# Guideline for Writing Scope Notes

“A scope note is a textual description of the **intension** of a **class** or **property.**

Scope notes are not formal modelling constructs, but are provided to help explain the intended meaning and application of the CIDOC CRM’s classes and properties. Basically, they refer to a conceptualisation common to domain experts and disambiguate between different possible interpretations. Illustrative example **instances** of classes and properties are also regularly provided in the scope notes for explanatory purposes.”

In simple words, the scope notes for classes should make sure that users communicating information via a machine, rather than via clarifying dialogues, can refer to identical items and have a shared understanding of a their kinds, i.e., the classes they belong to.

For each class, the ontology formally declares which properties can apply to an instance of that class. Consequently, the property scope notes should make sure that the users have a shared understanding what these properties mean, in contrast to others.

The CIDOC CRM has adopted the term “scope note” from terminologies systems, in particular the AAT of the Getty Research Institute, rather than talking about a “definition”, because for many fundamental concepts, also for biological species, definitions in a logical sense are hardly possible. Therefore, it is often sufficient in a scope note to remind widely common concepts, to clarify border cases and non-obvious applications. The following guidelines should be understood as a check list, if the respective aspects are obvious from a given scope or need additional clarification, and not as a formal template.

The criteria should be not more precise than useful for the intended discourse. Suitable specialization may refine more general consideration. For instance, defining an instance of E21 Person to exist until death for a cultural historical discourse, does not require to determine precisely the conditions for being dead.

## Guideline for Writing Class Scope Notes

A scope note for the description of a class (in the following “class A”) should make the user understand the necessary traits for recognizing an instance of this class by address the following aspects:

1. Substance and Characteristic Properties:

What are instances of class A made of?

Some typical substances are solid-state matter, logical arrangements of symbols, behaviour of things in time, people in their capacity to act intentionally. Substances may be structured or not. For instances of many classes, the form is characteristic. Typically, the substance is the same or a refinement of that the superclass. For instance, the substance of a living organism is a refinement of that of a physical object, a digital object is a refinement of a logical arrangements of symbols. The scope note may refer to an intuitive or common sense understanding of the substance of a well-known and understood category of things, such as that of a human being. Understanding the substance is necessary for providing identity criteria.

1. Traits and Potential:

Which traits justify that an item is instance of class A? With what can an instance of class A interact, have or establish a relationship?

For some classes it is possible to define explicitly the necessary characteristic traits, such as a text consisting of a fixed sequence of characters of an alphabet. For other classes, in particular natural kinds, prototypical examples may be more effective. It may be helpful to refer to an enumeration of characteristic subclasses for making the reader better understand the common traits of a class, but a class **must not** be defined as an enumeration of classes without essential common traits. Necessary characteristic traits often have to do with a variety of forms of the respective substance fit for functionality some purpose, such as a “material sample”, or capabilities. In case of processes, they may have to do with kinds of interaction and outcome or others.

Since the descriptional properties are formally declared in the ontology, the scope note should only provide an understanding on the general contexts of interaction, which often need to be represented by multiple formally declared properties.

1. Identity criteria:

What makes you tell one instance of class A apart from another? (synchronic identity).

This is nearly trivial and intuitive for persons, but can be demanding for other classes, such as buildings in an urban conglomerate. It must not be confused with classification, i.e., finding a characteristic class for something at our attention! It must also not be confused with identification criteria, i.e., what known characteristics may be enough to determine an instance, such as a social security number for a citizen of some state.

What makes an instance be the same after some time? (diachronic identity).

This is nearly trivial and intuitive for persons between birth and death. The existence of mummies may cause confuse the answer to this question. For companies, it may be a matter of legal dispute. Similarly, repair, spare part replacement reconstruction, transformations and decay may confuse the diachronic identity of physical things.

Which changes will be regarded not to affect identity is not a question of absolute insight in the nature of things, but a deliberate choice for analyzing certain kinds of problems. Each choice corresponds to a different class, which may coexist for some time on the same item.

Identity criteria are one of the most powerful consideration for effective ontological distinctions.

1. Unity criteria:

What makes some extent of substance be part of an instance of class A?

For instance, a set of chessmen forms a functional whole in the well-known configuration of figures in the same style. In contrast, a single king chessman should be physically coherent and have an integrity of form to be recognizable and stand well.

What makes activities be part of a meeting? Is a sleeping participant taking part? Meetings are typically spatially and temporally confined. Therefore, a sleeping participant may be defined as being participating.

Unity criteria may interplay with synchronic identity. For instance, a built complex may be one coherent built structure, but distinct habitations. Depending on the criteria given for the class, the complex is considered to be one thing or multiple things. In such cases, the multiple things may be part of the one thing.

1. Existence:

What kinds of processes make an instance of class A come into existence and what make it to end existing?

For instance:

Meetings typically start and end by agreement.

A blood sample starts to exist when taken, and may be consider to end existing when its content is denaturized.

A set of chessmen will start to exist when the figures are put together, for packaging or direct use. One may consider that it ends to exist when it is no more functional, i.e., when one of the figures is destroyed or lost beyond the reach of its owner. If figures of the same style are available, they may be replaced.

In a museum perspective, it may be regarded to exist as long as all kinds of figures are still present or as long as at least one figure exists. Replacement may not be regarded as permitted.

Existence criteria may interplay with diachronic identity. When the diachronic identity ends, whatever substance remains must be regarded to be something else, possibly constituting instances of other classes.

Existence criteria are also critical for making and understanding ontological distinctions. If multiple classes are applied to the same instances, either via IsA or multiple instantiation, all involved classes must have compatible identity and existence criteria.

1. Further clarifications:

It is often helpful to clarify the distinction of a class from other classes for a better understanding of the traits necessary for the instances of a class. Note that distinct classes may nevertheless share some common instances, and the substance of instances of some class may even be instances of another class for some phase of existence or carriers of instances of other classes. For example, the substance of a bottle for liquids may be a labelled blood sample for some time. A magnetic disc may be carrier of some text for some time.

It is important to point the reader to non-obvious applications, borderline cases and important application contexts.