### P1 is identified by (identifies)

Domain: [E1](#_E1_CRM_Entity) CRM Entity

Range: [E41](#_E41_Appellation) Appellation

Superproperty of: [E1](#_E1_CRM_Entity) CRM Entity. [P48](#_P48_has_preferred) has preferred identifier (is preferred identifier of): [E42](#_E42_Object_Identifier) 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_by (identifies)) is identified by (identifies): [E44](#_E44_Place_Appellation) Place Appellation

[E71](#_E71_Man-Made_Thing) Man-Made Thing. [P102](#_P102_has_title_(is title of)) has title (is title of): [E35](#_E35_Title) Title

[E39](#_E39_Actor) Actor. [P131](#_P131_is_identified_by (identifies)) 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.

*P1 is identified by (identifies)*, is a shortcut for the path from ‘*E1 CRM Entity*’ through ‘*P140i was attributed by’*, ‘E15 Identifier Assignment’, ‘*P37 assigned*’*,‘*E42 Identifier’, ‘P139 has alternative form’ to ‘E41 Appellation’.

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)

In First Order Logic:

P1(x,y) ⊃ E1(x)

P1(x,y) ⊃ E41(y)

Shortcut: P1(x,y) ≡ (∃z)[E41(y) ˄ E13(z) ∧ P140(z.x) ˄ P141(z,y)]

### P2 has type (is type of)

Domain: [E1](#_E1_CRM_Entity) CRM Entity

Range: [E55](#_E55_Type) Type

Superproperty of. [E1](#_E1_CRM_Entity) CRM Entity.[P137](#_P137_is_exemplified_by (exemplifies) 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.

P2 *has type (is type of)* is a shortcut of the more fully developed path from for the path from ‘*E1 CRM Entity*’ through ‘*P41i was classified* ’, ‘E17 Type Assignment’, ‘*P42 assigned* ’, to ‘E55 Type’.

Examples:

“enquiries@cidoc-crm.org” (E51) *has type* e-mail address (E55)

In First Order Logic:

P2(x,y) ⊃ E1(x)

P2(x,y) ⊃ E55(y)

Shortcut: P2(x,y) ≡ (∃z)[ E17(z) ∧ P41(z.x) ˄ P42(z,y)]

### P7 took place at (witnessed)

Domain: [E4](#_E4_Period) Period

Range: [E53](#_E53_Place) 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 a wider approximation of the geometric area within which the phenomena that characterise the period in question occurred, see below. P7took place at (witnessed) does not convey any meaning other than spatial positioning (frequently on the surface of the earth). For example, the period “Révolution française” can be said to have taken place in “France in 1789”; the “Victorian” period may be said to have taken place in “Britain from 1837-1901” and its colonies, as well as other parts of Europe and North America. An instance of E4 Period can take place at multiple non-contiguous, non-overlapping locations

It is a shortcut of the more fully developed path from E4 Period through *P161 has spatial projection*, E53 Place, *P89 falls within*  to E53 Place. E4 Period is a subclass of E92 Spacetime Volume. By the definition of *P161 has spatial projection* an instance of E4 Period takes place on all its spatial projections, that is, instances of E53 Place. Something happening at a given place can also be considered to happen at a larger place containing the first. For example, the assault on the Bastille July 14th 1789 took place in the area covered by Paris in 1789 but also in the area covered by France in 1789.

Examples:

* the period “Révolution française” (E4) *took place at* the area covered by France in 1789 (E53)

In First Order Logic:

P7(x,y) ⊃ E4(x)

P7(x,y) ⊃ E53(y)

Shortcut: P7(x,y) ≡ (∃z)[ E2(x) ∧ E53(z) ∧ P161(x,z) ˄ P89(z,y)]

### P8 took place on or within (witnessed)

Domain: [E4](#_E4_Period) Period

Range: [E18](#_E19_Physical_Object) Physical Thing

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

Scope note: This property describes the location of an instance of E4 Period with respect to an E19 Physical Object.

P8 took place on or within (witnessed) is a shortcut of the more fully developed path from ‘*E4 Period*’ through ‘*P7 took place at*,’ ‘*E53 Place*’, ‘*P156i occupied by’,* to ‘*E18 Physical Thing*’.

It describes a period that can be located with respect to the space defined by an E19 Physical Object such as a ship or a building. The precise geographical location of the object during the period in question may be unknown or unimportant.

For example, the French and German armistice of 22 June 1940 was signed in the same railway carriage as the armistice of 11 November 1918.

