

Definition of the CRM**ntp**

An Extension of CIDOC CRM to support negative statements

Proposal for approval by CIDOC CRM-SIG

Version 0.1

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Currently Maintained by UAL and Paveprime

Contributors: Martin Doerr, Carlo Meghini, Stephen Stead, Athanasios Velios and others.

# Index

# Introduction

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

# Scope

# Status

# **CRMntp** class hierarchy, aligned with portions from the CIDOC CRM class hierarchies

This class hierarchy lists:

* all classes declared in <Current Family model>
* all classes declared in <other Family model/s[[1]](#footnote-2)> and CIDOC CRM that are declared as superclasses of classes declared in the <Current Family model>,
* all classes declared in <other Family model/s> or CIDOC CRM that are either domain or range for a property declared in the <Current Family model>,
* all classes declared in <other Family model/s> and CIDOC CRM that are either domain or range for a property declared in <other Family model/s> or CIDOC CRM that is declared as superproperty of a property declared in the <Current Family model>
* all classes declared in <other Family model/s> and CIDOC CRM that are either domain or range for a property that is part of a complete path of which a property declared in <Current Family model> is declared to be a shortcut.

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<table>

List of external classes used in <Current Family model>

|  |  |  |  |
| --- | --- | --- | --- |
| Class identifier | Class name | Model | Version |
| S4 | Observation | CRMsci | 1.2 |
|  |  |  |  |

# CRMntp property hierarchy, aligned with portions from the CIDOC CRM property hierarchies

This property hierarchy lists:

* all properties declared in <Current Family model>,
* all properties declared in <Other Family model/s>[[2]](#footnote-3), and CIDOC CRM that are declared as superproperties of properties declared in <Current Family model>,
* all properties declared in <Other Family model/s> and CIDOC CRM that are part of a complete path of which a property declared in <Current Family model>, is declared to be a shortcut.

<table>

List of external properties used in <Current Family model>

|  |  |  |  |
| --- | --- | --- | --- |
| Property identifier | Property name | Model | Version |
| P9 | consists of (forms part of) | CRM base | 6.2 |
|  |  |  |  |

# CRMntp Class Declarations

# CRMntp Property Declarations

TP1 is identified by appellation type

Domain:

E1 CRM Entity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E1 CRM Entity, P1 is identified by (identifies), E41 Appellation, P2 has type, E55 Type

Examples:

TP1(x,y) ⇒ E1(x)  
TP1(x,y) ⇒ E55(y)  
TP1(x,y) ⇔ (∃ z)[E41(z) ∧ P1(x,z) ∧ P2(z,y)]

In First Order Logic:

TP1(x,y) ⇒ E1(x)  
TP1(x,y) ⇒ E55(y)  
TP1(x,y) ⇔ (∃ z)[E41(z) ∧ P1(x,z) ∧ P2(z,y)]

TP3 has note of type

Domain:

E1 CRM Entity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E1 CRM Entity, P3 has note, E62 String, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP4 has time-span of type

Domain:

E2 Temporal Entity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E2 Temporal Entity, P4 has time-span (is time-span of), E52 Time-Span, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP5 consists of condition state of type

Domain:

E3 Condition State

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E3 Condition State, P5 consists of (forms part of), E3 Condition State, P2 has type, E55 Type

Examples:

TP5(x,y) ⇒ E3(x)  
TP5(x,y) ⇒ E55(y)  
TP5(x,y) ⇔ (∃ z)[E3(z) ∧ P5(x,z) ∧ P2(z,y)]

In First Order Logic:

TP5(x,y) ⇒ E3(x)  
TP5(x,y) ⇒ E55(y)  
TP5(x,y) ⇔ (∃ z)[E3(z) ∧ P5(x,z) ∧ P2(z,y)]

TP7 took place at place of type

Domain:

E4 Period

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E4 Period, P7 took place at (witnessed), E53 Place, P2 has type, E55 Type

Examples:

TP7(x,y) ⇒ E4(x)  
TP7(x,y) ⇒ E55(y)  
TP7(x,y) ⇔ (∃ z)[E53(z) ∧ P7(x,z) ∧ P2(z,y)]

In First Order Logic:

TP7(x,y) ⇒ E4(x)  
TP7(x,y) ⇒ E55(y)  
TP7(x,y) ⇔ (∃ z)[E53(z) ∧ P7(x,z) ∧ P2(z,y)]

TP8 took place on or within physical thing of type

Domain:

E4 Period

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E4 Period, P8 took place on or within (witnessed), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP8(x,y) ⇒ E4(x)  
TP8(x,y) ⇒ E55(y)  
TP8(x,y) ⇔ (∃ z)[E18(z) ∧ P8(x,z) ∧ P2(z,y)]

In First Order Logic:

TP8(x,y) ⇒ E4(x)  
TP8(x,y) ⇒ E55(y)  
TP8(x,y) ⇔ (∃ z)[E18(z) ∧ P8(x,z) ∧ P2(z,y)]

TP11 had participant of type

Domain:

E5 Event

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E5 Event, P11 had participant (participated in), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP12 occurred in the presence of persistent item of type

Domain:

E5 Event

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E5 Event, P12 occurred in the presence of (was present at), E77 Persistent Item, P2 has type, E55 Type

Examples:

TP12(x,y) ⇒ E5(x)  
TP12(x,y) ⇒ E55(y)  
TP12(x,y) ⇔ (∃ z)[E77(z) ∧ P12(x,z) ∧ P2(z,y)]

In First Order Logic:

TP12(x,y) ⇒ E5(x)  
TP12(x,y) ⇒ E55(y)  
TP12(x,y) ⇔ (∃ z)[E77(z) ∧ P12(x,z) ∧ P2(z,y)]

TP13 destroyed physical thing of type

Domain:

E6 Destruction

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E6 Destruction, P13 destroyed (was destroyed by), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP13(x,y) ⇒ E6(x)  
TP13(x,y) ⇒ E55(y)  
TP13(x,y) ⇔ (∃ z)[E18(z) ∧ P13(x,z) ∧ P2(z,y)]

In First Order Logic:

TP13(x,y) ⇒ E6(x)  
TP13(x,y) ⇒ E55(y)  
TP13(x,y) ⇔ (∃ z)[E18(z) ∧ P13(x,z) ∧ P2(z,y)]

TP14 carried out by actor of type

Domain:

E7 Activity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E7 Activity, P14 carried out by (performed), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP15 was influenced by entity of type

Domain:

