. P68 foresees use of (use foreseen by): E57 Material

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

Scope note: This property documents that an 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 E89 Propositional Object.

Examples:

the eBay auction listing of 4 July 2002 (E73) *refers to* silver cup 232 (E22) *has type* item for sale (E55)

Properties: P67.1 has type: [E55](#_E55_Type_) Type

###### P69 has association with (is associated with)

Domain: [E29](#_E29_Design_or_) Design or Procedure

Range: [E29](#_E29_Design_or_) Design or Procedure

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

Scope note: This symmetric property describes the association of an E29 Design or Procedure with other Designs or Procedures.

Any instance of E29 Design or Procedure may be associated with other designs or procedures.

The *P69.1 has type* property of *P69 is associated* *with* allows the nature of the association to be specified; examples of types of association between instances of E29 Design or Procedure include: whole-part, sequence, prerequisite, etc

Examples:

* procedure for glass blowing (E29) *has association with* procedure for glass heating (E29)

Properties: P69.1 has type: [E55](#_E55_Type_) Type

###### P71 lists (is listed in)

Domain: [E32](#_E32_Authority_Document_1) Authority Document

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Subproperty of: [**E89**](#_E1_CRM_Entity) **Propositional Object.** [**P67**](#_P67_refers_to) **refers to (is referred to by):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

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

Scope note: This property documents a source E32 Authority Document for an instance of an E1 CRM Entity.

Examples:

* the Art & Architecture Thesaurus (E32) *lists* alcazars (E55)

###### P72 has language (is language of)

Domain: [E33](#_E33_Linguistic_Object) Linguistic Object

Range: [E56](#_E56_Language_1) Language

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

Scope note: This property describes the E56 Language of an E33 Linguistic Object.

Linguistic Objects are composed in one or more human Languages. This property allows these languages to be documented.

Examples:

* the American Declaration of Independence (E33*) has language* 18th Century English (E56)

###### P74 has current or former residence (is current or former residence of)

Domain: [E39](#_E39_Actor_) Actor

Range: [E53](#_E53_Place_) Place

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

Scope note: This property describes the current or former E53 Place of residence of an E39 Actor.

The residence may be either the Place where the Actor resides, or a legally registered address of any kind.

Examples:

* Queen Elizabeth II (E39) *has current or former residence* Buckingham Palace (E53)

###### P75 possesses (is possessed by)

Domain: [E39](#_E39_Actor_) Actor

Range: [E30](#_E30_Right_1) Right

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

Scope note: This property identifies former or current instances of E30 Rights held by an E39 Actor.

Examples:

* Michael Jackson (E21) *possesses* Intellectual property rights on the Beatles’ back catalogue (E30)

###### P78 is identified by (identifies)

Domain: [E52](#_E52_Time-Span) Time-Span

Range: [E49](#_E49_Time_Appellation) Time Appellation

Subproperty of: [**E1**](#_E1_CRM_Entity_) **CRM Entity.** [**P1**](#_P1_is_identified_1) **is identified by (identifies):** [**E41**](#_E41_Appellation_3) **Appellation**

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

Scope note: This property identifies an E52 Time-Span using an E49Time Appellation.

Examples:

* the time span 1926 to 1988 (E52) *is identified by* “Showa” (Japanese time appellation) (E49)

###### P82 at some time within

Domain: [E52](#_E52_Time-Span) Time-Span

Range: [E61](#_E61_Time_Primitive) Time Primitive

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

Scope note: 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 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 CRM as application or system specific date intervals, and are not further analysed.

Examples:

* the time-span of the development of the CIDOC CRM (E52) *at some time within* 1992-infinity (E61)

###### P87 is identified by (identifies)

Domain: [E53](#_E53_Place_) Place

Range: [E44](#_E44_Place_Appellation) Place Appellation

Subproperty of: [**E1**](#_E1_CRM_Entity_) **CRM Entity.** [**P1**](#_P1_is_identified_1) **is identified by (identifies):** [**E41**](#_E41_Appellation_3) **Appellation**

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

Scope note: This property identifies an E53 Place using an E44 Place Appellation.

