Proposed edits

About Types

Virtually all structured descriptions of museum objects begin with a unique object identifier and information about the "type" of the object, often in a set of fields with names like "Classification", "Category", "Object Type", "Object Name", etc. All these fields are used for terms that declare that the object belongs to a particular category of items. In the CIDOC CRM the class E55 Type comprises such terms from thesauri and controlled vocabularies used to characterize and classify instances of CIDOC CRM classes. Instances of E55 Type represent concepts (universals) in contrast to instances of E41 Appellation, which are used to name instances of CIDOC CRM classes.

For this purpose, the CIDOC CRM provides two basic properties that describe classification with terminology, corresponding to what is the current practice in the majority of information systems. The class E1 CRM Entity is the domain of the property *P2 has type (is type of)*, which has the range E55 Type. Consequently, every class in the CIDOC CRM, with the exception of E59 Primitive Value, inherits the property *P2 has type (is type of).* This provides a general alternative mechanism to specialize the classification of CIDOC CRM instances to any level of detail, by linking to external vocabulary sources, thesauri, classification schemas or ontologies.

Analogous to the function of the *P2 has type (is type of)* property, some properties in the CIDOC CRM are associated with an additional property. These are numbered in the CIDOC CRM documentation with a '.1' extension. The range of these properties of properties always falls under E55 Type. The purpose of a property of a property is to provide an alternative mechanism to specialize its domain property through the use of property subtypes declared as instances of E55 Type. They do not appear in the property hierarchy list but are included as part of the property declarations and referred to in the class declarations. For example, *P62.1 mode of depiction*: E55 Type is associated with E24 Physical Human-Made Thing. *P62 depicts (is depicted by):* E1 CRM Entity.

The class E55 Type also serves as the range of properties that relate to categorical knowledge commonly found in cultural documentation. For example, the property *P125 used object of type (was type of object used in)* enables the CIDOC CRM to express statements such as "this casting was produced using a mould", meaning that there has been an unknown or unmentioned object, a mould, that was actually used. This enables the specific instance of the casting to be associated with the entire type of manufacturing devices known as moulds. Further, the objects of type "mould" would be related via *P2 has type (is type of)* to this term. This indirect relationship may actually help in detecting the unknown object in an integrated environment. On the other side, some casting may refer directly to a known mould via *P16 used specific object (was used for).* So, a statistical question to how many objects in a certain collection are made with moulds could be answered correctly (following both paths through *P16 used specific object (was used for)* - *P2 has type (is type of)* and *P125 used object of type (was type of object used in)*). This consistent treatment of categorical knowledge enhances the CIDOC CRM's ability to integrate cultural knowledge.

Types, that is, instances of E55 Type and its subclasses, can be used to characterize the instances of a CIDOC CRM class and hence refine the meaning of the class. A type 'artist' can be used to characterize persons through *P2 has type (is type of)*. On the other hand, in an art history application of the CIDOC CRM it can be adequate to extend the CIDOC CRM class E21 Person with a subclass E21.xx Artist. What is the difference of the type 'artist' and the class Artist? From an everyday conceptual point of view there is no difference. Both denote the concept 'artist' and identify the same set of persons. Thus, in this setting a type could be seen as a class and the class of types may be seen as a metaclass. Since current systems do not provide an adequate control of user defined metaclasses, the CIDOC CRM prefers to model instances of E55 Type as if they were particulars, with the relationships described in the previous paragraphs.

Users may decide to implement a concept either as a subclass extending the CIDOC CRM class system or as an instance of E55 Type. A new subclass should only be created in case the concept is sufficiently stable and associated with additional explicitly modelled properties specific to it. Otherwise, an instance of E55 Type provides more

flexibility of use. Users that may want to describe a discourse not only using a concept extending the CIDOC CRM but also describing the history of this concept itself, may choose to model the same concept both as subclass and as an instance of E55 Type with the same name. Similarly, it should be regarded as good practice to foresee for each term hierarchy refining a CIDOC CRM class a term equivalent of this class as top term. For instance, a term hierarchy for instances of E21 Person may begin with “Person”.

One role of E55 Type is to be the CIDOC CRM’s interface to domain specific ontologies and thesauri or less formal terminological systems. Such sets of concepts can be represented in the CIDOC CRM as subclasses of E55 Type, forming hierarchies of terms, i.e., instances of E55 Type linked via *P127 has broader term (has narrower term)*. Such hierarchies may be extended with additional properties. Other standard models, in particular richer ones, used to describe terminological systems can also be interfaced with the CIDOC CRM by declaring their respective concept class as being equivalent to E55 Type, and their respective broader/narrower relation as being identical with *P127 has broader term (has narrower term)*, as long as they are semantically compatible.

In addition to being an interface to external thesauri and classification systems, E55 Type is an ordinary class in the CIDOC CRM and a subclass of E28 Conceptual Object. E55 Type and its subclasses inherit all properties from this superclass. Thus, together with the CIDOC CRM class E83 Type Creation the rigorous scholarly or scientific process that ensures a type is exhaustively described and appropriately named can be modelled inside the CIDOC CRM. In some cases, particularly in archaeology and the life sciences, E83 Type Creation requires the identification of an exemplary specimen and the publication of the type definition in an appropriate scholarly forum. *This is very central to research in the life sciences, where a type would be referred to as a “taxon,” the type description as a “protologue,” and the exemplary specimens as “original element” or “holotype”.*Finally, instances of E55 Type or suitable subclasses can describe universals from type systems not organized in thesauri or ontologies, such as industrial product names and types, defined and published by the producers themselves for each new product or product variant.

Original text (CIDOC CRM v7.3.2)

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