Examples:

* the coronation of Queen Elizabeth II (E7) *took place on or within* Westminster Abbey (E19)

In First Order Logic:

P8(x,y) ⊃ E4(x)

P8(x,y) ⊃ E18(y)

Shortcut: P8(x,y) ≡ (∃z)[E53(z) ˄ P7(x,z) ˄ P156(y,z)]

### P41 classified (was classified by)

Domain: [E17](#_E17_Type_Assignment) Type Assignment

Range: [E1](#_E1_CRM_Entity) CRM Entity

Subproperty of: [E13](#_E13_Attribute_Assignment) Attribute Assignment. [P140](#_P140_assigned_attribute_to (was att) assigned attribute to (was attributed by): [E1](#_E1_CRM_Entity) CRM Entity

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

Scope note: This property records the item to which a type was assigned in an E17 Type Assignment activity.

Any instance of a CRM entity may be assigned a type through type assignment. Type assignment events allow a more detailed path from ‘*E1 CRM Entity’* through *‘P41i was classified by’, ‘E17 Type Assignment’, ‘P42 assigned’, to ‘E55 Type’* for assigning types to objects compared to the shortcut offered by *P2* *has type (is type of)*.

Examples:

* 31 August 1997 classification of silver cup 232 (E17) *classified* silver cup 232 (E22)

In First Order Logic:

P41(x,y) ⊃ E17(x)

P41(x,y) ⊃ E1(y)

P41(x,y) ⊃ P140(x,y)

### P42 assigned (was assigned by)

Domain: [E17](#_E17_Type_Assignment) Type Assignment

Range: [E55](#_E55_Type) Type

Subproperty of: [E13](#_E13_Attribute_Assignment) Attribute Assignment. [P141](#_P141_assigned_(was_assigned by)) assigned (was assigned by): [E1](#_E1_CRM_Entity) CRM Entity

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

Scope note: This property records the type that was assigned to an entity by an E17 Type Assignment activity.

Type assignment events allow a more detailed path from ‘*E1 CRM Entity’* through *‘P41i was classified by’, ‘E17 Type Assignment’, ‘P42 assigned’, to ‘E55 Type’* for assigning types to objects compared to the shortcut offered by *P2* *has type (is type of)*.

For example, a fragment of an antique vessel could be assigned the type “attic red figured belly handled amphora” by expert A. The same fragment could be assigned the type “shoulder handled amphora” by expert B.

A Type may be intellectually constructed independent from assigning an instance of it.

Examples:

* 31 August 1997 classification of silver cup 232 (E17) *assigned* goblet (E55)

In First Order Logic:

P42(x,y) ⊃ E17(x)

P42(x,y)⊃ E55(y)

P42(x,y) ⊃ P141(x,y)

### P43 has dimension (is dimension of)

Domain: [E70](#_E70_Thing) 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 *‘P39i was measured by’, ‘E16 Measurement’, ‘P40 observed dimension’,* to *‘E54 Dimension’*. It offers no information about how and when an E54 Dimension was established, nor by whom.

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 (P91)* mm (E58), *has value (P90)* 224 (E60)

In First Order Logic:

P43(x,y) ⊃ E70(x)

P43(x,y) ⊃ E54(y)

Shortcut: P43(x,y) ≡ (∃z)[E16(z) ˄ P39(z,x) ˄ P40(z,y)]

### P44 has condition (is condition of)

Domain: [E18](#_E18_Physical_Thing) 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 *‘P34i was assessed by, ‘E14 Condition Assessment’, ‘P35 has identified’,* to *‘E3 Condition State’*. It offers no information about how and when the E3 Condition State was established, nor by whom.

An instance of 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)

In First Order Logic:

P44(x,y) ⊃ E18(x)

P44(x,y) ⊃ E3(y)

Shortcut: P44(x,y) ≡ (∃z)[E14(z) ˄ P34(z,x) ˄ P35(z,y)]

### P49 has former or current keeper (is former or current keeper of)

Domain: [E18](#_E18_Physical_Thing) Physical Thing

Range: [E39](#_E39_Actor) Actor

Superproperty of: [E18](#_E18_Physical_Thing) Physical Thing. [P50](#_P50_has_current_keeper (is current ) has current keeper (is current keeper of): [E39](#_E39_Actor) Actor

[E78](#_E78_Collection) Collection.[P109](#_P109_has_current) has current or former curator (is current or former curator 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. This property leaves open the question if parts of this physical thing have been added or removed during the time-spans it has been under the custody of this actor, but it is required that at least a part which can unambiguously be identified as representing the whole has been under this custody for its whole time. The way, in which a representative part is defined, should ensure that it is unambiguous who keeps a part and who the whole and should be consistent with the identity criteria of the kept instance of E18 Physical Thing.

