Attendees

- Pieter Pauwels [Ghent University]
- Georg Schneider [Fraunhofer IBP]
- Jun Wang [Curtin University]
- Anna Wagner [TU Darmstadt]
- Claudio Mirarchi [Polimi]
- Peter Bonsma [RDF]
- Mads Holten Rasmussen [DTU]
- Gonçal Costa [LaSalle University]
- Seppo Törmä [Aalto Unversity / VisuaLynk.com]
- Kris McGlinn [TCD-Adapt]
- Victor Malvar [neanex]
- Georgios Lilis [TUCrete]
- Elke Sauter
- Maxime Lefrancois [emse Saint-Etienne]

Excused

- Erika Mata [IVL]
- Vladimir Vukovic [Teesside Univ.]

Date and time

- 10/08/2017
- 17:00 CEST

Agenda

1. Geometry on the web:
    - update in the development of example cases
2. Product data and property handling:
    - connection with BauDataWeb / GoodRelations;
    - relation with buildingSMART;
    - property evaluations;
    - progress and tests

Minutes

1. Geometry on the web:

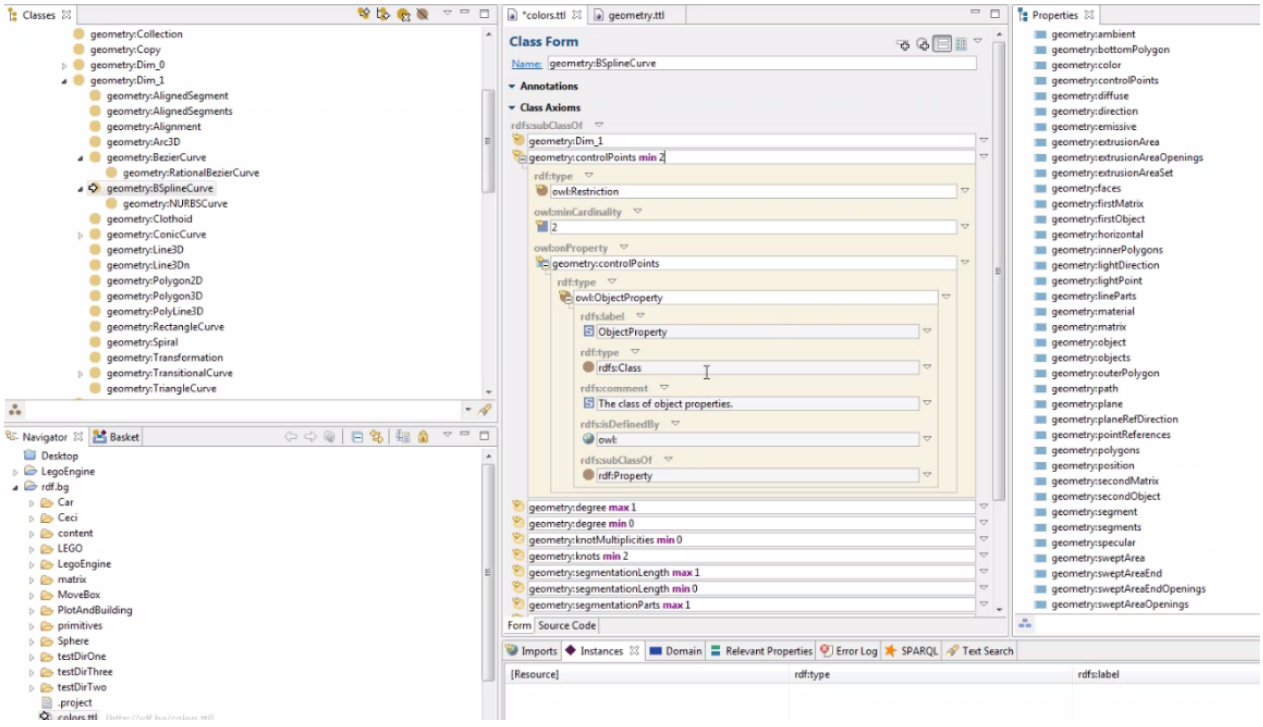
Pieter: Brief introduction to agenda for call, building on discussion from previous call. We began discussing equation-based geometry. We discussed whether or not a geometric ontology should aim at capturing the rules and logic and equations needed to generate different sorts of geometry, or whether we should aim to capture the ‘flat’ geometric representations directly. We did not conclude in the previous call.

In order to proceed, we asked Peter Bonsma (RDF.bg) to give a talk about the geometric ontology that he has built and that he uses in his software implementations.

Peter: We have created an ontology which describes the different concepts needed to represent geometry. This ontology is built up starting from our in-house software, which is able to parse IFC files and show them in a 3D editor. Our ontology is ‘split’ in four main categories:

- Appearance: about material, texture, colour,
- Environment: about light, projection,
- Geometric items: structured according several dimensions:
    - Dim0 - point;
    - Dim1 - curves, lines, etc.
    - Dim2 - faces, bezier surface, nurbs
    - Dim3 - Cube, sphere, etc.
- Mathematics: about matrix transformations mainly

Of particular relevance here are the classes and properties included in the GeometricItem category. Some indications about the ontology are given in the image below. The ontology is available now at http://rdf.bg/geometry.ttl. The ontology will be added in the W3C LBD pages (git repo https://github.com/w3c-lbd-cg/geometry).