E7 Activity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E7 Activity, P15 was influenced by (influenced), E1 CRM Entity, P2 has type, E55 Type

Examples:

TP15(x,y) ⇒ E7(x)  
TP15(x,y) ⇒ E55(y)  
TP15(x,y) ⇔ (∃ z)[E1(z) ∧ P15(x,z) ∧ P2(z,y)]

In First Order Logic:

TP15(x,y) ⇒ E7(x)  
TP15(x,y) ⇒ E55(y)  
TP15(x,y) ⇔ (∃ z)[E1(z) ∧ P15(x,z) ∧ P2(z,y)]

TP17 was motivated by entity of type

Domain:

E7 Activity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E7 Activity, P17 was motivated by (motivated), E1 CRM Entity, P2 has type, E55 Type

Examples:

TP17(x,y) ⇒ E7(x)  
TP17(x,y) ⇒ E55(y)  
TP17(x,y) ⇔ (∃ z)[E1(z) ∧ P17(x,z) ∧ P2(z,y)]

In First Order Logic:

TP17(x,y) ⇒ E7(x)  
TP17(x,y) ⇒ E55(y)  
TP17(x,y) ⇔ (∃ z)[E1(z) ∧ P17(x,z) ∧ P2(z,y)]

TP20 had specific purpose of event of type

Domain:

E7 Activity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E7 Activity, P20 had specific purpose (was purpose of), E5 Event, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP22 transferred title to actor of type

Domain:

E8 Acquisition

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E8 Acquisition, P22 transferred title to (acquired title through), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP23 transferred title from actor of type

Domain:

E8 Acquisition

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E8 Acquisition, P23 transferred title from (surrendered title through), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP24 transferred title of physical thing of type

Domain:

E8 Acquisition

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E8 Acquisition, P24 transferred title of (changed ownership through), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP24(x,y) ⇒ E8(x)  
TP24(x,y) ⇒ E55(y)  
TP24(x,y) ⇔ (∃ z)[E18(z) ∧ P24(x,z) ∧ P2(z,y)]

In First Order Logic:

TP24(x,y) ⇒ E8(x)  
TP24(x,y) ⇒ E55(y)  
TP24(x,y) ⇔ (∃ z)[E18(z) ∧ P24(x,z) ∧ P2(z,y)]

TP25 moved physical object of type

Domain:

E9 Move

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E9 Move, P25 moved (moved by), E19 Physical Object, P2 has type, E55 Type

Examples:

TP25(x,y) ⇒ E9(x)  
TP25(x,y) ⇒ E55(y)  
TP25(x,y) ⇔ (∃ z)[E19(z) ∧ P25(x,z) ∧ P2(z,y)]

In First Order Logic:

TP25(x,y) ⇒ E9(x)  
TP25(x,y) ⇒ E55(y)  
TP25(x,y) ⇔ (∃ z)[E19(z) ∧ P25(x,z) ∧ P2(z,y)]

TP26 moved to place of type

Domain:

E9 Move

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E9 Move, P26 moved to (was destination of), E53 Place, P2 has type, E55 Type

Examples:

TP26(x,y) ⇒ E9(x)  
TP26(x,y) ⇒ E55(y)  
TP26(x,y) ⇔ (∃ z)[E53(z) ∧ P26(x,z) ∧ P2(z,y)]

In First Order Logic:

TP26(x,y) ⇒ E9(x)  
TP26(x,y) ⇒ E55(y)  
TP26(x,y) ⇔ (∃ z)[E53(z) ∧ P26(x,z) ∧ P2(z,y)]

TP27 moved from place of type

Domain:

E9 Move

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E9 Move, P27 moved from (was origin of), E53 Place, P2 has type, E55 Type

Examples:

TP27(x,y) ⇒ E9(x)  
TP27(x,y) ⇒ E55(y)  
TP27(x,y) ⇔ (∃ z)[E53(z) ∧ P27(x,z) ∧ P2(z,y)]

In First Order Logic:

TP27(x,y) ⇒ E9(x)  
TP27(x,y) ⇒ E55(y)  
TP27(x,y) ⇔ (∃ z)[E53(z) ∧ P27(x,z) ∧ P2(z,y)]

TP28 custody surrendered by actor of type

Domain:

E10 Transfer of Custody

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E10 Transfer of Custody, P28 custody surrendered by (surrendered custody through), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP29 custody received by actor of type

Domain:

E10 Transfer of Custody

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E10 Transfer of Custody, P29 custody received by (received custody through), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP30 transferred custody of physical thing of type

Domain:

E10 Transfer of Custody

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E10 Transfer of Custody, P30 transferred custody of (custody transferred through), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP30(x,y) ⇒ E10(x)  
TP30(x,y) ⇒ E55(y)  
TP30(x,y) ⇔ (∃ z)[E18(z) ∧ P30(x,z) ∧ P2(z,y)]

In First Order Logic:

TP30(x,y) ⇒ E10(x)  
TP30(x,y) ⇒ E55(y)  
TP30(x,y) ⇔ (∃ z)[E18(z) ∧ P30(x,z) ∧ P2(z,y)]

TP31 has modified physical thing of type

Domain:

E11 Modification

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E11 Modification, P31 has modified (was modified by), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP31(x,y) ⇒ E11(x)  
TP31(x,y) ⇒ E55(y)  
TP31(x,y) ⇔ (∃ z)[E18(z) ∧ P31(x,z) ∧ P2(z,y)]

In First Order Logic:

TP31(x,y) ⇒ E11(x)  
TP31(x,y) ⇒ E55(y)  
TP31(x,y) ⇔ (∃ z)[E18(z) ∧ P31(x,z) ∧ P2(z,y)]

TP34 concerned physical thing of type

Domain:

E14 Condition Assessment

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E14 Condition Assessment, P34 concerned (was assessed by), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP34(x,y) ⇒ E14(x)  
TP34(x,y) ⇒ E55(y)  
TP34(x,y) ⇔ (∃ z)[E18(z) ∧ P34(x,z) ∧ P2(z,y)]

In First Order Logic:

TP34(x,y) ⇒ E14(x)  
TP34(x,y) ⇒ E55(y)  
TP34(x,y) ⇔ (∃ z)[E18(z) ∧ P34(x,z) ∧ P2(z,y)]

TP35 has identified condition state of type

Domain:

E14 Condition Assessment

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E14 Condition Assessment, P35 has identified (identified by), E3 Condition State, P2 has type, E55 Type

Examples:

TP35(x,y) ⇒ E14(x)  
TP35(x,y) ⇒ E55(y)  
TP35(x,y) ⇔ (∃ z)[E3(z) ∧ P35(x,z) ∧ P2(z,y)]