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 *‘P30i* custody transferred through*’, ‘E10 Transfer of Custody’, ‘P28 custody surrendered by’ or ‘P29 custody received by’* to *‘ E39 Actor’*.

Examples:

* paintings from The Iveagh Bequest (E18) *has former or current keeper*  Secure Deliveries Inc. (E40)

In First Order Logic:

P49(x,y) ⊃ E18(x)

P49(x,y) ⊃ E39(y)

Shortcut: P49(x,y) ≡ (∃z)[E10(z) ˄ P30(z,x) ˄ [P28(z,y) ˅ P29(z,y) ]]

### P50 has current keeper (is current keeper of)

Domain: [E18](#_E18_Physical_Thing) Physical Thing

Range: [E39](#_E39_Actor) Actor

Subproperty of: [E18](#_E18_Physical_Thing) Physical Thing. [P49](#_P49_has_former_or current keeper (i) 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 of validity of the record or database containing the statement that uses this property.

*P50 has current keeper (is current keeper of)* is a shortcut for the more detailed path from ‘*E18 Physical Thing’* through*, ‘P30i custody transferred through’, ‘E10 Transfer of Custody’, ‘P29 custody received by’ ,to ‘E39 Actor’.*

Examples:

* paintings from The Iveagh Bequest (E18) *has current keeper*  The National Gallery (E40)

In First Order Logic:

P50(x,y) ⊃ E18(x)

P50(x,y) ⊃ E39(y)

P50(x,y) ⊃ P49(x,y)

Shortcut: P50(x,y) ≡ (∃z)[E10(z) ˄ P30(z,x) ˄ P29(z,y)]

### P51 has former or current owner (is former or current owner of)

Domain: [E18](#_E18_Physical_Thing) Physical Thing

Range: [E39](#_E39_Actor) Actor

Superproperty of: [E18](#_E18_Physical_Thing) Physical Thing. [P52](#_P52_has_current_owner (is current o) has current owner (is current owner of): [E39](#_E39_Actor) 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 *‘P24i changed ownership through’, ‘E8 Acquisition’, ‘P23 transferred title from’, or ‘P22 transferred title to’,*to *‘E39 Actor*.’

Examples:

* paintings from the Iveagh Bequest (E18) *has former or current owner*  Lord Iveagh (E21)

In First Order Logic:

P51(x,y) ⊃ E18(x)

P51(x,y) ⊃ E39(y)

Shortcut: P51(x,y) ≡ (∃z)[E8(z) ˄ P24(z,x) ˄ [P23(z,y) ˅ P22(z,y) ]]

### P52 has current owner (is current owner of)

Domain: [E18](#_E18_Physical_Thing) Physical Thing

Range: [E39](#_E39_Actor) Actor

Subproperty of: [E18](#_E18_Physical_Thing) Physical Thing. [P51](#_P51_has_former_or current owner (is) has former or current owner (is former or current keeper of): [E39](#_E39_Actor) Actor

[E72](#_E72_Legal_Object) Legal Object.[P105](#_P105_right_held) right held by (has right on):[E39](#_E39_Actor) Actor

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

Scope note: This property identifies the E21 Person, E74 Group or E40 Legal Body that was the owner of an instance of E18 Physical Thing at the time of validity of the record or database containing the statement that uses this property.

*P52 has current owner (is current owner of)* is a shortcut for the more detailed path from ‘*E18 Physical Thing through’, ‘P24i changed ownership through, ‘E8 Acquisition’, ‘P22 transferred title to’, to ‘E39 Actor’*, if and only if this acquisition event is the most recent.

Examples:

* paintings from the Iveagh Bequest (E18) *has current owner*  «English Heritage» (E40)

In First Order Logic:

P52 (x,y) ⊃ E18(x)

P52 (x,y) ⊃ E39(y)

P52(x,y) ⊃ P51(x,y)

P52(x,y) ⊃ P105(x,y)

Shortcut: P52(x,y) ≡ (∃z)[E8(z) ˄ P24(z,x) ˄ P22(z,y) ]

### P53 has former or current location (is former or current location of)

Domain: [E18](#_E18_Physical_Thing) Physical Thing

Range: [E53](#_E53_Place) Place

Superproperty of: [E19](#_E19_Physical_Object) Physical Object.[P55](#_P55_has_current_location (currently) has current location (currently holds): [E53](#_E53_Place) Place

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

Scope note: This property allows an instance of E53 Place to be associated as the former or current location of an instance of E18 Physical Thing.

