

OGC GeoSparql and CIDOC CRM

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Overview

1. Introduction
2. OGC candidate standard of “GeoSPARQL”
3. Concept for GeoSPARQL in CIDOC CRM

Introduction

Integrating spatial information in the CRM

1. conceptual modeling
2. encoding of coordinate information

OGC (Open Geospatial Consortium) ISO TC 211

- Abstract standards
- Implementation standards

**-> ISO standards
(ISO 19100 series)**

OGC Candidate Standard “GeoSPARQL”

Overview

- framework how to implement the OGC Standards (Abstract and Implementation Specifications) with semantic technologies through RDF/OWL encoding
- definitions of SPARQL queries

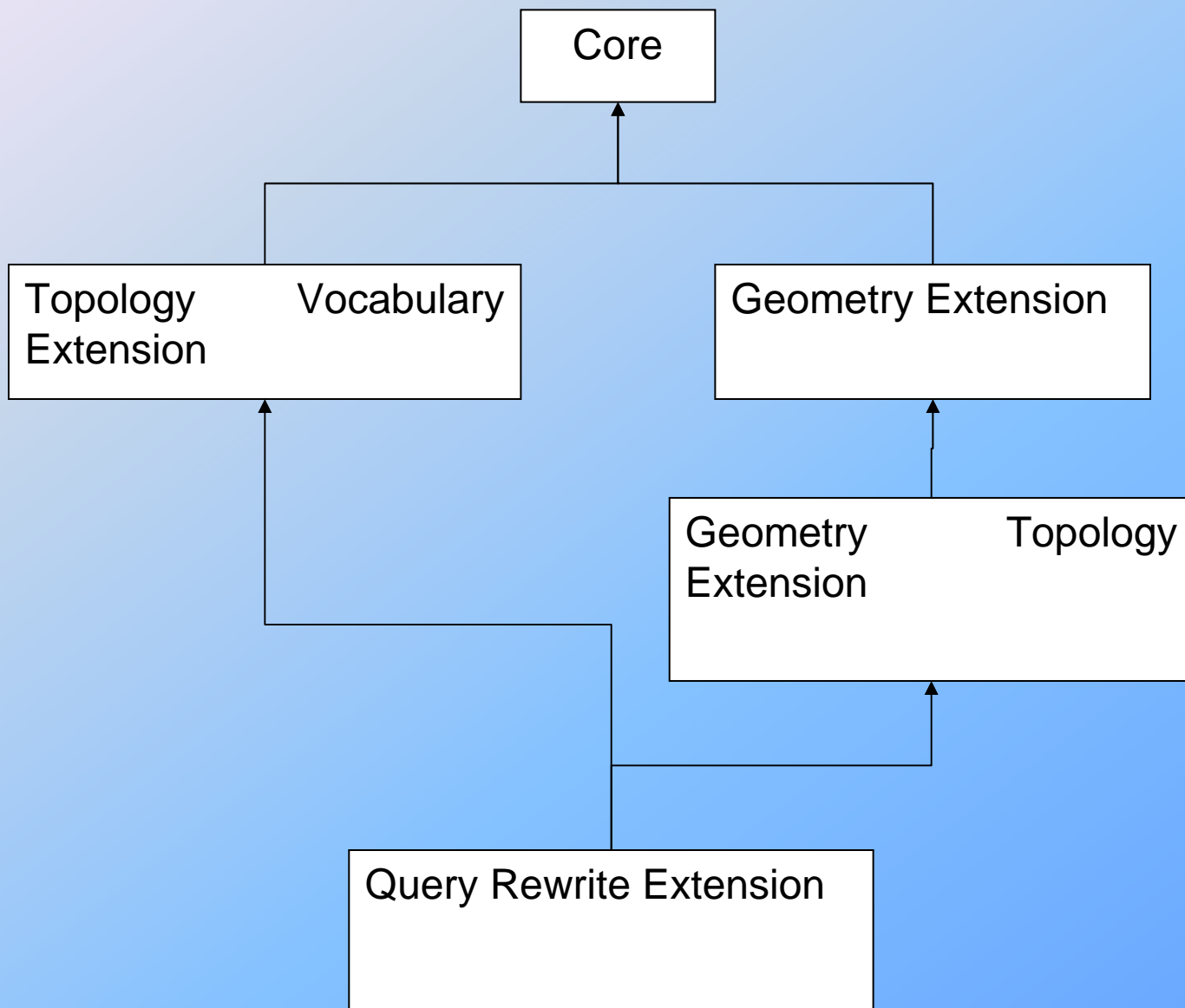
OGC :

The goal for the OGC GeoSPARQL standard is to support representing and querying geospatial data on the Semantic Web. GeoSPARQL defines a vocabulary for representing geospatial data in RDF, and it defines an extension to the SPARQL query language for processing geospatial data.

