

Issue Topic

Harmonize the quantification of P43 & O12 has dimension (also P179 had sales price)

Overall Issue Topic

Rework the property quantifications and FOL statements of P43, O12, and P179, to allow for E54 Dimension to cover dimensions of individual things and relative dimensions (that are calculated as distances and angles between things)

Website Issue Link

<https://cidoc-crm.org/Issue/ID-665-harmonize-the-quantification-of-p43-o12-has-dimension-also-p179-had-sales-price>

Present State of Issue

At the 58th SIG the following things were decided

1. P43 has dimension: change quantification to “one to many (0,n:0,1)”
2. P191 had duration: change quantification to “one to one, necessary (1,1:0,1)”
3. P179 had sales price: change quantification to “one to one, necessary (1,1:0,1)”
4. Provide additional FOL conditions to disallow one instance of E54 Dimension to be the dimension of an E18 Physical Thing and an E96 Purchase, and an E52 Time-Span simultaneously.
5. O12 has dimension: change quantification to “many to many (0,n:0,n)”
6. Provide additional condition that if a dimension pertains to multiple instances of S15 Observable Entity, then this dimension is an instance of S25 Relative Dimension.
7. Assign HW to define a shortcut property (S21 Measurement. Oxx7 observed dimension: E54 Dimension; “one to one, necessary (1,1:0,1)”. The model can generalize to Observation.

For Discussion

Point (1) will be tackled through issue [681](#)

Points (2), (3) and (4) are to be settled through issue [680](#) -point (4) also has links to issue [602](#).

Point (7) is dealt by issue [683](#)

Finally, points (4) and (5) are addressed in the redrafted definition of O12 – see [below](#), and [HERE](#) for the diagram.

O12 has dimension (is dimension of)

Domain:

S15 Observable Entity

Range:

E54 Dimension

Superproperty of:

S15 Observable Entity. O33i has relative dimension (is relative to): S25 Relative Dimension

E16 Measurement. P40 has dimension (is dimension of): E54 Dimension

Quantification:

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

Scope note:

This property associates an instance of S15 Observable Entity with an instance of E54 Dimension that the observable entity has. It offers no information about how and when an E54 Dimension was established.

Most instances of E54 Dimension pertain to one item only. An instance of E54 Dimension referred to by more than one item via this property or a specialization of it is more specifically an instance of S25 Relative Dimension, such as a distance between two physical objects.

Referring to an instance of E54 Dimension by this property is mutually exclusive to using either property P191 had duration (was duration of) or P179 had sales price (was sales price).

In case the instance of S15 Observable Entity is more specifically an instance of E18 Physical Thing, using the property P43 has dimension (is dimension of) implies the property O12 has dimension (is dimension of).

This property is a shortcut of the fully developed path from S15 Observable Entity through *O24i was measured by (measured)*, S21 Measurement, *Oxx7observed dimension (was observed in)* to E54 Dimension.

Examples:

The earthquake of Mexico city in 2017 (E7) *has dimension* magnitude 6.2 Richter (Mindock, 2017).

The landslide that was activated in Parnitha in 1999 after the earthquake (E26), *has dimension* crest length > 70 (Lucchese et al., 2013 and Kritikos et al., 2013)

In First Order Logic:

$$O12(x,y) \Rightarrow S15(x)$$

$$O12(x,y) \Rightarrow E54(y)$$

$$[P43(x,y) \wedge E18(x)] \Rightarrow O12(x,y)$$

$$[O12(x,y) \wedge O12(z,y) \wedge (x \neq z)] \Rightarrow Sxx2(y)$$

$$O12(x,y) \Leftarrow (\exists z) [S21(z) \wedge O24(z,x) \wedge Oxx7(z,y)]$$

Action to be Taken

Decide whether to approve the proposed change.