Examples of Place Appellations used to identify Places include instances of E48 Place Name, addresses, E47 Spatial Coordinates etc.

Examples:

* the location of the Duke of Wellington’s House (E53) *is identified by* “No 1 London” (E45)

###### P94 has created (was created by)

Domain: [E65](#_E65_Creation_1) Creation

Range: [E28](#_E28_Conceptual_Object_) Conceptual Object

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

Superproperty of: E83 Type Creation. P135 created type (was created by): E55 Type

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

Scope note: This property allows a conceptual E65 Creation to be linked to the E28 Conceptual Object created by it.

It represents the act of conceiving the intellectual content of the E28 Conceptual Object. It does not represent the act of creating the first physical carrier of the E28 Conceptual Object. As an example, this is the composition of a poem, not its commitment to paper.

Examples:

* the composition of “The Four Friends” by A. A. Milne (E65) *has created* “The Four Friends” by A. A. Milne (E28)

###### P95 has formed (was formed by)

Domain: [E66](#_E66_Formation) Formation

Range: [E74](#_E74_Group_) Group

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

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

Scope note: This property links the founding or E66 Formation for an E74 Group with the Group itself.

Examples:

* the formation of the CIDOC CRM SIG at the August 2000 CIDOC Board meeting (E66) *has formed* the CIDOC CRM Special Interest Group (E74)

###### P98 brought into life (was born)

Domain: [E67](#_E67_Birth) Birth

Range: [E21](#_E21_Person_1) Person

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

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

Scope note: This property links an E67 Birth event to an E21 Person in the role of offspring.

Twins, triplets etc. are brought into life by the same Birth event. 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.

Examples:

* the Birth of Queen Elizabeth II (E67) *brought into life* Queen Elizabeth II (E21)

###### P100 was death of (died in)

Domain: [E69](#_E69_Death) Death

Range: [E21](#_E21_Person_1) Person

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

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

Scope note: This property links an E69 Death event to the E21 Person that died.

A Death event 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.

Examples:

* Mozart’s death (E69) *was death of* Mozart (E21)

###### P102 has title (is title of)

Domain: [E71](#_E72_Legal_Object_) Man-Made Thing

Range: [E35](#_E35_Title) Title

Subproperty of: [**E1**](#_E1_CRM_Entity_) **CRM Entity.** [**P1**](#_P1_is_identified_1) **is identified by (identifies):** [**E41**](#_E41_Appellation_3) **Appellation**

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

Scope note: This property describes the E35 Title applied to an instance of E71 Man-Made Thing. The E55 Type of Title is assigned in a sub property.

The *P102.1* *has type* property of the *P102* *has title (is title of)* property enables the relationship between the Title and the thing to be further clarified, for example, if the Title was a given Title, a supplied Title etc.

It allows any man-made material or immaterial thing to be given a Title. It is possible to imagine a Title being created without a specific object in mind.

Examples:

* the first book of the Old Testament (E33) *has title* “Genesis” (E35)

*has type* translated (E55)

Properties: P102.1 has type: [E55](#_E55_Type_) Type

###### P103 was intended for (was intention of)

Domain: [E71](#_E72_Legal_Object_) Man-Made Thing

Range: [E55](#_E55_Type_) Type

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

Scope note: This property links an instance of E71 Man-Made Thing to an E55 Type of usage.

It creates a property between specific man-made things, both physical and immaterial, to Types of intended methods and techniques of use. Note: A link between specific man-made things and a specific use activity should be expressed using *P19* *was intended use of (was made for).*

Examples:

* this plate (E22) *was intended for* being destroyed at wedding reception (E55)

###### P104 is subject to (applies to)

Domain: [E72](#_E72_Legal_Object_1) Legal Object

Range: [E30](#_E30_Right_1) Right

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

Scope note: This property links a particular E72 Legal Object to the instances of E30 Right to which it is subject.

The Right is held by an E39 Actor as described by *P75* *possesses (is possessed by)*.