2011: submitted as OGC Candidate Standard

2012: editing and revision of the Standards Working Group (SWG)

Components of GeoSPARQL



OGC Candidate Standard “GeoSPARQL”

Core Component

top-level RDFS/OWL classes for spatial objects

SpatialObject

- superclass of everything feature or geometry that can have a spatial representation
- root class within the hierarchy of the GeoSPARQL ontology

Feature

- Superclass of everything feature in GeoSPARQL

“A feature is an abstraction of a real world phenomenon” [ISO 19101]

OGC Candidate Standard “GeoSPARQL”

Geometry Component

- **RDFS/OWL classes** for geometry object types

Geometry: root geometry class
subclass of SpatialObject

- **RDFS data types** for serializing geometry data

Serialization: coordinates are stored in a format which defines the sequence of the characters

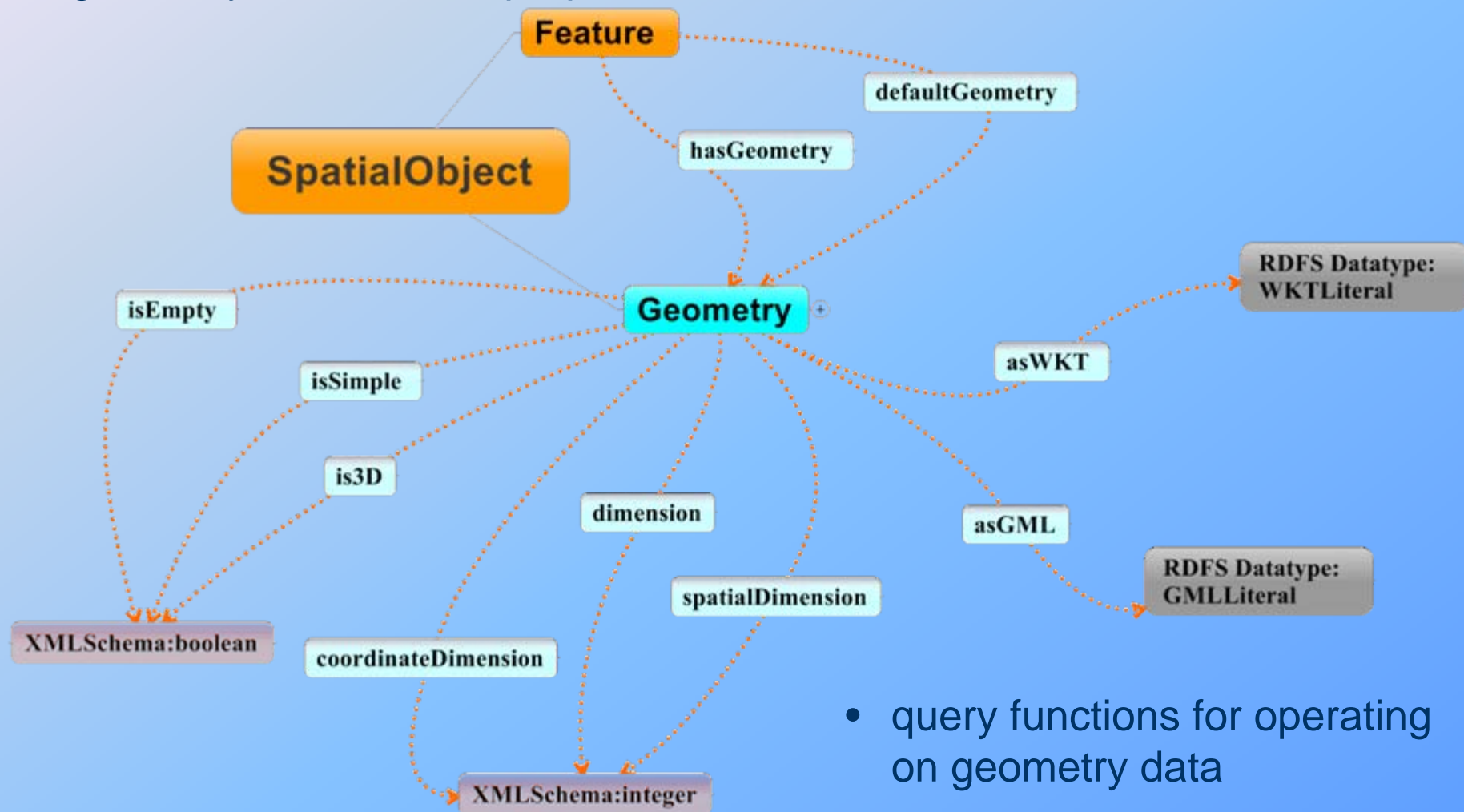
- Well Known Text (WKT) as defined by Simple Features or ISO 19125
- Geography Markup Language (GML) as defined in ISO 19136