In the case of E19 Physical Objects, the property does not allow any indication of the Time-Span during which the Physical Object was located at this Place, nor if this is the current location.

In the case of immobile objects, the Place would normally correspond to the Place of creation.

*P53 has former or current location* (*is former or current location of)* is a shortcut. A more detailed representation can make use of the fully developed (i.e. indirect) path from ‘*E19 Physical Object’,* though*, ‘P25i moved by’, ‘E9 Move’, ‘P26 moved to’* or *‘P27 moved from’, to ‘ E53 Place’*.

Examples:

* silver cup 232 (E22) *has former or current location* Display Case 4, Room 23, Museum of Oxford (E53)

In First Order Logic:

P53(x,y) ⊃ E18(x)

P53(x,y) ⊃ E53(y)

Shortcut: P53(x,y) ≡ (∃z)[E9(z) ˄ P25(z,x) ˄ [P26(z,y) ˅ P27(z,y) ]]

### P55 has current location (currently holds)

Domain: [E19](#_E19_Physical_Object) Physical Object

Range: [E53](#_E53_Place) Place

Subproperty of: [E18](#_E18_Physical_Thing) Physical Thing. [P53](#_P53_has_former_or current location ) has former or current location (is former or current location of): [E53](#_E53_Place) Place

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

Scope note: This property records the location of an E19 Physical Object at the time of validity of the record or database containing the statement that uses this property.

This property is a specialisation of *P53* *has former or current location (is former or current location of).* It indicates that the E53 Place associated with the E19 Physical Object is the current location of the object. The property does not allow any indication of how long the Object has been at the current location.

*P55 has current location (currently holds)* is a shortcut. A more detailed representation can make use of the fully developed (i.e. indirect) path from ‘*E19 Physical Object’,*through*, ‘P25i moved by’, ‘E9 Move’, ‘P26 moved to’, to, ‘E53 Place*’if and only if this Move is the most recent.

Examples:

* silver cup 232 (E22) *has current location* Display cabinet 23, Room 4, British Museum (E53)

In First Order Logic:

P55(x,y) ⊃ E19(x)

P55(x,y) ⊃ E53(y)

P55(x,y) ⊃ P53(x,y)

Shortcut: P53(x,y) ≡ (∃z)[E9(z) ˄ P25(z,x) ˄ P26(z,y)]

### P56 bears feature (is found on)

Domain: [E19](#_E19_Physical_Object) Physical Object

Range: [E26](#_E26_Physical_Feature) Physical Feature

Subproperty of: [E18](#_E18_Physical_Thing) Physical Thing. [P46](#_P46_is_composed_of (forms part of)) is composed of (forms part of**)**: [E18](#_E18_Physical_Thing) Physical Thing

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

Scope note: This property links an instance of E19 Physical Object to an instance of E26 Physical Feature that it bears.

An E26 Physical Feature can only exist on one object. One object may bear more than one E26 Physical Feature. An E27 Site should be considered as an E26 Physical Feature on the surface of the Earth.

An instance B of E26 Physical Feature being a detail of the structure of another instance A of E26 Physical Feature can be linked to B by use of the property P46 is composed of (forms part of). This implies that the subfeature B is P56i found on the same E19 Physical Object as A.

P56 bears feature (is found on) is a shortcut. A more detailed representation can make use of the fully developed (i.e. indirect) path from ‘*E19 Physical Object’,* through*, ‘P59 has section’, ‘E53 Place’, ‘P53i is former or current location of’,* to*, ‘E26 Physical Feature’*.

Examples:

* silver cup 232 (E22) *bears feature* 32 mm scratch on silver cup 232 (E26)

In First Order Logic:

P56(x,y) ⊃E19(x)

P56(x,y) ⊃ E26(y)

P56(x,y) ⊃ P46(x,y)

Shortcut: P56(x,y) ≡ (∃z)[E53(z) ˄ P59(x,z) ˄ P53(y,z)]

### P58 has section definition (defines section)

Domain: [E18](#_E18_Physical_Thing) Physical Thing

Range: [E46](#_E46_Section_Definition) Section Definition E41 Appellation

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

Scope note: This property links an area (section) named by a E46 Section Definition to the instance of E18 Physical Thing upon which it is found.