Examples:

* Beatles back catalogue (E72) *is subject to* reproduction right on Beatles back catalogue (E30)

###### P105 right held by (has right on)

Domain: [E72](#_E72_Legal_Object_1) Legal Object

Range: [E39](#_E39_Actor_) Actor

Superproperty of: E18 Physical Thing. P52 has current owner (is current owner of): E39 Actor

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

Scope note: This property identifies the E39 Actor who holds the instances of E30 Right to an E72 Legal Object.

It is a superproperty of *P52 has current owner (is current owner of)* because ownership is a right that is held on the owned object.

*P105 right held by (has right on)* is a shortcut of the fully developed path from E72 Legal Object through *P104 is subject to (applies to)*, E30 Right, *P75 possesses (is possessed by)* to E39 Actor.

Examples:

* Beatles back catalogue (E73) *right held by* Michael Jackson (E21)

###### P106 is composed of (forms part of)

Domain: [E90](#_E90_Symbolic_Object_1) Symbolic Object

Range: [E90](#_E90_Symbolic_Object_1) Symbolic Object

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

Scope note: 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.

Examples:

* This Scope note (E33) *P106 is composed of* ‘fragments of texts’ (E33)
* ‘recognizable’ (E90) *P106 is composed of* ‘ecognizabl’ (E90)

###### P107 has current or former member (is current or former member of) [ LRM-R30 is part of this]

[This covers both membership and structural parts, these are distinct in LRM, need to expand]

[In the has part rltnship there is no implicit Joining event. Look at the examples: the Library of China joined IFLA, the cataloguing Section never did, it was formed as structural part of the organization.

A member existed prior to the Joining event. The has part relationship starts with the Formation event

Although a part can leave the broader structure and become autonomous...

Group merging and splitting: see E81 Transformation, domain is Persistent Item. Consider this as LRM-R32 is restricted to Collective Agents, not Persons. See P151 for Mergers]

Domain: [E74](#_E74_Group_) Group

Range: [E39](#_E39_Actor_) Actor

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

Scope note: This property relates an E39 Actor to the E74 Group of which that E39 Actor is a member.

Groups, Legal Bodies and Persons, may all be members of Groups. A Group necessarily consists of more than one member.

This property is a shortcut of the more fully developed path from E74 Group through P144 joined with (gained member by), E85 Joining, P143 joined (was joined by) to E39 Actor.

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

Examples:

* Moholy Nagy (E21) *is current or former* *member of* Bauhaus (E74)
* National Museum of Science and Industry (E40) *has current or former member* The National Railway Museum (E40)
* The married couple Queen Elisabeth and Prince Phillip (E74) *has current or former member* Prince Phillip (E21) with P107.1 *kind of member* husband (E55 Type)

Properties: P107.1 *kind of member*: [E55](#_E55_Type_) Type

###### P108 has produced (was produced by)

Domain: [E12](#_E12_Production_) Production

Range: [E24](#_E24_Physical_Man-Made_1) Physical Man-Made Thing

Subproperty of: [**E11**](#_E11_Modification) **Modification.** [**P31**](#_P31_has_modified) **has modified (was modified by):** [**E24**](#_E24_Physical_Man-Made_1) **Physical Man-Made Thing**

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

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

Scope note: This property identifies the E24 Physical Man-Made Thing that came into existence as a result of an E12 Production.

The identity of an instance of E24 Physical Man-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 Man-Made Thing.

Examples:

* The building of Rome (E12) *has* *produced* Τhe Colosseum (E22)

###### P125 used object of type (was type of object used in)

Domain: [E7](#_E7_Activity_) Activity

Range: [E55](#_E55_Type_) Type

Subproperty of:

Superproperty of: E7 Activity. P32 used general technique (was technique of): E55 Type

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

Scope note: This property defines the kind of objects used in an E7 Activity, when the specific instance is either unknown or not of interest, such as use of "a hammer".

Examples:

* at the Battle of Agincourt (E7), the English archers *used object of type* long bow (E55)

###### P127 has broader term (has narrower term)

Domain: [E55](#_E55_Type_) Type

Range: [E55](#_E55_Type_) Type

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

Scope note: This property identifies a super-Type to which an E55 Type is related.