These specifications (ISO 19125, ISO 19136) are also the base for subclasses of the geometry class. An RDF/OWL class hierarchy can be generated from the WKT or GML schema

OGC Candidate Standard “GeoSPARQL”

Geometry Component

- geometry-related RDF properties



- query functions for operating on geometry data

Concept to map OGC GeoSPARQL in CIDOC CRM

Mapping of GeoSPARQL to CRM classes

Feature

A feature is an abstraction of a real world phenomenon

A feature is a geographic feature if it is associated with a location relative to the Earth. Vector data consists of geometric and topological primitives used, separately or in combination, to construct objects that express the spatial characteristics of geographic features.

Feature as E53 Place

E53 Place in combination with other E1 objects:

ISO 19109 features may have “feature types” specifying and classifying the meaning of features

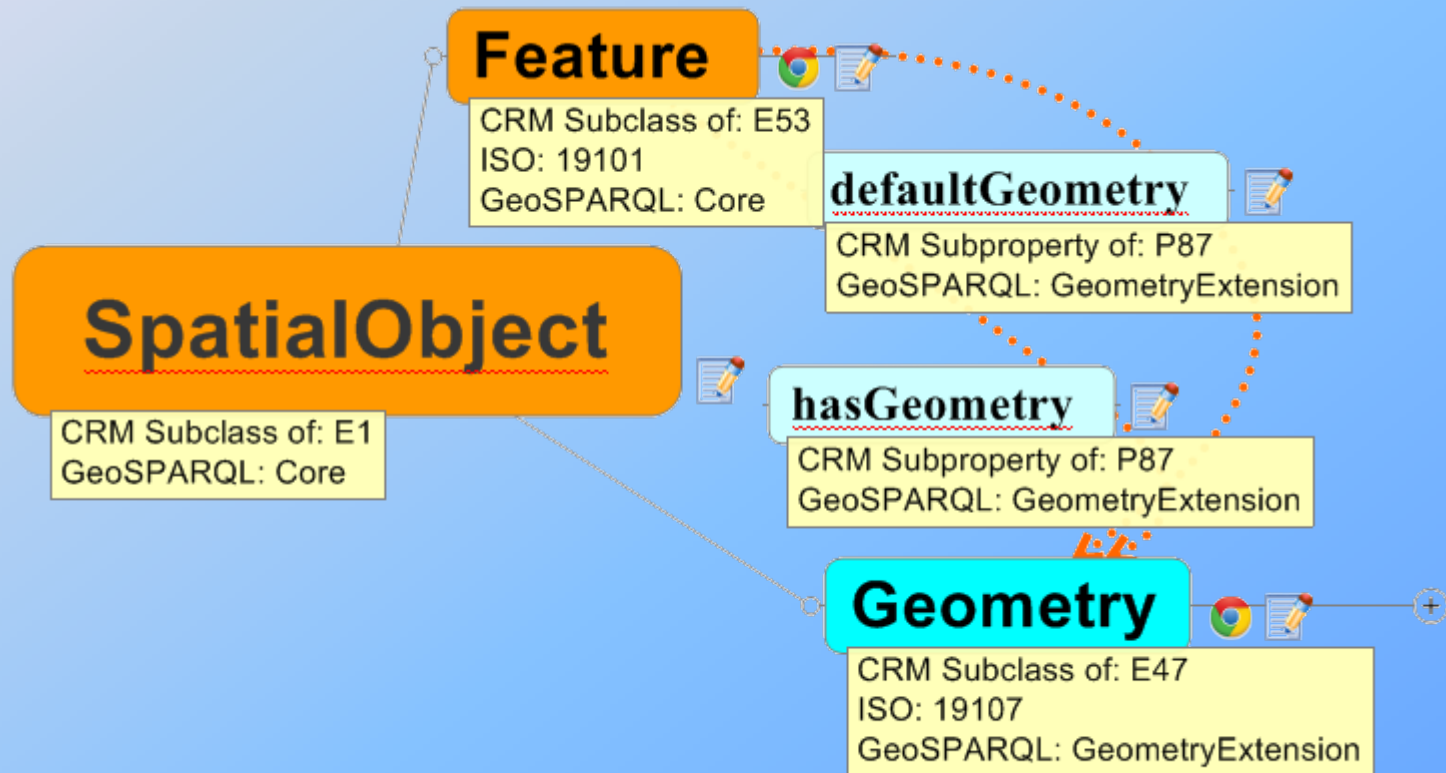
In CRM “feature types” correspond to CRM classes