The CRM handles sections as locations (instances of E53 Place) within or on E18 Physical Thing that are identified by E46 Section Definitions. Sections need not be discrete and separable components or parts of an object.

This is part of a more developed path from ‘*E18 Physical Thing’* through *‘P58 has section definition’, ‘E46 Section Definition E41 Appellation, P87 is identified by, E44 Place Appellation* that allows a more precise definition of a location found on an object than the shortcut *P59 has section (is located on or within)*.

A particular instance of a Section Definition only applies to one instance of Physical Thing.

Examples:

* HMS Victory (E22) *has section definition* “poop deck of HMS Victory” (E46)

In First Order Logic:

P58(x,y) ⊃ E18(x)

P58(x,y) ⊃ E46(y)

### P59 has section (is located on or within)

Domain: [E18](#_E18_Physical_Thing) 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, ‘E46 Section Definition E41 Appellation, P87i is identified by E44 Place Appellation 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)

In First Order Logic:

P59(x,y) ⊃ E18(x)

P59(x,y) ⊃ E53(y)

Shortcut: P59(x,y) ≡ (∃z)[E41(z) ˄ P58(x,z) ˄ P87(y,z)]

### P62 depicts (is depicted by)

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

Range: [E1](#_E1_CRM_Entity) CRM Entity

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

Scope note: This property identifies something that is depicted by an instance of E24 Physical Man-Made Thing. Depicting is meant in the sense that an E24 Physical Man-Made Thing intentionally shows, through its optical qualities or form, a representation of the entity depicted. Photographs are by default regarded as being intentional in this sense. Anything that is designed to change the properties of the depiction, such as an e-book reader, is specifically excluded. The property does not pertain to inscriptions or any other information encoding.

This property is a shortcut of the more fully developed path from E24 Physical Man-Made Thing through *P65 shows visual item*, E36 Visual Item, *P138 represents,*  E1CRM Entity. P138.1 mode of representation “depiction” allows the nature of the depiction to be refined.

Examples:

* The painting “La Liberté guidant le peuple” by Eugène Delacroix (E84) *depicts* the French “July Revolution” of 1830 (E7)
* the 20 pence coin held by the Department of Coins and Medals of the British Museum under registration number 2006,1101.126 (E24) *depicts* Queen Elizabeth II (E21) *mode of depiction* Profile (E55)

In First Order Logic:

P62(x,y) ⊃ E24(x)

P62(x,y) ⊃ E1(y)

P62(x,y,z) ⊃ [P62(x,y) ∧ E55(z)]

Shortcut: P62(x,y) ≡ (∃z)[E36(z) ˄ P65(x,z) ˄ P138(z,y)]

Properties: P62.1 mode of depiction: [E55](#_E55_Type) Type

### P65 shows visual item (is shown by)

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

Range: [E36](#_E36_Visual_Item) Visual Item

Subproperty of: [E18](#_E18_Physical_Thing) Physical Thing. [P128](#_P128_carries_(is_carried by)) carries (is carried by): [E90](#_E90_Symbolic_Object) Symbolic 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 E24 Physical Man-Made Thing , *P65 shows visual item*, E36 Visual Item, *P138 represents,*E1 CRM Entity which is shortcut by*, P62* *depicts (is depicted by)*.

Examples:

* My T-Shirt (E22) *shows visual item* Mona Lisa (E38)

In First Order Logic: P65(x,y) ⊃ E24(x)

P65(x,y) ⊃ E36(y)

P65(x,y) ⊃ P128(x,y)

### P105 right held by (has right on)

Domain: [E72](#_E72_Legal_Object) Legal Object

Range: [E39](#_E39_Actor) Actor

Superproperty of: [E18](#_E18_Physical_Thing) Physical Thing .[P52](#_P52_has_current_owner (is current o) has current owner (is current owner of): [E39](#_E39_Actor) 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 E72 Legal Object,*P104 is subject to*, E30 Right, *P75i is possessed by,* E39 Actor.

