# ISSUE 275

### E61 Time Primitive

Subclass of: [E59](#_E59_Primitive_Value) Primitive Value

Scope Note: This class comprises instances of E59 Primitive Value for time that should be implemented with appropriate validation, precision and references to temporal coordinate systems to express time in some context relevant to cultural and scientific documentation.

An E61 Time Primitive defines an E52 Time Span in the sense of providing an approximation of its real phenomenal extent. The identity of its true extent is given by the nature of the temporal phenomenon alone.  Instances of E61 Time Primitive as mathematically precise points can always only be an approximation of the real, continous phenomenon of which they are approximations a greater or lesser degree of accuracy.

Instantiating different instances of E61 Time Primitive relative to the same instance or E52 Time Span allows for the expression of multiple opinions/approximations of the same phenomenon. When representing different opinions/approximations of the E52 Time Span of some E2 Temporal Event, multiple instances of E61 Time Primitive should be instantiated relative to one E52 Time Span. Only one E52 Time Span should be instantiated since there is only one real phenomenal time extent of any given event.

The instances of E61 Time Primitive are not considered as elements of the universe of discourse that the CRM aims at defining and analysing. Rather, they play the role of a symbolic interface between the scope of this model and the world of mathematical and computational manipulations and the symbolic objects they define and handle.

In particular they comprise lexical forms encoded as "strings" or series of characters and symbols based on encoding schemes (characterised by being a limited subset of the respective mathematical abstractions) such as UNICODE and values of datatypes that can be encoded in a lexical form, including quantitative specifications of time-spans and geometry. They have in common that instances of E59 Primitive Value define themselves by virtue of their encoded value, regardless the nature of their mathematical abstractions.

Therefore they must not be represented in an implementation by a universal identifier associated with a content model of different identity. In a concrete application, it is recommended that the primitive value system from a chosen implementation platform and/or data definition language be used to substitute for this class and its subclasses.

Examples:

* 1994 – 1997
* 13 May 1768
* 2000/01/01 00:00:59.7
* 85th century BC

In First Order Logic:

 E61(x) ⊃ E59(x)

#### P169 defines spacetime volume (spacetime volume is defined by)

Domain: E95 Spacetime Primitive

Range: E92 Spacetime Volume

Scope note: This property associates an instance of E95 Spacetime Primitive with the instance of E92 Spacetime Volume it defines.

{reference to CRMgeo.. check where references need to be made}

#### P171 at some place within

Domain: [E53](#_E53_Place) Place

Range: E94 Space Primitive

Scope note: This property describes the maximum spatial extent within which an E53 Place falls. Since instances of E53 Places may not have precisely known spatial extents, the CRM supports statements about maximum spatial extents of E53 Places. This property allows an instance of an E53 Places’s maximum spatial extent (i.e. its outer boundary) to be assigned an E94 Space Primitive value.

*P171 at some place within* is a shortcut of the fully developed path *E53 Place P89 falls within E53 Place P168 place is defined by E94 Space Primitive* through a not represented declarative Place as defined in CRMgeo (Doerr and Hiebel 2013) to a Space Primitive.

Examples:

* the spatial extent of the Acropolis of Athens (E53) is *at some place within* POLYGON ((37.969172 23.720787, 37.973122 23.721495 37.972741 23.728994, 37.969299 23.729735, 37.969172 23.720787)) (E94)

#### P172 contains

Domain: [E53](#_E53_Place) Place

Range: E94 Space Primitive

Scope note: This property describes a minimum spatial extent which is contained within an E53 Place. Since instances of E53 Place may not have precisely known spatial extents, the CRM supports statements about minimum spatial extents of instances of E53 Place. This property allows an instance of E53 Places’s minimum spatial extent (i.e. its inner boundary or a point being within a Place) to be assigned an E94 Space Primitive value.

This property is a shortcut of the fully developed path:

*E53 Place P89i contains E53 Place P168 place is defined by E94 Space Primitive*

Examples:

* the spatial extent of the Acropolis of Athens (E53) *contains* POINT (37.971431 23.725947) (E94)