In First Order Logic:

TP35(x,y) ⇒ E14(x)  
TP35(x,y) ⇒ E55(y)  
TP35(x,y) ⇔ (∃ z)[E3(z) ∧ P35(x,z) ∧ P2(z,y)]

TP37 assigned identifier of type

Domain:

E15 Identifier Assignement

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E15 Identifier Assignement, P37 assigned (was assigned by), E42 Identifier, P2 has type, E55 Type

Examples:

TP37(x,y) ⇒ E15(x)  
TP37(x,y) ⇒ E55(y)  
TP37(x,y) ⇔ (∃ z)[E42(z) ∧ P37(x,z) ∧ P2(z,y)]

In First Order Logic:

TP37(x,y) ⇒ E15(x)  
TP37(x,y) ⇒ E55(y)  
TP37(x,y) ⇔ (∃ z)[E42(z) ∧ P37(x,z) ∧ P2(z,y)]

TP38 deassigned identifier of type

Domain:

E15 Identifier Assignement

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E15 Identifier Assignement, P38 deassigned (was deassigned by), E42 Identifier, P2 has type, E55 Type

Examples:

TP38(x,y) ⇒ E15(x)  
TP38(x,y) ⇒ E55(y)  
TP38(x,y) ⇔ (∃ z)[E42(z) ∧ P38(x,z) ∧ P2(z,y)]

In First Order Logic:

TP38(x,y) ⇒ E15(x)  
TP38(x,y) ⇒ E55(y)  
TP38(x,y) ⇔ (∃ z)[E42(z) ∧ P38(x,z) ∧ P2(z,y)]

TP39 measured entity of type

Domain:

E16 Measurement

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E16 Measurement, P39 measured (was measured by), E1 CRM Entity, P2 has type, E55 Type

Examples:

TP39(x,y) ⇒ E16(x)  
TP39(x,y) ⇒ E55(y)  
TP39(x,y) ⇔ (∃ z)[E1(z) ∧ P39(x,z) ∧ P2(z,y)]

In First Order Logic:

TP39(x,y) ⇒ E16(x)  
TP39(x,y) ⇒ E55(y)  
TP39(x,y) ⇔ (∃ z)[E1(z) ∧ P39(x,z) ∧ P2(z,y)]

TP40 observed dimension of type

Domain:

E16 Measurement

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E16 Measurement, P40 observed dimension (was observed in), E54 Dimension, P2 has type, E55 Type

Examples:

TP40(x,y) ⇒ E16(x)  
TP40(x,y) ⇒ E55(y)  
TP40(x,y) ⇔ (∃ z)[E54(z) ∧ P40(x,z) ∧ P2(z,y)]

In First Order Logic:

TP40(x,y) ⇒ E16(x)  
TP40(x,y) ⇒ E55(y)  
TP40(x,y) ⇔ (∃ z)[E54(z) ∧ P40(x,z) ∧ P2(z,y)]

TP41 classified entity of type

Domain:

E17 Type Assignment

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E17 Type Assignment, P41 classified (was classified by), E1 CRM Entity, P2 has type, E55 Type

Examples:

TP41(x,y) ⇒ E17(x)  
TP41(x,y) ⇒ E55(y)  
TP41(x,y) ⇔ (∃ z)[E1(z) ∧ P41(x,z) ∧ P2(z,y)]

In First Order Logic:

TP41(x,y) ⇒ E17(x)  
TP41(x,y) ⇒ E55(y)  
TP41(x,y) ⇔ (∃ z)[E1(z) ∧ P41(x,z) ∧ P2(z,y)]

TP43 has dimension of type

Domain:

E70 Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E70 Thing, P43 has dimension (is dimension of), E54 Dimension, P2 has type, E55 Type

Examples:

TP43(x,y) ⇒ E70(x)  
TP43(x,y) ⇒ E55(y)  
TP43(x,y) ⇔ (∃ z)[E54(z) ∧ P43(x,z) ∧ P2(z,y)]

In First Order Logic:

TP43(x,y) ⇒ E70(x)  
TP43(x,y) ⇒ E55(y)  
TP43(x,y) ⇔ (∃ z)[E54(z) ∧ P43(x,z) ∧ P2(z,y)]

TP44 has condition of type

Domain:

E18 Physical Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E18 Physical Thing, P44 has condition (is condition of), E3 Condition State, P2 has type, E55 Type

Examples:

TP44(x,y) ⇒ E18(x)  
TP44(x,y) ⇒ E55(y)  
TP44(x,y) ⇔ (∃ z)[E3(z) ∧ P44(x,z) ∧ P2(z,y)]

In First Order Logic:

TP44(x,y) ⇒ E18(x)  
TP44(x,y) ⇒ E55(y)  
TP44(x,y) ⇔ (∃ z)[E3(z) ∧ P44(x,z) ∧ P2(z,y)]

TP46 is composed of physical thing of type

Domain:

E18 Physical Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E18 Physical Thing, P46 is composed of (forms part of), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP46(x,y) ⇒ E18(x)  
TP46(x,y) ⇒ E55(y)  
TP46(x,y) ⇔ (∃ z)[E18(z) ∧ P46(x,z) ∧ P2(z,y)]

In First Order Logic:

TP46(x,y) ⇒ E18(x)  
TP46(x,y) ⇒ E55(y)  
TP46(x,y) ⇔ (∃ z)[E18(z) ∧ P46(x,z) ∧ P2(z,y)]

TP48 has preferred identifier of type

Domain:

E1 CRM Entity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E1 CRM Entity, P48 has preferred identifier (is preferred identifier of), E42 Identifier, P2 has type, E55 Type

Examples:

TP48(x,y) ⇒ E1(x)  
TP48(x,y) ⇒ E55(y)  
TP48(x,y) ⇔ (∃ z)[E42(z) ∧ P48(x,z) ∧ P2(z,y)]

In First Order Logic:

TP48(x,y) ⇒ E1(x)  
TP48(x,y) ⇒ E55(y)  
TP48(x,y) ⇔ (∃ z)[E42(z) ∧ P48(x,z) ∧ P2(z,y)]

TP49 has former or current keeper of type

Domain:

E18 Physical Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E18 Physical Thing, P49 has former or current keeper (is former or current keeper of), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP50 has current keeper of type

Domain:

E18 Physical Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E18 Physical Thing, P50 has current keeper (is current keeper of) , E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP51 has former or current owner of type

Domain:

E18 Physical Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E18 Physical Thing, P51 has former or current owner (is former or current owner of), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP52 has current owner of type

Domain:

E18 Physical Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E18 Physical Thing, P52 has current owner (is current owner of), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP53 has former or current location of type

Domain:

E18 Physical Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E18 Physical Thing, P53 has former or current location (is former or current location of) , E53 Place, P2 has type, E55 Type

Examples:

TP53(x,y) ⇒ E18(x)  
TP53(x,y) ⇒ E55(y)  
TP53(x,y) ⇔ (∃ z)[E53(z) ∧ P53(x,z) ∧ P2(z,y)]

In First Order Logic:

TP53(x,y) ⇒ E18(x)  
TP53(x,y) ⇒ E55(y)  
TP53(x,y) ⇔ (∃ z)[E53(z) ∧ P53(x,z) ∧ P2(z,y)]

TP54 has current permanent location of type

Domain:

E19 Physical Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E19 Physical Object, P54 has current permanent location (is current permanent location of), E53 Place, P2 has type, E55 Type

Examples:

TP54(x,y) ⇒ E19(x)  
TP54(x,y) ⇒ E55(y)  
TP54(x,y) ⇔ (∃ z)[E53(z) ∧ P54(x,z) ∧ P2(z,y)]

In First Order Logic:

TP54(x,y) ⇒ E19(x)  
TP54(x,y) ⇒ E55(y)  
TP54(x,y) ⇔ (∃ z)[E53(z) ∧ P54(x,z) ∧ P2(z,y)]

TP55 has current location of type

Domain:

E19 Physical Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E19 Physical Object, P55 has current location (currently holds) , E53 Place, P2 has type, E55 Type

Examples:

TP55(x,y) ⇒ E19(x)  
TP55(x,y) ⇒ E55(y)  
TP55(x,y) ⇔ (∃ z)[E53(z) ∧ P55(x,z) ∧ P2(z,y)]

In First Order Logic:

TP55(x,y) ⇒ E19(x)  
TP55(x,y) ⇒ E55(y)  
TP55(x,y) ⇔ (∃ z)[E53(z) ∧ P55(x,z) ∧ P2(z,y)]

TP56 bears feature of type

Domain:

E19 Physical Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E19 Physical Object, P56 bears feature (is found on), E26 Physical Feature, P2 has type, E55 Type

Examples:

TP56(x,y) ⇒ E19(x)  
TP56(x,y) ⇒ E55(y)  
TP56(x,y) ⇔ (∃ z)[E26(z) ∧ P56(x,z) ∧ P2(z,y)]

In First Order Logic:

TP56(x,y) ⇒ E19(x)  
TP56(x,y) ⇒ E55(y)  
TP56(x,y) ⇔ (∃ z)[E26(z) ∧ P56(x,z) ∧ P2(z,y)]

TP59 has section of type

Domain:

E18 Physical Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E18 Physical Thing, P59 has section (is located on or within), E53 Place, P2 has type, E55 Type

Examples:

TP59(x,y) ⇒ E18(x)  
TP59(x,y) ⇒ E55(y)  
TP59(x,y) ⇔ (∃ z)[E53(z) ∧ P59(x,z) ∧ P2(z,y)]

In First Order Logic:

TP59(x,y) ⇒ E18(x)  
TP59(x,y) ⇒ E55(y)  
TP59(x,y) ⇔ (∃ z)[E53(z) ∧ P59(x,z) ∧ P2(z,y)]

TP62 depicts entity of type

Domain:

E24 Physical Human-Made Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E24 Physical Human-Made Thing, P62 depicts  (is depicted by) , E1 CRM Entity, P2 has type, E55 Type

Examples:

TP62(x,y) ⇒ E24(x)  
TP62(x,y) ⇒ E55(y)  
TP62(x,y) ⇔ (∃ z)[E1(z) ∧ P62(x,z) ∧ P2(z,y)]

In First Order Logic:

TP62(x,y) ⇒ E24(x)  
TP62(x,y) ⇒ E55(y)  
TP62(x,y) ⇔ (∃ z)[E1(z) ∧ P62(x,z) ∧ P2(z,y)]

TP65 shows visual item of type

Domain:

E24 Physical Human-Made Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E24 Physical Human-Made Thing, P65 shows visual item (is shown by), E36 Visual Item, P2 has type, E55 Type

Examples:

TP65(x,y) ⇒ E24(x)  
TP65(x,y) ⇒ E55(y)  
TP65(x,y) ⇔ (∃ z)[E36(z) ∧ P65(x,z) ∧ P2(z,y)]

In First Order Logic:

TP65(x,y) ⇒ E24(x)  
TP65(x,y) ⇒ E55(y)  
TP65(x,y) ⇔ (∃ z)[E36(z) ∧ P65(x,z) ∧ P2(z,y)]

TP67 refers to entity of type

Domain:

E89 Propositional Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E89 Propositional Object, P67 refers to ( is referred to by), E1 CRM Entity, P2 has type, E55 Type

Examples:

TP67(x,y) ⇒ E89(x)  
TP67(x,y) ⇒ E55(y)  
TP67(x,y) ⇔ (∃ z)[E1(z) ∧ P67(x,z) ∧ P2(z,y)]

In First Order Logic:

TP67(x,y) ⇒ E89(x)  
TP67(x,y) ⇒ E55(y)  
TP67(x,y) ⇔ (∃ z)[E1(z) ∧ P67(x,z) ∧ P2(z,y)]

TP69 has association with design or procedure of type

Domain:

E29 Design or Procedure

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E29 Design or Procedure, P69 has association with (is associated with), E29 Design or Procedure, P2 has type, E55 Type

Examples:

TP69(x,y) ⇒ E29(x)  
TP69(x,y) ⇒ E55(y)  
TP69(x,y) ⇔ (∃ z)[E29(z) ∧ P69(x,z) ∧ P2(z,y)]

In First Order Logic:

TP69(x,y) ⇒ E29(x)  
TP69(x,y) ⇒ E55(y)  
TP69(x,y) ⇔ (∃ z)[E29(z) ∧ P69(x,z) ∧ P2(z,y)]

TP70 documents entity of type

Domain:

E31 Document

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E31 Document, P70 documents (is documented in), E1 CRM Entity, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP71 lists entity of type

Domain:

E32 Authority Document

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E32 Authority Document, P71 lists (is listed in), E1 CRM Entity, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP73 has translation linguistic object of type

Domain:

E33 Linguistic Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E33 Linguistic Object, P73 has translation, E33 Linguistic Object, P2 has type, E55 Type