Examples:

* Beatles back catalogue (E73) *right held by* Michael Jackson (E21)

In First Order Logic:

P105(x,y) ⊃ E72(x)

P105(x,y) ⊃ E39(y)

Shortcut: P105(x,y) ≡ (∃z)[E30(z) ˄ P104(x,z) ˄ P75(y,z)]

### P107 has current or former member (is current or former member of)

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 *E74 Group , P144i gained member by, E85 Joining, P143 joined , 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)

In First Order Logic:

P107(x,y) ⊃ E74(x)

P107(x,y) ⊃ E39(y)

P107(x,y,z) ⊃ [P107(x,y) ∧ E55(z)]

Shortcut: P107(x,y) ≡ (∃z)[E85(z) ˄ P144(z,x) ˄ P143(z,y)]

Properties: P107.1 *kind of member*: [E55](#_E55_Type) Type

### P130 shows features of (features are also found on)

Domain: [E70](#_E70_Thing) Thing

Range: [E70](#_E70_Thing) Thing

Superproperty of: [E33](#_E33_Linguistic_Object) Linguistic Object. [P73](#_P73_has_translation_(is translation)i has translation (is translation of): [E33](#_E33_Linguistic_Object) Linguistic Object

[E18](#_E18_Physical_Thing) Physical Thing. [P128](#_P128_carries_(is) carries (is carried by): [E90](#_E90_Symbolic_Object) Symbolic Object

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

Scope note: This property generalises the notions of "copy of" and "similar to" into a directed relationship, where the domain expresses the derivative or influenced item and the range the source or influencing item, if such a direction can be established. The property can also be used to express similarity in cases that can be stated between two objects only, without historical knowledge about its reasons. The property expresses a symmetric relationship in case no direction of influence can be established either from evidence on the item itself or from historical knowledge. This holds in particular for siblings of a derivation process from a common source or non-causal cultural parallels, such as some weaving patterns.

The *P130.1* *kind of similarity* property of the *P130 shows features of (features are also found on)* property enables the relationship between the domain and the range to be further clarified, in the sense from domain to range, if applicable. For example, it may be expressed if both items are product “of the same mould”, or if two texts “contain identical paragraphs”.

If the reason for similarity is a sort of derivation process, i.e., that the creator has used or had in mind the form of a particular thing during the creation or production, this process should be explicitly modelled. In these cases, *P130 shows features of* can be regarded as a shortcut of such a process. However, the current model does not contain any path specific enough to infer this property. Specializations of the CIDOC CRM may however be more explicit, for instance describing the use of moulds etc.

In First Order Logic:

P130 (x,y) ⊃ E70(x)

P130 (x,y) ⊃ E70(y)

P130(x,y,z) ⊃ [P130(x,y) ∧ E55(z)]

P130(x,y) ⊃ P130(y,x)

Properties: P130.1 kind of similarity: [E55](#_E55_Type) Type

### P138 represents (has representation)

Domain: [E36](#_E36_Visual_Item) Visual Item

Range: [E1](#_E1_CRM_Entity) CRM Entity

Subproperty of: [E89](#_E73_Information_Object) Propositional Object. [P67](#_P67_refers_to_(is referred to by)) 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.

This property is also used for the relationship between an original and a digitisation of the original by the use of techniques such as digital photography, flatbed or infrared scanning. Digitisation is here seen as a process with a mechanical, causal component rendering the spatial distribution of structural and optical properties of the original and does not necessarily include any visual similarity identifiable by human observation."

Properties: P138.1 mode of representation: [E55](#_E55_Type) Type

Examples:

* the digital file found at <http://www.emunch.no/N/full/No-MM_N0001-01.jpg> (E36) represents page 1 of Edward Munch's manuscript MM N 1, Munch-museet (E73) mode of representation Digitisation(E55)
* The 3D model VAM\_A.200-1946\_trace\_1M.ply (E73) represents Victoria & Albert Museum’s Madonna and child sculpture (visual work) A.200-1946 (E22) mode of representation 3D surface (E55)

In First Order Logic:

P138(x,y) ⊃ E36(x)

P138(x,y) ⊃ E1(y)

P138(x,y,z) ⊃ [P138(x,y) ∧ E55(z)]

P138(x,y) ⊃ P67(x,y)

### P143 joined (was joined by)

Domain: [E85](#_E85_Joining) Joining

Range: [E39](#_E39_Actor) Actor

Subproperty of: [E5](#_E5_Event) Event. [P11](#_P11_had_participant_(participated i) had participant (participated in): [E39](#_E39_Actor) Actor

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

Scope note: This property identifies the instance of E39 Actor that becomes member of a E74 Group in an E85 Joining.

