Issue 663 – 58 SIG

In the 58th CIDOC CRM SIG & 51st FRBR/LRMoo SIG Meeting, the SIG went through the scope notes of the properties in relation to Jxx1 One-Proposition Set (HW by MD & PF). The properties in question are:

* **Jxx6 has domain (is domain of)**
* **Jxx7 has range (is range of)**
* **Jxx8 has property type (is property type of)**
* **Jxx9 assigned proposition (is assigned by)**

The details of the definitions plus some comments by the SIG can be found below {[Jxx6](#_Jxx6_has_domain), [Jxx7](#_Jxx7_has_range), [Jxx8](#_Jxx8_has_property), [Jxx9](#_Jxx9_assigned_proposition)}:

**Nb**. The SIG did not manage to go through the proposed FOL axioms

### Overall discussion (in terms of how to proceed):

* **HW:** MD & PF to incorporate adjustments proposed by the SIG and then call for a vote.
* **Nb.** Make sure that there are examples illustrating how the properties should be used (and, where necessary, mark the equivalences with the CRMbase properties)
* The FOL axioms will be reviewed at the next SIG meeting, in Plovdiv.

*Paris, March 2024*

## Jxx6 has domain (is domain of):

### Proposed definition:

**Jxx6 has domain (is domain of)**

Domain:

Ixx1 One-Proposition Set

Range:

E1 CRM Entity

Superproperty of:

Subproperty of:

I4 Proposition Set. Jxx4 contains entity (is contained in): E1 CRM Entity

Quantification:

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

Scope note:

This property associates an instance of Ixx1 One-Proposition Set with an instance of E1 CRM Entity that must appear as the only domain instance of the proposition in the content of the former.

This property is part of the fully developed path from E13 Attribute Assignment through *Jxx9 assigned proposition (is assigned by)*, Ixx1 One-Proposition Set, *Jxx6 has domain (is domain of)* E1 CRM Entity, which is shortcut by *P140 assigned attribute to (was attributed by)*.

Full path:

<???>

Examples:

* <example 1>
* <example 2>

In First Order Logic:

Jxx6(x,y) ⇒ Ixx1(x)

 Jxx6(x,y) ⇒ E1(y)

 Jxx6(x,y) ⇒ Jxx4(x,y)

 Jxx4(x,y) ) ˄ Ixx1(x) ⇒ Jxx6(x,y) OR Jxx7(x,y)  **Restriction of superproperty to subproperties**.

### Discussion points:

* The clause “This property is part of the fully developed path from E13 Attribute Assignment through *Jxx9 assigned proposition (is assigned by)*, Ixx1 One-Proposition Set, *Jxx6 has domain (is domain of)* E1 CRM Entity, which is shortcut by *P140 assigned attribute to (was attributed by)*” to be redrafted as an implication.
	+ The equivalence only holds insofar as the I6 Belief Value of the instance of Ixx1 One-Proposition Set is held to be true.
	+ This has to be added to the scope note, cause only in this case will the implication hold.

## Jxx7 has range (is range of):

### Proposed definition:

**Jxx7 has range (is range of)**

Domain:

Ixx1 One-Proposition Set

Range:

E1 CRM Entity

Superproperty of:

Subproperty of:

I4 Proposition Set. Jxx4 contains entity (is contained in): E1 CRM Entity

Quantification:

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

Scope note:

This property associates an instance of Ixx1 One-Proposition Set with an instance of E1 CRM Entity that must appear as the range of the proposition in the content of the former.

This property is part of the fully developed path from E13 Attribute Assignment through *Jxx9 assigned proposition (is assigned by)*, Ixx1 One-Proposition Set, *Jxx7 has range (is range of)* E1 CRM Entity, which is shortcut by *P141 assigned (was assigned by)*.

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Full path:

<???>

Examples:

* <example 1>
* <example 2>

In First Order Logic:

Jxx7(x,y) ⇒ Ixx1(x)

Jxx7(x,y) ⇒ E1(y)

Jxx7(x,y) ⇒ Jxx4(x,y)

### Discussion points:

* The clause “This property is part of the fully developed path from E13 Attribute Assignment through *Jxx9 assigned proposition (is assigned by)*, Ixx1 One-Proposition Set, *Jxx7 has range (is range of)* E1 CRM Entity, which is shortcut by *P141 assigned (was assigned by)*.” to be redrafted as an implication.
	+ The equivalence only holds insofar as the I6 Belief Value of the instance of Ixx1 One-Proposition Set is held to be true.
	+ This has to be added to the scope note, cause only in this case will the implication hold.