E53 Place without any other additional semantic meaning:

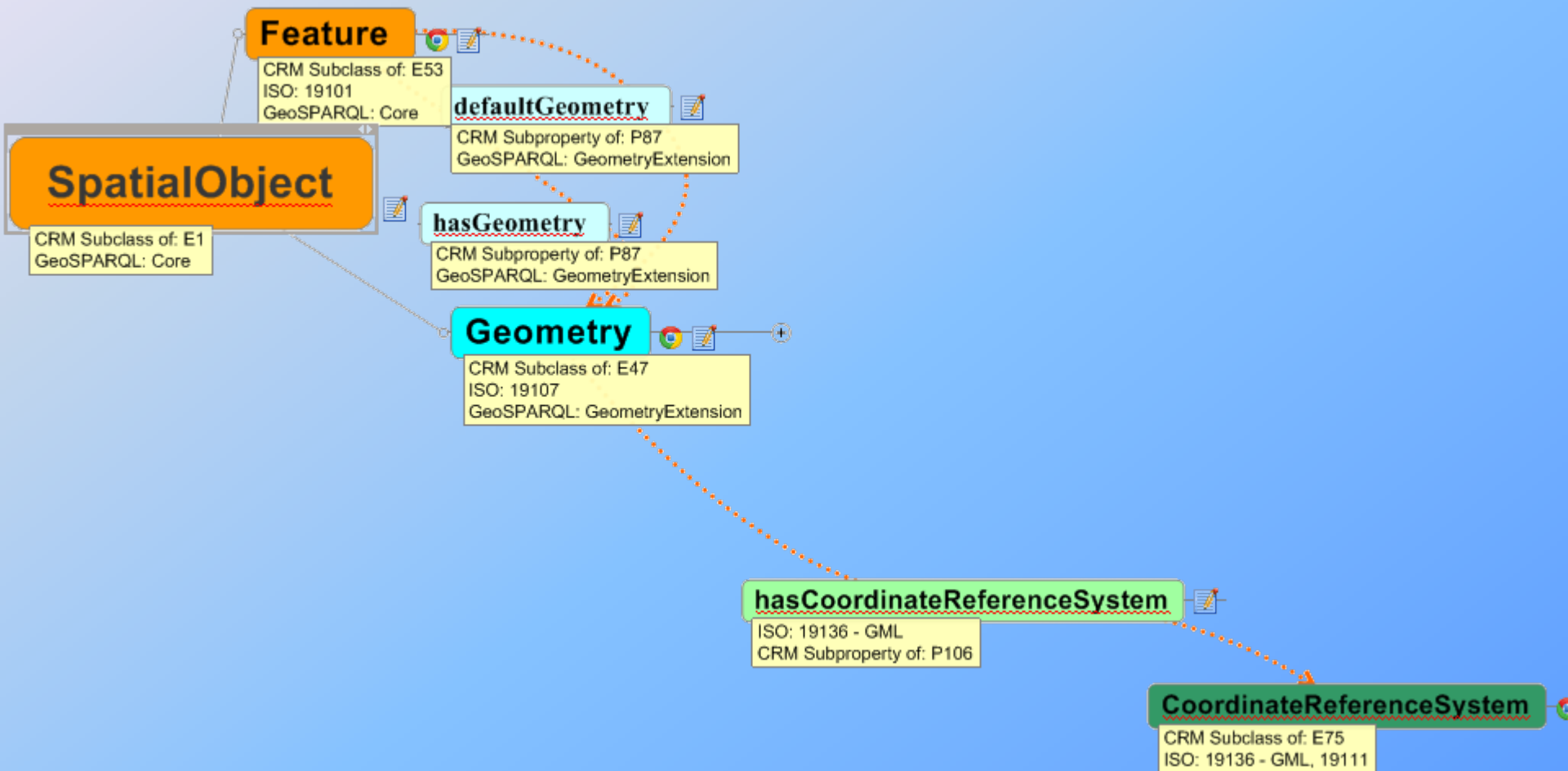
Example: Getty Thesaurus of Geographic Names (TGN) with placenames and coordinates

Suggestion: Subclass feature to E53 with the rule, that for any other semantic meaning of a feature a corresponding CRM object has to be created

Geometry as E47 Coordinate Information



Spatial Reference Systems as E75 Conceptual Object Appellation



RDF/OWL class hierarchy from the GML schema for Geometry subclasses

