1. **Appendix**

**Deprecated classes and properties**

The following is a list of classes and/or properties that have been deprecated between the version 5.0.4 of the CIDOC CRM, which served as community draft for ISO21127:2014, and this release (7.1). While the CIDOC CRM is developed with the principle of monotonic change, attempting to minimize backwards incompatibility through conservative initial modelling as well as modelling evolution, certain revisions inevitably entail changes to the model which will require an update to knowledge bases based on old versions of the ontology, in order to reconcile instances with the current version. The following tables provide information on which classes or properties have been deprecated and will thus require an update to previous official CRM compliant KBs in order to be in accord with the latest version of the standard. The reader will find in the first table, "Deprecated Class Migration Instructions", classes that have been deprecated and the suggested class or primitive replacement for that class. The reader should further refer to the 'deprecated property migration instructions table' in order to see not only the replacements for deprecated properties but also to understand how to build correct new semantic paths between the instances of deprecated classes and the newly suggested replacement classes or primitives. Finally, there are migration instructions where the range of a property has been reduced to a subclass of the previous range.

***Deprecated Class Migration Instructions***

*Table 5: Deprecated Class Migration Instructions*

|  |  |
| --- | --- |
| **Deprecated Class** | **Migration Instruction** |
| E38 Image | use [E36](#_toc7971) Visual Item |
| E40 Legal Body | use [E74](#_toc8492) Group |
| E44 Place Appellation | use [E41](#_toc8039) Appellation |
| E45 Address | use [E41](#_toc8039) Appellation, [*P2*](#_toc8844) *has type*: “Address” |
| E46 Section Definition | use [E41](#_toc8039) Appellation |
| E47 Spatial Coordinates | use [E94](#_toc8709) Space Primitive |
| E48 Place Name | use [E41](#_toc8039) Appellation |
| E49 Time Appellation | use [E41](#_toc8039) Appellation |
| E50 Date | use [E61](#_toc8263) Time Primitive |
| E51 Contact Point | use [E41](#_toc8039) Appellation, [*P2*](#_toc8844) *has type*: “Contact Point” |
| E75 Conceptual Object Appellation | use [E41](#_toc8039) Appellation |
| E82 Actor Appellation | use [E41](#_toc8039) Appellation |
| E84 Information Carrier | use [E22](#_toc7751) Human-Made Object, [*P2*](#_toc8844) *has type*: “Information Carrier” |

***Deprecated Property Migration Instructions***

*Table 6: Deprecated Property Migration Instructions*

|  |  |
| --- | --- |
| **Deprecated property** | **Migration Instruction** |
| *P58 has section definition (defines section)* | use[*P1*](#_toc8819) *is identified by (identifies)* |
| *P78 is identified by (identifies):* E49 Time Appellation  [except for instances of E50 Date] | use [*P1*](#_toc8819) *identified by (identifies):* [E41](#_toc8039) Appellation [for instance, Japanese imperial rule names] |
| *P78 is identified by (identifies):* E50 Date | use [*P170i*](#_toc11400) *time is defined by*: [E61](#_toc8226)Time Primitive |
| *P88 consists of (forms part of)* | If used as a geometric decomposition, use [*P89i*](#_toc10142) *contains*.  If the respective place is defined in the source by an instance of [E26](#_toc7791) Physical Feature, and the use of *P88 consists of* aims at describing its decomposition into its natural components, describe explicitly in the migration target the instance of [E26](#_toc7791) Physical Feature and its parts using [*P46*](#_toc9643) *is composed of* |
| *P83 had at least duration (was minimum duration of)*  and  *P84 had at most duration (was maximum duration of)* | use [*P191*](#_toc11843) *had duration (was duration of)*:  The instances of [E60](#_toc8250) Number in the full source paths: [E52](#_toc8080) Time-Span*. P83 had at least duration.* [E54](#_toc8128) Dimension*.* [*P90*](#_toc10161) *has value.* [E60](#_toc8250) Number and in [E52](#_toc8080) Time-Span*. P84 had at most duration.* [E54](#_toc8128) Dimension*.* [*P90*](#_toc10161) *has value.* [E60](#_toc8250) Number  should both be merged in the migration target path into one numerical interval, instance of [E60](#_toc8250) Number:  [E52](#_toc8080) Time-Span*.* [*P191*](#_toc11802) *had duration.* [E54](#_toc8128) Dimension*.* [*P90*](#_toc10161) *has value.* [E60](#_toc8250) Number  For representing intervals in RDF/OWL encoding see the respective implementation guidelines. |
| *P87 is identified by (identifies)*: E44 Place Appellation (except for instances of E47 Spatial Coordinates) | use [*P1*](#_toc8819) *identified by (identifies)*: [E41](#_toc8039) Appellation |
| *P87 is identified by (identifies)*: E47 Spatial Coordinates | use [*P168i*](#_toc11363) *defines place*: [E94](#_toc8709) Space Primitive |
| *P114 is equal in time to\** | use the **fully developed path** from [E2](#_toc7256) Temporal Entity through [*P4*](#_toc8889) *has time-span*, [E52](#_toc8080) Time-Span, [*P4*](#_toc8889)*i is time-span of,* to [E2](#_toc7256) Temporal Entity.  Theoretically, *P114 is equal in time to* is equal to the conjunction of: *(*[*P175*](#_toc11548) *starts before or with the start of* **AND** [*P175*](#_toc11548)*i starts after or with the start of* **AND**[*P184*](#_toc11706) *ends before or with the end of* **AND** [*P184*](#_toc11706)*i ends with or after the end of),* without fuzzy temporal boundaries. However, note that only a common cause or a socially declared time-span can lead to temporal equality of different instances of [E2](#_toc7256) Temporal Entity. Consequently, creating the full path is always the preferred migration strategy. |
| *P115 finishes (is finished by) \** | [*P176*](#_toc11573)*i starts after the start of* **AND** [*P184*](#_toc11706) *ends before or with the end of* **AND** [*P184*](#_toc11706)*i ends with or after the end of* [[*P176*](#_toc11573)*i starts after the start of* is required because the Range [E2](#_toc7256) Temporal Entity must be longer than the Domain [E2](#_toc7256) Temporal Entity] |
| *P116 starts (is started by) \** | [*P175*](#_toc11548) *starts before or with the start of* **AND** *P175i starts after or with the start of* **AND**[*P185*](#_toc11731) *ends before the end of* [[*P185*](#_toc11731) *ends before the end of* is required because the Range [E2](#_toc7256) Temporal Entity must be longer than the Domain [E2](#_toc7256) Temporal Entity] |
| *P117 occurs during (includes) \** | [*P176*](#_toc11573)*i starts after the start of* **AND** [*P185*](#_toc11731) *ends before the end of* |
| *P118 overlaps in time with (is overlapped in time by) \** | [*P176*](#_toc11573) *starts before the start of* **AND**[*P185*](#_toc11731) *ends before the end of* |
| *P119 meets in time with (is met in time by) \** | use [*P182*](#_toc11652) *ends before or with the start of* **AND** [*P173*](#_toc11495)*i ends after or with the start of* |
| *P120 occurs before (occurs after) \** | use [*P183*](#_toc11679) *ends before the start of* |
| *P131 is identified by (identifies)* | use [*P1*](#_toc8819) *identified by (identifies)* |
| *P149 is identified by (identifies)* | use [*P1*](#_toc8819) *identified by (identifies)* |
| *P178 ends after or with (ends before or at the end of)* | use [*P184*](#_toc11706)*i ends with or after the end of* instead |
| *P181 has amount* | [E54](#_toc8128) Dimension. [*P90*](#_toc10207) *has value*: [E60](#_toc8250) Number instead |