It allows Types to be organised into hierarchies. This is the sense of "broader term generic (BTG)" as defined in ISO 2788.

Examples:

* dime (E55) *has broader term* coin (E55)

###### P128 carries (is carried by)

Domain: [E24](#_E24_Physical_Man-Made_1) Physical Man-Made Thing

Range: [E90](#_E90_Symbolic_Object_1) Symbolic Object

Subproperty of: [**E70**](#_E70_Thing_1) **Thing.** [**P130**](#_P130_shows_features) **shows features of (features are also found on):** [**E70**](#_E70_Thing_1) **Thing**

Superproperty of: [**E24**](#_E24_Physical_Man-Made_1) **Physical Man-Made Thing.** [**P65**](#_P65_shows_visual) **shows visual item (is shown by):** [**E36**](#_E36_Visual_Item) **Visual Item**

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

Scope note: This property identifies an E90 Symbolic Object carried by an instance of E24 Physical Man-Made Thing.

In general this would be an E84 Information Carrier. *P65 shows visual item (is shown by)* is a specialisation of *P128 carries (is carried by)* which should be used for carrying visual items.

Examples:

* Matthew’s paperback copy of Reach for the Sky (E84) *carries* the text of Reach for the Sky (E73)

###### P129 is about (is subject of) [=LRM-R12 has as subject]

Domain: [E89](#_E1_CRM_Entity) Propositional Object

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Subproperty: [**E89**](#_E1_CRM_Entity) **Propositional Object.** [**P67**](#_P67_refers_to) **refers to (is referred to by):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

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

Scope note: This property documents that an E89 Propositional Object has as subject an instance of E1 CRM Entity.

This differs from P67 refers to (is referred to by), which refers to an E1 CRM Entity, in that it describes the primary subject or subjects of an E89 Propositional Object.

Examples:

* The text entitled ‘Reach for the sky’ (E33) *is about* Douglas Bader (E21)

###### P130 shows features of (features are also found on)

[NB: need to check the current text in CRMbase]

[In mapping, used for alternates. The P130.1 could be used to type the level of similarity based on the functional definition of alternates]

Domain: [E70](#_E70_Thing_1) Thing

Range: [E70](#_E70_Thing_1) Thing

Superproperty: E33 Linguistic Object. P73 has translation (is translation of): E33 Linguistic Object

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

Scope note: This property generalises the notions of "copy of" and "similar to" into a dynamic, asymmetric relationship, where the domain expresses the derivative, if such a direction can be established.

Otherwise, the relationship is symmetric. It is a shortcut of *P15 was influenced by (influenced)* in a creation or production, if such a reason for the similarity can be verified. Moreover it expresses similarity in cases that can be stated between two objects only, without historical knowledge about its reasons.

Examples:

* the Parthenon Frieze on the Acropolis in Athens (E22) *shows features of* the Original Parthenon Frieze in the British museum (E22). *Kind of similarity*: Copy (E55)

Properties: P130.1 kind of similarity: [E55](#_E55_Type_) Type

###### P131 is identified by (identifies)

Domain: [E39](#_E39_Actor_) Actor

Range: [E82](#_E82_Actor_Appellation) Actor Appellation

Subproperty: [**E1**](#_E1_CRM_Entity_) **CRM Entity.** [**P1**](#_P1_is_identified_1) **is identified by (identifies):** [**E41**](#_E41_Appellation_3) **Appellation**

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

Scope note: This property identifies a name used specifically to identify an E39 Actor.

This property is a specialisation of *P1 is identified by (identifies)* is identified by.

Examples:

* Tyler Withersopp IV (E39) *is identified by* US social security number “619-17-4204” (E82)

###### P138 represents (has representation)

Domain: [E36](#_E36_Visual_Item) Visual Item

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Subproperty: [**E89**](#_E1_CRM_Entity) **Propositional Object.** [**P67**](#_P67_refers_to) **refers to (is referred to by):** [**E1**](#_E1_CRM_Entity_) **CRM Entity**

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

Scope note: This property establishes the relationship between an E36 Visual Item and the entity that it visually represents.