## Jxx8 has property type (is property type of):

### Proposed definition:

**Jxx8 has property type (is property type of)**

Domain:

Ixx1 One-Proposition Set

Range:

E55 Type

Superproperty of:

Subproperty of:

I4 Proposition Set. Jxx4 contains property type (is property type in): E55 Type

Quantification:

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

Scope note:

This property associates an instance of Ixx1 One-Proposition Set with an instance of E55 Type that must appear as the only property type of the proposition in the content of the former.

This property is part of the fully developed path from E13 Attribute Assignment through *Jxx9 assigned proposition (is assigned by)*, Ixx1 One-Proposition Set, *Jxx8 has property type (is property type of)* E1 CRM Entity, which is shortcut by *P177 assigned property of type (is type of property assigned).*

Full path:

<???>

Examples:

* <example 1>
* <example 2>

In First Order Logic:

Jxx8(x,y) ⇒ Ixx1(x)

Jxx8(x,y) ⇒ E55(y)

Jxx8(x,y) ⇒ Jxx5(x,y)

### Discussion points:

* It is not clear whether the scope note refers to an instance of a property or the type of the property referred to. Needs to be made clear.
	+ It has to be an instance of the property, but then the issue of how many types can one assign to the property (which links to issue 672).
	+ As it now stands one can assign as many properties to an instance of E13, but MD suggested that the property quantification for P177 be made stricter (in 672).

## Jxx9 assigned proposition (is assigned by):

### Proposed definition:

**Jxx9 assigned proposition (is assigned by)**

Domain:

E13 Attribute Assigment

Range:

Ixx1 One-Proposition Set

Superproperty of:

Subproperty of:

Quantification:

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

Scope note:

This property associates an instance of E13 Attribute Assignment with an instance of Ixx1 One-Proposition Set that describes the proposition made and believed to be true.

This property constitutes a formal logical alternative to specifying the proposition made by an instance of E13 Attribute Assignment via *P140 assigned attribute to (was attributed by),  P141 assigned (was assigned by)* and *P177 assigned property of type (is type of property assigned).* As such, it is of importance for querying knowledge bases compatible with either model.

This property forms part of the following three (3) fully developed paths from E13 Attribute Assignment through:

* *Jxx9 assigned proposition (is assigned by)*, Ixx1 One-Proposition Set, *Jxx6 has domain (is domain of)* to E1 CRM Entity, which is shortcut by *P140 assigned attribute to (was attributed by)*.
* *Jxx9 assigned proposition (is assigned by)*, Ixx1 One-Proposition Set, *Jxx7 has range (is range of)* to E1 CRM Entity, which is shortcut by *P141 assigned (was assigned by)*,
* *Jxx9 assigned proposition (is assigned by)*, Ixx1 One-Proposition Set, *Jxx8 has property type (is property type of)* to E1 CRM Entity, which is shortcut by *P177 assigned property of type (is type of property assigned).*

This property is a shortcut for the path from E13 Attribute Assignment through *J2 concluded that (was concluded by)*, I2 Belief, *J4 that (is subject of)*, I4 Proposition Set, *J5 holds to be* to I6 Belief Value (= “True”).

Full path:

<???>

Examples:

* <example 1>
* <example 2>

In First Order Logic:

Jxx9(x,y) ⇒ E13(x)

Jxx9(x,y) ⇒ Ixx1(y)

Jxx9(x,y) ⇒ P140(x,u) ˄ Jxx6(y,u) ˄ P141(x,v) ˄ Jxx7(y,v) ˄ P177(w) ˄ Jxx8(y,w)

Jxx9(x,y) ⇒ (∃u) [I2(u) ˄ J2(x,u) ˄ J4(u,y) ˄ J5(u,’TRUE’)]  **believed to be true!**

 **E13(x)** ⇒  (∃uvw) [E1(u) ˄ P140(x,u) ˄ E1(v) ˄ P141(x,v) ˄ E55(w) ˄ P177(x,w)]

 **J2(x,y) ˄ E13(x) ⇒ Jxx9(x,y)**

### Discussion points:

* The clauses about the fully developed paths that the property can be a part of should explicitly mention the condition that the equivalences with P140, P141, and P177 entail that the Ixx1 One-Proposition Set is believed to be true.
* The clause “This property is a shortcut for the path from E13 Attribute Assignment through *J2 concluded that (was concluded by)*, I2 Belief, *J4 that (is subject of)*, I4 Proposition Set, *J5 holds to be* to I6 Belief Value (= “True”).” to be rendered as an inference, proviso that the belief value associated with the proposition set is “True”.