Joining events allow for describing people becoming members of a group with the more detailed path E74 Group, *P144i gained member by*, E85 Joining, *P143 joined ,* E39 Actor, compared to the shortcut offered by *P107 has current or former member (is current or former member of).*

Examples:

* The election of Sir Isaac Newton as Member of Parliament to the Convention Parliament of 1689 (E85) *joined* Sir Isaac Newton (E21)
* The inauguration of Mikhail Sergeyevich Gorbachev as leader of the Union of Soviet Socialist Republics (USSR) in 1985 (E85) *joined* Mikhail Sergeyevich Gorbachev (E21)
* The implementation of the membership treaty January 1. 1973 between EU and Denmark (E85) joined Denmark (E40)

In First Order Logic:

P143(x,y) ⊃ E85(x)

P143(x,y) ⊃ E39(y)

P143(x,y) ⊃ P11(x,y)

### P144 joined with (gained member by)

Domain: [E85](#_E85_Joining) Joining

Range: [E74](#_E74_Group) Group

Subproperty of: [E5](#_E5_Event) Event. [P11](#_P11_had_participant_(participated i) had participant (participated in): [E39](#_E39_Actor) Actor

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

Scope note: This property identifies the instance of E74 Group of which an instance of E39 Actor becomes a member through an instance of E85 Joining.

Although a Joining activity normally concerns only one instance of E74 Group, it is possible to imagine circumstances under which becoming member of one Group implies becoming member of another Group as well.

Joining events allow for describing people becoming members of a group with a more detailed path from E74 Group through, P144i gained member by, E85 Joining, P143 joined , E39 Actor, compared to the shortcut offered by P107 has current or former member (is current or former member of).

The property P144.1 *kind of member* can be used to specify the type of membership or the role the member has in the group.

Examples:

* The election of Sir Isaac Newton as Member of Parliament to the Convention Parliament of 1689 ([E85](#_E85_Joining)) *joined with* the Convention Parliament (E40)
* The inauguration of Mikhail Sergeyevich Gorbachev as Leader of the Union of Soviet Socialist Republics (USSR) in 1985 (E85) *joined with* the office of Leader of the Union of Soviet Socialist Republics (USSR) (E40) with *P144.1 kind of member* President (E55)
* The implementation of the membership treaty January 1. 1973 between EU and Denmark (E85) *joined with* EU (E40)

In First Order Logic:

P144(x,y) ⊃ E85(x)

P144(x,y)⊃ E74(y)

P144(x,y,z) ⊃ [P144(x,y) ∧ E55(z)]

P144(x,y) ⊃ P11(x,y)

Properties: P144.1 *kind of member*: [E55](#_E55_Type) Type

### P152 has parent (is parent of)

Domain: [E21](#_E21_Person) Person

Range: [E21](#_E21_Person) Person

Subproperty of:

Quantification: (2,n:0:n)

Scope note: This property associates an instance of E21 Person with another instance of E21 Person who plays the role of the first instance’s parent, regardless of whether the relationship is biological parenthood, assumed or pretended biological parenthood or an equivalent legal status of rights and obligations obtained by a social or legal act. This property is, among others, a shortcut of the fully developed paths from ‘*E21Person’ through ‘P98i was born’, ‘E67 Birth’, ‘P96 by mother’ to ‘E21 Person’,* and from ‘*E21Person’ through ‘P98i was born’, ‘E67 Birth’, ‘P97 from father’ to ‘E21 Person’*.

Examples:

* Gaius Octavius (E29) has parent Julius Caesar (E29)
* Steve Jobs (E29) has parent Joanne Simpson (biological mother)(E29)
* Steve Jobs (E29) has parent Clara Jobs (adoption mother) (E29)​

In First Order Logic:

P152(x,y) ⊃ E21(x)

P152(x,y) ⊃ E21(y)

Shortcut: P153(x,y) ≡ (∃z)[E67(z) ˄ [P98(z,x) ˄ P96(z,y) ˅ P98(z,x) ˄ P97(z,y)]]

### P161 has spatial projection (is spatial projection of)

Domain: [E92](#_E92_Spacetime_Volume) Spacetime Volume

Range: [E53](#_E53_Place) Place

Superproperty of: [E18](#_E18_Physical_Thing) Physical Thing. [P156](#_P153_assigned_co-reference) occupies (is occupied by): [E53](#_E53_Place) Place

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

Scope note: This property associates an instance of an E92 Spacetime Volume with an instance of E53 Place that is the result of the spatial projection of the instance of the E92 Spacetime Volume on a reference space.