\*The properties P114 to P120 have been introduced in the CIDOC CRM extension “Definition of the CRMarchaeo. An Extension of CIDOC CRM to support the archaeological excavation process”, Version 1.5.1, March 2021.

***Migration Instructions for the reduced scope of*** [***E81***](#_toc8541) ***Transformation***

From version 7.1.1 on, the class [E81](#_toc8581) Transformation pertains only to instances of [E18](#_toc7650) Physical Thing, rather than to instances of [E77](#_toc8517) Persistent Item. The reason is the insight that only for physical things the form previous to a transformation must cease to exist. For instances of [E28](#_toc7737) Conceptual Object, any number of copies can be around that are not affected by the transformation. Similarly, transformations of instances of [E74](#_toc8492) Group do not necessarily cause the dissolution of the previous grouping.

Therefore, the properties [*P123*](#_toc10694) *resulted in (resulted from)* and [*P124*](#_toc10713) *transformed (was transformed by) now* have the range: [E18](#_toc7650) Physical Thing.

If these properties were applied in the source to instances of [E28](#_toc7825) Conceptual Object or its subclasses, use in the migration target [E65](#_toc8333) Creation instead of [E81](#_toc8581) Transformation, [*P94*](#_toc10286) *has created (was created by)* instead of [*P123*](#_toc10694) *resulted in (resulted from),* and [*P16*](#_toc9122) *used specific object (was used for)* instead of [*P124*](#_toc10713) *transformed (was transformed by).*

If these properties were applied in the source to instances of [E74](#_toc8403) Group, use in the migration target [E66](#_toc8349) Formation instead of [E81](#_toc8581) Transformation, [*P95*](#_toc10306) *has formed (was formed by)* instead of [*P123*](#_toc10694) *resulted in (resulted from),* and [*P151*](#_toc11213) *was formed from (participated in)* instead of [*P124*](#_toc10713) *transformed (was transformed by).*

***Migration Instructions for the reduced scope of*** [***E16***](#_toc7578) ***Measurement***

From version 7.1.1 on, the class [E16](#_toc7578) Measurement pertains only to instances of [E18](#_toc7610) Physical Thing, rather than to instances of [E1](#_toc7226) CRM Entity. The reason is twofold. Firstly, the property [*P43*](#_toc9592) *has dimension (is dimension of)* associates a dimension only with [E70](#_toc8368) Thing, and thereby only allows for documenting the results of the measuring of instances of [E70](#_toc8368) Thing. Secondly, in the narrower sense, only physical things can be observed for quantitative measurements, but instances of [E54](#_toc8088) Dimension, in particular for instances of [E28](#_toc7785) Conceptual Object, may be inferred by other forms of [E13](#_toc7522) Attribute Assignment, such as data evaluation. Therefore, the property [*P39*](#_toc9517) *measured (was measured by)* now has the range: [E18](#_toc7610) Physical Thing.

If this property was applied in the source to instances of [E28](#_toc7785) Conceptual Object or its subclasses, use in the migration target [E13](#_toc7522) Attribute Assignment instead of [E16](#_toc7578) Measurement, [*P140*](#_toc11014) *assigned attribute to (was attributed by)* instead of [*P39*](#_toc9517) *measured (was measured by)*, [*P141*](#_toc11035) *assigned (was assigned by)* instead of [*P40*](#_toc9534) *observed dimension (was observed in),* and [*P177*](#_toc11558) *assigned property of type (is type of property assigned)*: *"*P43 has dimension (is dimension of)"([E55](#_toc8064)).