Any entity may be represented visually. This property is part of the fully developed path from E24 Physical Man-Made Thing through *P65 shows visual item (is shown by)*, E36 Visual Item, *P138 represents (has representation)* to E1 CRM Entity, which is shortcut by *P62depicts (is depicted by)*. P138.1 mode of representation allows the nature of the representation to be refined.

Examples:

* the design on the reverse of a Swiss coin (E36) *represents* Helvetia (E28) *mode of representation* Profile (E55)

Properties: P138.1 mode of representation: [E55](#_E55_Type_) Type

###### P140 assigned attribute to (was attributed by)

Domain: [E13](#_E18_Physical_Thing_) Attribute Assignment

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Superproperty of:E14 Condition Assessment. P34 concerned (was assessed by): E18 Physical Thing

E16 Measurement. P39 measured (was measured by): E70 Thing

E17 Type Assignment. **P41 classified (was classified by): E1 CRM Entity**

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

Scope note: This property indicates the item to which an attribute or relation is assigned.

Examples:

* February 1997 Current Ownership Assessment of Martin Doerr’s silver cup (E13) *assigned attribute to* Martin Doerr’s silver cup (E19)
* 01 June 1997 Identifier Assignment of the silver cup donated by Martin Doerr (E15) *assigned attribute to* silver cup 232 (E19)

###### P141 assigned (was assigned by)

Domain: [E13](#_E18_Physical_Thing_) Attribute Assignment

Range: [E1](#_E1_CRM_Entity_) CRM Entity

Superproperty of:E14 Condition Assessment. P35 has identified (identified by): E3 Condition State

[**E15**](#_E18_Physical_Thing_1) **Identifier Assignment.** [**P37**](#_P37_assigned_(was) **assigned (was assigned by):** [**E42**](#_E42_Identifier_1) **Identifier**

E15 Identifier Assignment. P38 deassigned (was deassigned by): E42 Identifier

E16 Measurement. P40 observed dimension (was observed in): E54 Dimension

E17 Type Assignment. **P42 assigned (was assigned by): E55 Type**

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

Scope note: This property indicates the attribute that was assigned or the item that was related to the item denoted by a property P140 assigned attribute to in an Attribute assignment action.

Examples:

* February 1997 Current Ownership Assessment of Martin Doerr’s silver cup (E13) *assigned* Martin Doerr (E21)
* 01 June 1997 Identifier Assignment of the silver cup donated by Martin Doerr (E15) *assigned* object identifier “232” (E42)

###### P142 used constituent (was used in) [related to LRM-R16 Nomen has part Nomen, also LRM-R17 nomen derivation]

[Actually string of nomen-A *used constituent* string of nomen-B] But the domain of P142 is E15 Identifier Assignment, here we just deal with Nomens. The idea is the same as in Lewis Carroll's portmanteau

Domain: [E15](#_E18_Physical_Thing_1) Identifier Assignment

Range: [E90](#_E90_Symbolic_Object_1) Symbolic Object

Subproperty of: [**E7**](#_E7_Activity_) **Activity.** [**P16**](#_P16_used_specific) **used specific object (was used for):** [**E70**](#_E70_Thing_1) **Thing**

Quantification: (0,n:0,n)

Scope note: This property associates the event of assigning an instance of E42 Identifier with the instances of E90 Symbolic Object that were used as constituents of the identifier.

