



How to model geospatial data

handout

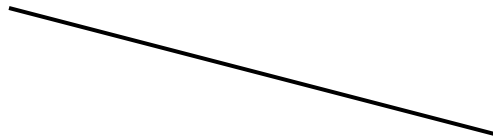
Ontologies and Semantic Web

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Specifics of spatial data

- Full extent of geo linked data is in the 9th Lecture/Tutorial
- This represent the basics needed for completion of Checkpoint 2 of semestral work
- Spatial data represent various spatial objects or groups of spatial objects in various coordinate reference systems.



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Representation of data - coordinate reference system

- Czech data will be most likely in one of two coordinate reference systems:

S-JTSK - official Czech CRS, very precise, used in cadastre

-748837 -1170362

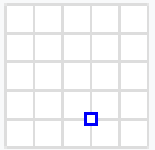
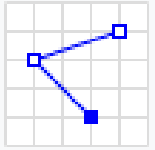
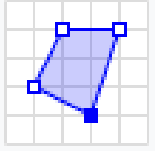
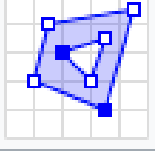
WGS-84 - basically GPS coordinates

14.57620 48.94729

Representation of data - Well Known Text (WKT)

- https://en.wikipedia.org/wiki/Well-known_text_representation_of_geometry

Geometry primitives (2D)

Type	Examples	
Point		<code>POINT (30 10)</code>
LineString		<code>LINESTRING (30 10, 10 30, 40 40)</code>
Polygon		<code>POLYGON ((30 10, 40 40, 20 40, 10 20, 30 10))</code>
		<code>POLYGON ((35 10, 45 45, 15 40, 10 20, 35 10), (20 30, 35 35, 30 20, 20 30))</code>

Representation of data - Geography Markup Language (GML)

- XML based format, described by set of XSD files available from: <http://schemas.opengis.net/gml/3.2.1/>

```
<gml:Point gml:id="P.AD.11883332" srsName="http://www.opengis.net/def/crs/EPSG/0/4258" srsDimension="2">  
  <gml:pos>50.3680827 12.8171168</gml:pos>  
</gml:Point>
```

Representation of data

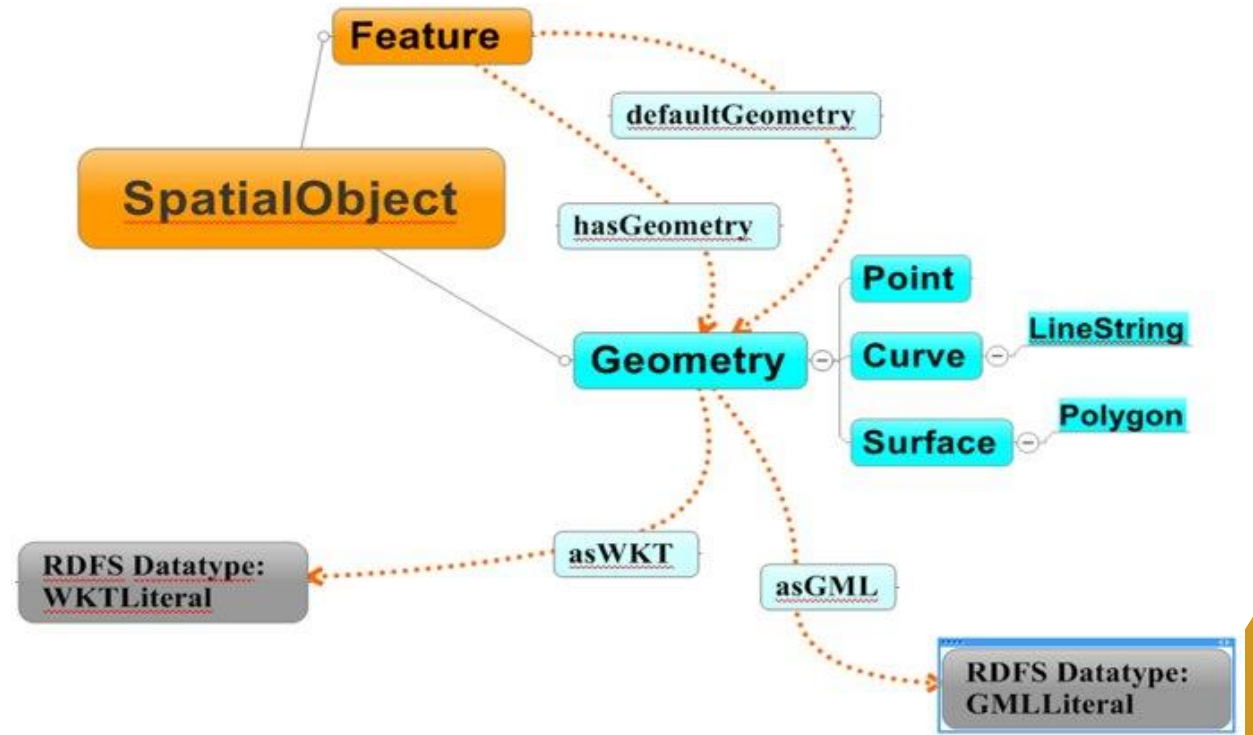
- See examples for basic objects in WKT and GML here: <https://ofn.gov.cz/prostorov%C3%A1-data/2019-08-22/#geometrické-objekty-typy>

Representation of spatial data in RDF

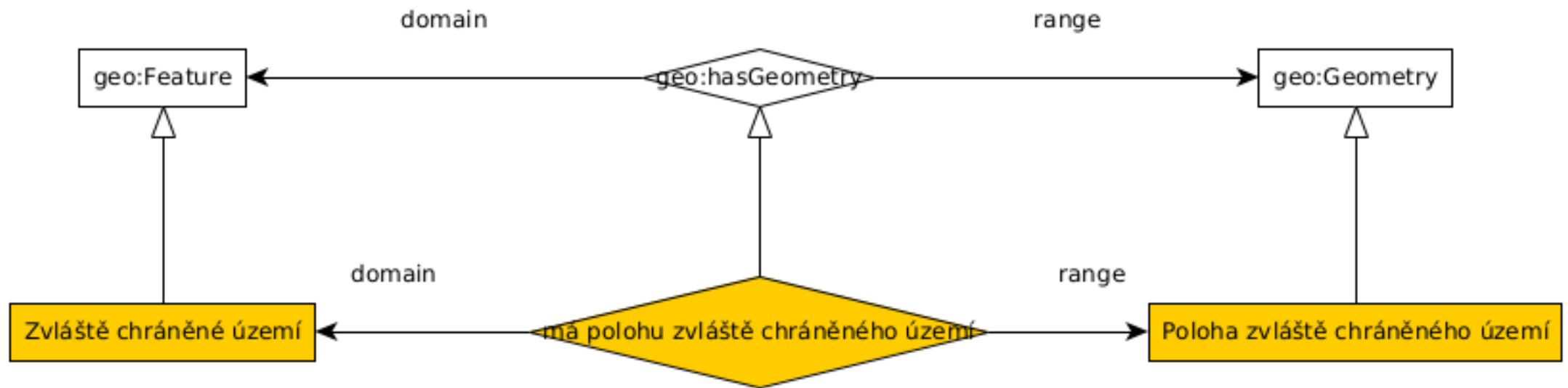
- Geometry is standalone object
- Spatially representable object = Feature
- Geometry representation is a Literal

GeoSPARQL

- fully integrated into GraphDB



Integration of GeoSPARQL into our schema



Integration of GeoSPARQL into our data