Examples:

TP73(x,y) ⇒ E33(x)  
TP73(x,y) ⇒ E55(y)  
TP73(x,y) ⇔ (∃ z)[E33(z) ∧ P73(x,z) ∧ P2(z,y)]

In First Order Logic:

TP73(x,y) ⇒ E33(x)  
TP73(x,y) ⇒ E55(y)  
TP73(x,y) ⇔ (∃ z)[E33(z) ∧ P73(x,z) ∧ P2(z,y)]

TP74 has current of former residence of type

Domain:

E39 Actor

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E39 Actor, P74 has current or former residence (is current or former residence of), E53 Place, P2 has type, E55 Type

Examples:

TP74(x,y) ⇒ E39(x)  
TP74(x,y) ⇒ E55(y)  
TP74(x,y) ⇔ (∃ z)[E53(z) ∧ P74(x,z) ∧ P2(z,y)]

In First Order Logic:

TP74(x,y) ⇒ E39(x)  
TP74(x,y) ⇒ E55(y)  
TP74(x,y) ⇔ (∃ z)[E53(z) ∧ P74(x,z) ∧ P2(z,y)]

TP75 possesses right of type

Domain:

E39 Actor

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E39 Actor, P75 possesses (is possessed by), E30 Right, P2 has type, E55 Type

Examples:

TP75(x,y) ⇒ E39(x)  
TP75(x,y) ⇒ E55(y)  
TP75(x,y) ⇔ (∃ z)[E30(z) ∧ P75(x,z) ∧ P2(z,y)]

In First Order Logic:

TP75(x,y) ⇒ E39(x)  
TP75(x,y) ⇒ E55(y)  
TP75(x,y) ⇔ (∃ z)[E30(z) ∧ P75(x,z) ∧ P2(z,y)]

TP76 has contact point of type

Domain:

E39 Actor

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E39 Actor, P76 has contact point (provides access to) , E41 Appellation, P2 has type, E55 Type

Examples:

TP76(x,y) ⇒ E39(x)  
TP76(x,y) ⇒ E55(y)  
TP76(x,y) ⇔ (∃ z)[E41(z) ∧ P76(x,z) ∧ P2(z,y)]

In First Order Logic:

TP76(x,y) ⇒ E39(x)  
TP76(x,y) ⇒ E55(y)  
TP76(x,y) ⇔ (∃ z)[E41(z) ∧ P76(x,z) ∧ P2(z,y)]

TP79 beginning is qualified by note of type

Domain:

E52 Time-Span

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E52 Time-Span, P79 beginning is qualified by, E62 String, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP80 end is qualified by note of type

Domain:

E52 Time-Span

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E52 Time-Span, P80 end is qualified by, E62 String, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP89 falls within place of type

Domain:

E53 Place

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E53 Place, P89 falls within (contains), E53 Place, P2 has type, E55 Type

Examples:

TP89(x,y) ⇒ E53(x)  
TP89(x,y) ⇒ E55(y)  
TP89(x,y) ⇔ (∃ z)[E53(z) ∧ P89(x,z) ∧ P2(z,y)]

In First Order Logic:

TP89(x,y) ⇒ E53(x)  
TP89(x,y) ⇒ E55(y)  
TP89(x,y) ⇔ (∃ z)[E53(z) ∧ P89(x,z) ∧ P2(z,y)]

TP92 brought into existence persistent item of type

Domain:

E63 Beginning of Existence

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E63 Beginning of Existence, P92 brought into existence (was brought into existence by), E77 Persistent Item, P2 has type, E55 Type

Examples:

TP92(x,y) ⇒ E63(x)  
TP92(x,y) ⇒ E55(y)  
TP92(x,y) ⇔ (∃ z)[E77(z) ∧ P92(x,z) ∧ P2(z,y)]

In First Order Logic:

TP92(x,y) ⇒ E63(x)  
TP92(x,y) ⇒ E55(y)  
TP92(x,y) ⇔ (∃ z)[E77(z) ∧ P92(x,z) ∧ P2(z,y)]

TP93 took out of existence persistent item of type

Domain:

E64 End of Existence

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E64 End of Existence, P93 took out of existence (was taken out of existence by), E77 Persistent Item, P2 has type, E55 Type

Examples:

TP93(x,y) ⇒ E64(x)  
TP93(x,y) ⇒ E55(y)  
TP93(x,y) ⇔ (∃ z)[E77(z) ∧ P93(x,z) ∧ P2(z,y)]

In First Order Logic:

TP93(x,y) ⇒ E64(x)  
TP93(x,y) ⇒ E55(y)  
TP93(x,y) ⇔ (∃ z)[E77(z) ∧ P93(x,z) ∧ P2(z,y)]

TP94 has created conceptual object of type

Domain:

E65 Creation

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E65 Creation, P94 has created (was created by), E28 Conceptual Object, P2 has type, E55 Type

Examples:

TP94(x,y) ⇒ E65(x)  
TP94(x,y) ⇒ E55(y)  
TP94(x,y) ⇔ (∃ z)[E28(z) ∧ P94(x,z) ∧ P2(z,y)]

In First Order Logic:

TP94(x,y) ⇒ E65(x)  
TP94(x,y) ⇒ E55(y)  
TP94(x,y) ⇔ (∃ z)[E28(z) ∧ P94(x,z) ∧ P2(z,y)]

TP95 has formed group of type

Domain:

E66 Formation

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E66 Formation, P95 has formed (was formed by), E74 Group, P2 has type, E55 Type

Examples:

TP95(x,y) ⇒ E66(x)  
TP95(x,y) ⇒ E55(y)  
TP95(x,y) ⇔ (∃ z)[E74(z) ∧ P95(x,z) ∧ P2(z,y)]

In First Order Logic:

TP95(x,y) ⇒ E66(x)  
TP95(x,y) ⇒ E55(y)  
TP95(x,y) ⇔ (∃ z)[E74(z) ∧ P95(x,z) ∧ P2(z,y)]

TP96 by mother of type

Domain:

E67 Birth

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E67 Birth, P96 by mother (gave birth), E21 Person, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP97 from father of type

Domain:

E67 Birth

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E67 Birth, P97 from father (was father for), E21 Person, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP98 brought into life person of type

Domain:

E67 Birth

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E67 Birth, P98 brought into life (was born), E21 Person, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP99 dissolved group of type

Domain:

E68 Dissolution

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E68 Dissolution, P99 dissolved (was dissolved by), E74 Group, P2 has type, E55 Type

Examples:

TP99(x,y) ⇒ E68(x)  
TP99(x,y) ⇒ E55(y)  
TP99(x,y) ⇔ (∃ z)[E74(z) ∧ P99(x,z) ∧ P2(z,y)]

In First Order Logic:

TP99(x,y) ⇒ E68(x)  
TP99(x,y) ⇒ E55(y)  
TP99(x,y) ⇔ (∃ z)[E74(z) ∧ P99(x,z) ∧ P2(z,y)]

TP100 was death of person of type

Domain:

E69 Death

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E69 Death, P100 was death of (died in), E21 Person, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP102 has title of type

Domain:

E71 Human-Made Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E71 Human-Made Thing, P102 has title (is title of), E35 Title, P2 has type, E55 Type

Examples:

TP102(x,y) ⇒ E71(x)  
TP102(x,y) ⇒ E55(y)  
TP102(x,y) ⇔ (∃ z)[E35(z) ∧ P102(x,z) ∧ P2(z,y)]

In First Order Logic:

TP102(x,y) ⇒ E71(x)  
TP102(x,y) ⇒ E55(y)  
TP102(x,y) ⇔ (∃ z)[E35(z) ∧ P102(x,z) ∧ P2(z,y)]

TP104 is subject to right of type

Domain:

E72 Legal Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E72 Legal Object, P104 is subject to (applies to), E30 Right, P2 has type, E55 Type

Examples:

TP104(x,y) ⇒ E72(x)  
TP104(x,y) ⇒ E55(y)  
TP104(x,y) ⇔ (∃ z)[E30(z) ∧ P104(x,z) ∧ P2(z,y)]

In First Order Logic:

TP104(x,y) ⇒ E72(x)  
TP104(x,y) ⇒ E55(y)  
TP104(x,y) ⇔ (∃ z)[E30(z) ∧ P104(x,z) ∧ P2(z,y)]

TP105 right held by actor of type

Domain:

E72 Legal Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E72 Legal Object, P105 right held by (has right on), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP106 is composed of symbolic object of type

Domain:

E90 Symbolic Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E90 Symbolic Object, P106 is composed of (forms part of), E90 Symbolic Object, P2 has type, E55 Type

Examples:

TP106(x,y) ⇒ E90(x)  
TP106(x,y) ⇒ E55(y)  
TP106(x,y) ⇔ (∃ z)[E90(z) ∧ P106(x,z) ∧ P2(z,y)]

In First Order Logic:

TP106(x,y) ⇒ E90(x)  
TP106(x,y) ⇒ E55(y)  
TP106(x,y) ⇔ (∃ z)[E90(z) ∧ P106(x,z) ∧ P2(z,y)]

TP107 has current or former member of type

Domain:

E74 Group

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E74 Group, P107 has current or former member (is current or former member of), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP108 has produced physical human-made thing of type

Domain:

E12 Production

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E12 Production, P108 has produced (was produced by), E24 Physical Human-Made Thing, P2 has type, E55 Type

Examples:

TP108(x,y) ⇒ E12(x)  
TP108(x,y) ⇒ E55(y)  
TP108(x,y) ⇔ (∃ z)[E24(z) ∧ P108(x,z) ∧ P2(z,y)]

In First Order Logic:

TP108(x,y) ⇒ E12(x)  
TP108(x,y) ⇒ E55(y)  
TP108(x,y) ⇔ (∃ z)[E24(z) ∧ P108(x,z) ∧ P2(z,y)]

TP109 has current or former curator of type

Domain:

E78 Curated Holding

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E78 Curated Holding, P109 has current or former curator (is current or former curator of), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP110 augmented physical human-made thing of type

Domain:

E79 Part Addition

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E79 Part Addition, P110 augmented (was augmented by), E24 Physical Human-Made Thing, P2 has type, E55 Type

Examples:

TP110(x,y) ⇒ E79(x)  
TP110(x,y) ⇒ E55(y)  
TP110(x,y) ⇔ (∃ z)[E24(z) ∧ P110(x,z) ∧ P2(z,y)]

In First Order Logic:

TP110(x,y) ⇒ E79(x)  
TP110(x,y) ⇒ E55(y)  
TP110(x,y) ⇔ (∃ z)[E24(z) ∧ P110(x,z) ∧ P2(z,y)]

TP111 added physical thing of type

Domain:

E79 Part Addition

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E79 Part Addition, P111 added (was added by), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP111(x,y) ⇒ E79(x)  
TP111(x,y) ⇒ E55(y)  
TP111(x,y) ⇔ (∃ z)[E18(z) ∧ P111(x,z) ∧ P2(z,y)]

In First Order Logic:

TP111(x,y) ⇒ E79(x)  
TP111(x,y) ⇒ E55(y)  
TP111(x,y) ⇔ (∃ z)[E18(z) ∧ P111(x,z) ∧ P2(z,y)]

TP112 diminished physical human-made thing of type

Domain:

E80 Part Removal

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E80 Part Removal, P112 diminished (was diminished by), E24 Physical Human-Made Thing, P2 has type, E55 Type

Examples:

TP112(x,y) ⇒ E80(x)  
TP112(x,y) ⇒ E55(y)  
TP112(x,y) ⇔ (∃ z)[E24(z) ∧ P112(x,z) ∧ P2(z,y)]

In First Order Logic:

TP112(x,y) ⇒ E80(x)  
TP112(x,y) ⇒ E55(y)  
TP112(x,y) ⇔ (∃ z)[E24(z) ∧ P112(x,z) ∧ P2(z,y)]

TP113 removed physical thing of type

Domain:

E80 Part Removal

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E80 Part Removal, P113 removed (was removed by), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP113(x,y) ⇒ E80(x)  
TP113(x,y) ⇒ E55(y)  
TP113(x,y) ⇔ (∃ z)[E18(z) ∧ P113(x,z) ∧ P2(z,y)]

In First Order Logic:

TP113(x,y) ⇒ E80(x)  
TP113(x,y) ⇒ E55(y)  
TP113(x,y) ⇔ (∃ z)[E18(z) ∧ P113(x,z) ∧ P2(z,y)]

TP121 overlaps with place of type

Domain:

E53 Place

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E53 Place, P121 overlaps with, E53 Place, P2 has type, E55 Type

Examples:

TP121(x,y) ⇒ E53(x)  
TP121(x,y) ⇒ E55(y)  
TP121(x,y) ⇔ (∃ z)[E53(z) ∧ P121(x,z) ∧ P2(z,y)]

In First Order Logic:

TP121(x,y) ⇒ E53(x)  
TP121(x,y) ⇒ E55(y)  
TP121(x,y) ⇔ (∃ z)[E53(z) ∧ P121(x,z) ∧ P2(z,y)]

TP122 borders with place of type

Domain:

E53 Place

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E53 Place, P122 borders with, E53 Place, P2 has type, E55 Type

Examples:

TP122(x,y) ⇒ E53(x)  
TP122(x,y) ⇒ E55(y)  
TP122(x,y) ⇔ (∃ z)[E53(z) ∧ P122(x,z) ∧ P2(z,y)]

In First Order Logic:

TP122(x,y) ⇒ E53(x)  
TP122(x,y) ⇒ E55(y)  
TP122(x,y) ⇔ (∃ z)[E53(z) ∧ P122(x,z) ∧ P2(z,y)]

TP123 resulted in persistent item of type

Domain:

E81 Transformation

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E81 Transformation, P123 resulted in (resulted from), E77 Persistent Item, P2 has type, E55 Type

Examples:

TP123(x,y) ⇒ E81(x)  
TP123(x,y) ⇒ E55(y)  
TP123(x,y) ⇔ (∃ z)[E77(z) ∧ P123(x,z) ∧ P2(z,y)]

In First Order Logic:

TP123(x,y) ⇒ E81(x)  
TP123(x,y) ⇒ E55(y)  
TP123(x,y) ⇔ (∃ z)[E77(z) ∧ P123(x,z) ∧ P2(z,y)]

TP124 transformed persistent item of type

Domain:

E81 Transformation

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E81 Transformation, P124 transformed (was transformed by), E77 Persistent Item, P2 has type, E55 Type

Examples:

TP124(x,y) ⇒ E81(x)  
TP124(x,y) ⇒ E55(y)  
TP124(x,y) ⇔ (∃ z)[E77(z) ∧ P124(x,z) ∧ P2(z,y)]

In First Order Logic:

TP124(x,y) ⇒ E81(x)  
TP124(x,y) ⇒ E55(y)  
TP124(x,y) ⇔ (∃ z)[E77(z) ∧ P124(x,z) ∧ P2(z,y)]

TP128 carries symbolic object of type

Domain:

E18 Physical Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E18 Physical Thing, P128 carries (is carried by), E90 Symbolic Object, P2 has type, E55 Type

Examples:

TP128(x,y) ⇒ E18(x)  
TP128(x,y) ⇒ E55(y)  
TP128(x,y) ⇔ (∃ z)[E90(z) ∧ P128(x,z) ∧ P2(z,y)]

In First Order Logic:

TP128(x,y) ⇒ E18(x)  
TP128(x,y) ⇒ E55(y)  
TP128(x,y) ⇔ (∃ z)[E90(z) ∧ P128(x,z) ∧ P2(z,y)]

TP129 is about entity of type

Domain:

E89 Propositional Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E89 Propositional Object, P129 is about (is subject of), E1 CRM Entity, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP130 shows features of thing of type

Domain:

E70 Thing

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E70 Thing, P130 shows features of (features are also found on), E70 Thing, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP134 continued activity of type

Domain:

E7 Activity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E7 Activity, P134 continued (was continued by), E7 Activity, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP138 represents entity of type

Domain:

E36 Visual Item

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E36 Visual Item, P138 represents (has representation), E1 CRM Entity, P2 has type, E55 Type

Examples:

TP138(x,y) ⇒ E36(x)  
TP138(x,y) ⇒ E55(y)  
TP138(x,y) ⇔ (∃ z)[E1(z) ∧ P138(x,z) ∧ P2(z,y)]

In First Order Logic:

TP138(x,y) ⇒ E36(x)  
TP138(x,y) ⇒ E55(y)  
TP138(x,y) ⇔ (∃ z)[E1(z) ∧ P138(x,z) ∧ P2(z,y)]

TP139 has alternative form of type

Domain:

E41 Appellation

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E41 Appellation, P139 has alternative form, E41 Appellation, P2 has type, E55 Type

Examples:

TP139(x,y) ⇒ E41(x)  
TP139(x,y) ⇒ E55(y)  
TP139(x,y) ⇔ (∃ z)[E41(z) ∧ P139(x,z) ∧ P2(z,y)]

In First Order Logic:

TP139(x,y) ⇒ E41(x)  
TP139(x,y) ⇒ E55(y)  
TP139(x,y) ⇔ (∃ z)[E41(z) ∧ P139(x,z) ∧ P2(z,y)]

TP140 assigned attribute to entity of type

Domain:

E13 Attribute Assignment

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E13 Attribute Assignment, P140 assigned attribute to (was attributed by), E1 CRM Entity, P2 has type, E55 Type

Examples:

TP140(x,y) ⇒ E13(x)  
TP140(x,y) ⇒ E55(y)  
TP140(x,y) ⇔ (∃ z)[E1(z) ∧ P140(x,z) ∧ P2(z,y)]

In First Order Logic:

TP140(x,y) ⇒ E13(x)  
TP140(x,y) ⇒ E55(y)  
TP140(x,y) ⇔ (∃ z)[E1(z) ∧ P140(x,z) ∧ P2(z,y)]

TP141 assigned entity of type

Domain:

E13 Attribute Assignement

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E13 Attribute Assignement, P141 assigned (was assigned by), E1 CRM Entity, P2 has type, E55 Type

Examples:

TP141(x,y) ⇒ E13(x)  
TP141(x,y) ⇒ E55(y)  
TP141(x,y) ⇔ (∃ z)[E1(z) ∧ P141(x,z) ∧ P2(z,y)]

In First Order Logic:

TP141(x,y) ⇒ E13(x)  
TP141(x,y) ⇒ E55(y)  
TP141(x,y) ⇔ (∃ z)[E1(z) ∧ P141(x,z) ∧ P2(z,y)]

TP142 used constituent of type

Domain:

E15 Identifier Assignment

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E15 Identifier Assignment, P142 used constituent (was used in), E90 Symbolic Object, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP143 joined actor of type

Domain:

E85 Joining

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E85 Joining, P143 joined (was joined by), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP144 joined with group of type

Domain:

E85 Joining

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E85 Joining, P144 joined with (gained member by), E74 Group, P2 has type, E55 Type

Examples:

TP144(x,y) ⇒ E85(x)  
TP144(x,y) ⇒ E55(y)  
TP144(x,y) ⇔ (∃ z)[E74(z) ∧ P144(x,z) ∧ P2(z,y)]

In First Order Logic:

TP144(x,y) ⇒ E85(x)  
TP144(x,y) ⇒ E55(y)  
TP144(x,y) ⇔ (∃ z)[E74(z) ∧ P144(x,z) ∧ P2(z,y)]

TP145 separated actor of type

Domain:

E86 Leaving

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E86 Leaving, P145 separated (left by), E39 Actor, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP146 separated from group of type

Domain:

E86 Leaving

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E86 Leaving, P146 separated from (lost member by), E74 Group, P2 has type, E55 Type

Examples:

TP146(x,y) ⇒ E86(x)  
TP146(x,y) ⇒ E55(y)  
TP146(x,y) ⇔ (∃ z)[E74(z) ∧ P146(x,z) ∧ P2(z,y)]

In First Order Logic:

TP146(x,y) ⇒ E86(x)  
TP146(x,y) ⇒ E55(y)  
TP146(x,y) ⇔ (∃ z)[E74(z) ∧ P146(x,z) ∧ P2(z,y)]

TP147 curated curated holding of type

Domain:

E87 Curation Activity

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E87 Curation Activity, P147 curated (was curated by), E78 Curated Holding, P2 has type, E55 Type

Examples:

TP147(x,y) ⇒ E87(x)  
TP147(x,y) ⇒ E55(y)  
TP147(x,y) ⇔ (∃ z)[E78(z) ∧ P147(x,z) ∧ P2(z,y)]

In First Order Logic:

TP147(x,y) ⇒ E87(x)  
TP147(x,y) ⇒ E55(y)  
TP147(x,y) ⇔ (∃ z)[E78(z) ∧ P147(x,z) ∧ P2(z,y)]

TP148 has component of type

Domain:

E89 Propositional Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E89 Propositional Object, P148 has component (is component of), E89 Propositional Object, P2 has type, E55 Type

Examples:

TP148(x,y) ⇒ E89(x)  
TP148(x,y) ⇒ E55(y)  
TP148(x,y) ⇔ (∃ z)[E89(z) ∧ P148(x,z) ∧ P2(z,y)]

In First Order Logic:

TP148(x,y) ⇒ E89(x)  
TP148(x,y) ⇒ E55(y)  
TP148(x,y) ⇔ (∃ z)[E89(z) ∧ P148(x,z) ∧ P2(z,y)]

TP151 was formed from group of type

Domain:

E66 Formation

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E66 Formation, P151 was formed from (participated in), E74 Group, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP152 has parent of type

Domain:

E21 Person

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E21 Person, P152 has parent(is parent of), E21 Person, P2 has type, E55 Type

Examples:

## In First Order Logic:

TP157 is at rest relative to physical thing of type

Domain:

E53 Place

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E53 Place, P157 is at rest relative to (provides reference space for), E18 Physical Thing, P2 has type, E55 Type

Examples:

TP157(x,y) ⇒ E53(x)  
TP157(x,y) ⇒ E55(y)  
TP157(x,y) ⇔ (∃ z)[E18(z) ∧ P157(x,z) ∧ P2(z,y)]

In First Order Logic:

TP157(x,y) ⇒ E53(x)  
TP157(x,y) ⇒ E55(y)  
TP157(x,y) ⇔ (∃ z)[E18(z) ∧ P157(x,z) ∧ P2(z,y)]

TP165 incorporates symbolic object of type

Domain:

E73 Information Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E73 Information Object, P165 incorporates (is incorporated in), E90 Symbolic Object, P2 has type, E55 Type

Examples:

TP165(x,y) ⇒ E73(x)  
TP165(x,y) ⇒ E55(y)  
TP165(x,y) ⇔ (∃ z)[E90(z) ∧ P165(x,z) ∧ P2(z,y)]

In First Order Logic:

TP165(x,y) ⇒ E73(x)  
TP165(x,y) ⇒ E55(y)  
TP165(x,y) ⇔ (∃ z)[E90(z) ∧ P165(x,z) ∧ P2(z,y)]

TP179 had sales price of monetary amount of type

Domain:

E96 Purchase

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E96 Purchase, P179 had sales price (was sales price of), E97 Monetary Amount, P2 has type, E55 Type

Examples:

TP179(x,y) ⇒ E96(x)  
TP179(x,y) ⇒ E55(y)  
TP179(x,y) ⇔ (∃ z)[E97(z) ∧ P179(x,z) ∧ P2(z,y)]

In First Order Logic:

TP179(x,y) ⇒ E96(x)  
TP179(x,y) ⇒ E55(y)  
TP179(x,y) ⇔ (∃ z)[E97(z) ∧ P179(x,z) ∧ P2(z,y)]

TP187 has production plan of type

Domain:

E99 Product Type

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E99 Product Type, P187 has production plan (is production plan for), E29 Design or Procedure, P2 has type, E55 Type

Examples:

TP187(x,y) ⇒ E99(x)  
TP187(x,y) ⇒ E55(y)  
TP187(x,y) ⇔ (∃ z)[E29(z) ∧ P187(x,z) ∧ P2(z,y)]

In First Order Logic:

TP187(x,y) ⇒ E99(x)  
TP187(x,y) ⇒ E55(y)  
TP187(x,y) ⇔ (∃ z)[E29(z) ∧ P187(x,z) ∧ P2(z,y)]

TP188 requires production tool of type

Domain:

E99 Product Type

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E99 Product Type, P188 requires production tool (is production tool for), E19 Physical Object, P2 has type, E55 Type

Examples:

TP188(x,y) ⇒ E99(x)  
TP188(x,y) ⇒ E55(y)  
TP188(x,y) ⇔ (∃ z)[E19(z) ∧ P188(x,z) ∧ P2(z,y)]

In First Order Logic:

TP188(x,y) ⇒ E99(x)  
TP188(x,y) ⇒ E55(y)  
TP188(x,y) ⇔ (∃ z)[E19(z) ∧ P188(x,z) ∧ P2(z,y)]

TP190 has symbolic content of type

Domain:

E90 Symbolic Object

Range:

E55 Type

Superproperty of:

todo

Subproperty of:

todo

Quantification:

todo

Scope note:

This property is a shortcut of the fully developed path: E90 Symbolic Object, P190 has symbolic content, E62 String, P2 has type, E55 Type

Examples:

## In First Order Logic:

# Amendments

1. It should be clearly mentioned the versions of other models. For example:

   CRM <family model name> ver. XX [↑](#footnote-ref-2)
2. It should be clearly mentioned the versions of other models. For example:

   CRM <family model name> ver. XX [↑](#footnote-ref-3)