Examples:

* On June 1, 2001 assigning the personal name identifier “Guillaume, de Machaut, ca. 1300-1377” (E15) *used constituent* “ca. 1300-1377” (E49)
* Assigning a uniform title to the anonymous textual work known as ‘The Adoration of the Shepherds’(E15) *used constituent* ‘Coventry’ (E48)
* Assigning a uniform title to Pina Bausch’s choreographic work entitled ‘Rite of spring’ (E15) *used constituent* ‘(Choreographic Work: Bausch)’(E90)
* Assigning a uniform title to the motion picture directed in 1933 by Merian C. Cooper and Ernest B. Schoedsack and entitled ‘King Kong’ (E15) *used constituent* ‘1933’ (E50)
* Assigning the corporate name identifier ‘Univerza v Ljubljani. Oddelek za bibliotekarstvo’ to The Department for library science of the University of Ljubljana (E15) *used constituent* ‘Univerza v Ljubljani’ (E42)

###### P148 has component (is component of)

Domain: [E89](#_E1_CRM_Entity) Propositional Object

Range: [E89](#_E1_CRM_Entity) Propositional Object

Superproperty of:

Quantification: (0,n:0,n)

Scope note: This property associates an instance of E89 Propositional Object with a structural part of it that is by itself an instance of E89 Propositional Object.

Examples:

* Dante’s “Divine Comedy” (E89) *has component* Dante’s “Hell” (E89)

###### P151 was formed from (participated in)

[Relates to LRM-R32, Collective Agents mergers and splits (Sorry, my mistake: it only works for splits if the group that becomes autonomous did not exist within the broader one but is formed from scratch on tbe occasion of the split). As the previous Collective Agent will no longer exist]

Domain: [E66](#_E66_Formation) Formation

Range: [E74](#_E74_Group_) Group

Subproperty of: E5 Event. P11 had participant (participated in): E39 Actor

Quantification: (0,n:0:n)

Scope note: This property associates an instance of E66 Formation with an instance of E74 Group from which the new group was formed preserving a sense of continuity such as in mission, membership or tradition.

Examples:

* The formation of the House of Bourbon-Conti in 1581 (E66) *was formed from* House of Condé (E74)

###### P165 incorporates (is incorporated in)

Domain: [E73](#_E73_Information_Object) Information Object

Range: [E90](#_E90_Symbolic_Object_1) Symbolic Object

Subproperty of: [E90](#_E90_Symbolic_Object_1) Symbolic Object. [P106](#_P106_is_composed_) is composed of (forms part of): [E90](#_E90_Symbolic_Object_1) Symbolic Object

Quantification: (0,n:0,n)

Scope note: This property associates an instance of E73 Information Object with an instance of E90 Symbolic Object (or any of its subclasses) that was included in it.

This property makes it possible to recognise the autonomous status of the incorporated signs, which were created in a distinct context, and can be incorporated in many distinct self-contained expressions, and to highlight the difference between structural and accidental whole-part relationships between conceptual entities.

It accounts for many cultural facts that are quite frequent and significant: the inclusion of a poem in an anthology, the re-use of an operatic aria in a new opera, the use of a reproduction of a painting for a book cover or a CD booklet, the integration of textual quotations, the presence of lyrics in a song that sets those lyrics to music, the presence of the text of a play in a movie based on that play, etc.

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1. “FRBR” stands for: “Functional Requirements for Bibliographic Records,” after the name of the IFLA Study Group that developed the model. However, current use and understanding of the FRBR model go well beyond that, and the term “FRBR” has now turned into a noun in its own right, used without particular intention to refer to “functionalities,” nor to “requirements,” but rather to the *semantics* of bibliographic records. The *Final Report on Functional Requirements for Bibliographic Records* published in 1998 contained both a study on functional requirements for bibliographic records, and a description of the model known today as “FRBR.” [↑](#footnote-ref-1)
2. In addition to FRBR itself, the FRBR family of conceptual models includes the *Functional Requirements for Authority Data* (FRAD), published in 2009, and the *Functional Requirements for Subject Authority Data* (FRSAD), published in 2011. [↑](#footnote-ref-2)
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7. Tom Delsey and Beth Dulabahn participated in the Working Group’s first meeting in Paris in 2003. [↑](#footnote-ref-7)
8. Alternatively, users who would be eager to avoid the confusion between structural parts and successive members of complex works can use the CIDOC CRM property *P148 has component (is component of),* instead of *R10 has member,* to record the relationship between an instance of F15 Complex Work and its structural parts. [↑](#footnote-ref-8)