Issue: 674
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Harmonize CRMgeo with CRMbase v7.1.2

Rational:

due to the changes in CIDOC CRM there is the need to harmonize CRMgeo with CRMbase v7.1.2 to be in line with the new ISO Standard and the other CRM extensions that have been aligned to CRMbase v7.1.2. In addition a new version (1.1.) of GeoSparql has been published in 2024 and it makes sense to refer to this version which introduces more serializations for Geometries (e.g. GeoJSON Literal) and defines alignments to other ontologies like "WGS84 Geo Positioning (wgs84)" which is frequently used with point coordinate information.

In addition GeoSparql 1.1 makes an alignment to CRMgeo 1.2 which now allows the integration from both the GIS community and the CH community.

Suggested changes to CRMgeo 1.3 (2.0):

Deprecate classes SP5, SP14, SP12, SP15 because of new classes in CRM 7.2.1.:

~~SP5_Geometric_Place_Expression~~ replaced by E94_Space_Primitive

~~SP14_Time_Expression~~ replaced by E61_Time_Primitive

~~SP12_Spacetime_Volume_Expression~~ replaced by E95_Spacetime_Primitive

~~SP15_Geometry~~ replaced by geosparql:geometry

Changed class hierarchies for SP6, SP7, geosparql:geometry, SP1

Make SP6 Declarative Place and SP7 Declarative Space Time Volume a subclass of geosparql:geometry as a geosparql:geometry may have a temporal definition depending on the serialization it is based on.

SP6 Declarative Place and SP7 Declarative Space Time Volume inherit the properties of geosparql:geometry.

SP1 Phenomenal Spacetime Volume only superclass of E4 Period and not E18 Physical Thing anymore, as the property P196 defines relates E18 to E92. SP1 not a subclass from E2 Temporal Entity any more.

Include WGS84 (https://www.w3.org/2003/01/geo/) Vocabulary

In order to have native properties for longitude(long) and latitude(lat) in WGS84 which is a very frequently used to express point coordinates. Make wgs84:Point a subclass of SP6 Declarative Place so the properties wgs84:lat and wgs84:long may be used in CRMgeo and wgs84:Point inherits all properties of SP6. This is in line with the GeoSparql 1.1 alignment to WGS84 where wgs84:Point is defined as a subclass of geosparql:geometry

Make Q10, Q14, Q16, Q12 subproperties:

Q10 defines place ~~-~~subproperty of P168i defines place

Q10(x,y) => P168i(x,y)

P168(x,y) => SP6(x)

Q14 defines time subproperty of P170 defines time

Q14(x,y) => P170(x,y)

P170(x,y) => SP10(y)

Q16 defines spacetime volume subproperty of P169 defines spacetime volume:

Q16(x,y) => P169(x,y)

P169(x,y) => SP7(y)

Q11_approximates subproperty of P189_approximates

Q11(x,y) => P189(x,y)

…because P189 is defined to be either between phenomenal places or a declarative approximating a phenomenal one in CRMbase.

Change labels Q11, Q12 Q13, Q9, Q15, Q17, Q18:

Q11_approximates with Q11_approximates_place

Q12_approximates with Q12_approximates_ spacetime

Q13_approximates with Q13_approximates_time

Q9_is_expressed_in_terms_of with Q9_place_is_expressed_in_terms_of

Q15_is_expressed_in_terms_of with Q15_time_is_expressed_in_terms_of

Q17_is_expressed_in_terms_of with Q17_time_is_expressed_in_terms_of

Q18_is_expressed_in_terms_of with Q18_place_is_expressed_in_terms_of

Change domains of properties Q9, Q15, Q17, Q18 in order to be able to use the properties in RDF:

Q9_place_is_expressed_in_terms_of:

Change Domain from E94 Space Primitive to SP6 Declarative Place

Q15_time_is_expressed_in_terms_of:

Change Domain from SP14 Time Expression to SP10 Declarative Time Span

Q17_time_is_expressed_in_terms_of

Change Domain from E95 Spacetime Primitive to SP7 Declarative Space Time Volume

Q18_place_is_expressed_in_terms_of

Change Domain from E95 Spacetime Primitive to SP7 Declarative Space Time Volume

Additional properties from Geosparql 1.1:

Geosparql 1.1 introduces new Serializations for Geometries under the superproperty hasSerialization (asKML, asGeoJSON,…)