In general there can be more than one useful reference space (for reference space see *p156 occupies* and *p157 is at rest relative to*) to describe the spatial projection of a spacetime volume, for example, in describing a sea battle, the difference between the battle ship and the seafloor as reference spaces. Thus it can be seen that the projection is not unique.

The spatial projection is the actual spatial coverage of a spacetime volume, which normally has fuzzy boundaries except Spacetime volumes which are geometrically defined in the same reference system as the range of this property are an exception to this and do not have fuzzy boundaries. Modelling explicitly fuzzy spatial projections serves therefore as a common topological reference of different spatial approximations rather than absolute geometric determination, for instance for relating outer or inner spatial boundaries for the respective spacetime volumes.

In case the domain of an instance of *P161 has spatial projection* is an instance of E4 Period, the spatial projection describes all areas that period was ever present at, for instance, the Roman Empire. In case the domain of an instance of *P161 has spatial projection* is an instance of E19 Physical Object, the spatial projection has to be understood as the complete path along which the object has or has been moved during its existence.

This property is part of the fully developed path from E4 Period through *P161 has spatial projection*, E53 Place, *P89 falls within (contains)* to E53 Place, which in turn is shortcut by *P7took place at (witnessed.)*

Example:

The Roman Empire *P161 has spatial projection* all areas ever claimed by Rome.

In First Order Logic:

P161(x,y) ⊃ E92(x),

P161(x,y) ⊃ E53(y)

### P167 at (was place of)

Domain: [E93](#_E93_Spacetime_Snapshot) Presence

Range: [E53](#_E53_Place) Place

Quantification: E93

Scope note: This property associates an instance of E93 Presence with an instance of E53 Place that geometrically includes the spatial projection of the respective instance of E93 Presence. Besides others, this property may be used to state in which space an object has been for some known time, such as a room of a castle or in a drawer. It may also be used to describe a confinement of the spatial extent of some realm during a known time-span. It is a shortcut of the more fully developed path from E93 Presence through P161 has spatial projection, E53 Place, P89 falls within (contains) to E53 Place.

In First Order Logic:

P167(x,y) ⊃ E93(x),

P167(x,y) ⊃ E53(y),

Shortcut: P167(x,y) ≡ (∃z)[ E93(x) ∧ E53(z) ∧ P161(x,z) ∧ P89(z,y)]

### P171 at some place within

Domain: [E53](#_E53_Place) Place

Range: [E94](#_E94_Space_Primitive) Space Primitive

Scope note: This property describes the maximum spatial extent within which an E53 Place falls. Since instances of E53 Places may not have precisely known spatial extents, the CRM supports statements about maximum spatial extents of E53 Places. This property allows an instance of an E53 Places’s maximum spatial extent (i.e. its outer boundary) to be assigned an E94 Space Primitive value.

*P171 at some place within* is a shortcut of the fully developed path from *E53 Place, P89 falls within, E53 Place, P168 place is defined by to E94 Space Primitive* through a not represented declarative Place as defined in CRMgeo (Doerr and Hiebel 2013) to a Space Primitive.

Examples:

* the spatial extent of the Acropolis of Athens (E53) is *at some place within* POLYGON ((37.969172 23.720787, 37.973122 23.721495 37.972741 23.728994, 37.969299 23.729735, 37.969172 23.720787)) (E94)

In First Order Logic:

P171(x,y) ⊃ E53(x),

P167(x,y) ⊃ E94(y),

Shortcut: P167(x,y) ≡ (∃z)[ E53(z) ∧ P89(x,z) ∧ P168(z,y)]

### P172 contains

Domain: [E53](#_E53_Place) Place

Range: [E94](#_E94_Space_Primitive) Space Primitive

Scope note: This property describes a minimum spatial extent which is contained within an E53 Place. Since instances of E53 Place may not have precisely known spatial extents, the CRM supports statements about minimum spatial extents of instances of E53 Place. This property allows an instance of E53 Places’s minimum spatial extent (i.e. its inner boundary or a point being within a Place) to be assigned an E94 Space Primitive value.

This property is a shortcut of the fully developed path: *E53 Place, P89i contains, E53 Place, P168 place is defined by, E94 Space Primitive*

Examples:

* the spatial extent of the Acropolis of Athens (E53) *contains* POINT (37.971431 23.725947) (E94)

In First Order Logic:

P172(x,y) ⊃ E53(x),

P172(x,y) ⊃ E94(y),

Shortcut: P172(x,y) ≡ (∃z)[ E53(z) ∧ P89(z,x) ∧ P168(z,y)]