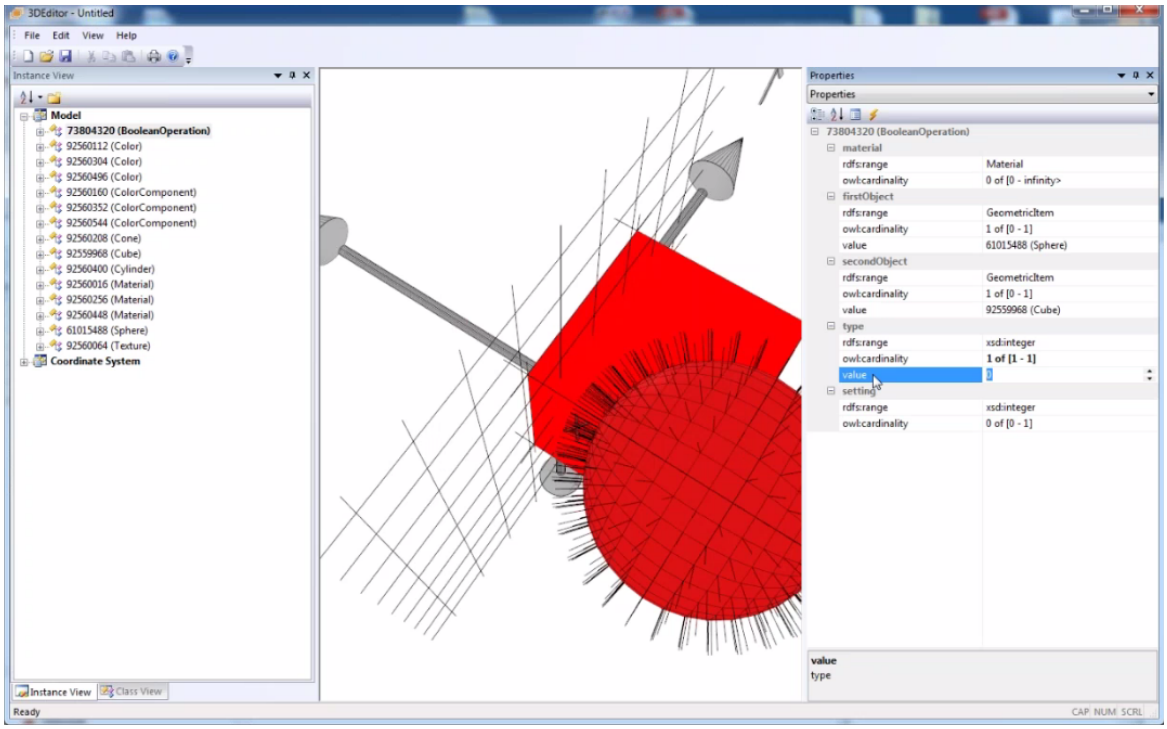


Using this ontology, you can capture the 3D geometric representation of objects, e.g. create an instance of “cone” and specify height, radius, materials.

The idea is to support users in extending this ontology with their own shapes. It is interesting to see if there is a basic set of static geometries.

The ontology is not complete and it should be evaluated within the W3C LBD group (examples needed that should be captured with this ontology).

The ontology is now used in commercial applications, for example our in-house application (screen-shot below).



The ontology specifies constraints, e.g. a bezier curve needs at least two points in its instantiation.

The ontology can capture any geometry that is also included in IFC. When converting from IFC4 some semantics is lost. For example, t?profile some semantics is lost (polyline?).

Peter gives demonstration of 3D Editor tool (screenshot above), which is based upon the ontology.

Pieter: So you can also capture the boolean operators and the matrix calculations as well, correct?
Peter: Yes, they are instantiated as well.

Georg: How does the ontology interface with IFC?
Peter: When we open an IFC file, it is parsed, and a number of mappings is defined internally that connect IFC entities directly with geometry classes in the ontology. So, they are filled directly by the software. This mapping is part of the commercial application of course, and not of the ontology.

Pieter: Not everything in IFC is geometric. Where and how do you draw the line? For example, IFCWall has geometry associated to it in IFC, but the entity is not in itself a geometric thing. How do you handle that?

Peter: In such cases, we map directly to those parent classes that do capture the geometry, in the case of IfcWall, that is IfcProduct. The mapping goes directly there.

Actions:
The group agrees that we can use this ontology as a starting point to capture geometry within our W3C LBD community group. We agree to place the ontology online in the appropriate GitHub pages (https://github.com/w3c-lbd-cg/geometry), document it in the same repository (README.md), develop example geometry representations for sample buildings (also in README.md), and prepare a description in subgroup Working Document the online webpage (https://w3c-lbd-cg.github.io/lbd/ and https://docs.google.com/document/d/1EqipM52agpk0cgXp1yC1npf93Cz-lQt127BGbV3j70g/edit).

2. Product data and property handling:

- connection with BauDataWeb / GoodRelations;
- relation with buildingSMART;
- property evaluations;
- progress and tests

Pieter: The original plan was to have more time for documenting ongoing work for capturing building product data and properties. We will postpone this to a follow-up call. We can briefly mention what the main idea is behind the product ontology and the property sets.

The product subgroup is forming (Mads, Walter, Emilio, Goncal, Pieter) and has been discussing a couple of things. The main plan is now to have a top-level product:Product class and a product:aggregates object property (prod.ttl in https://github.com/w3c-lbd-cg/product). This product:Product class is a subClassOf bot:Element, hence connecting to the building topology (bot:containsElement). Below that top-level, a range of products (valves, beams, tables, …) can be defined with more specific details (other files in https://github.com/w3c-lbd-cg/product).

Properties of those products are now meant to be kept separate in property set ontologies. This is very much tentative.

Work is underway to make sure that the above setup aligns well with what is available in BuildingSMART's Industry Foundation Classes (IFC).

Georg: Please consider also the issue stated on github discussing the relationship to GoodRelations (http://goodrelations.co.uk/) and BauDataWeb (http://wiki.goodrelations-vocabulary.org/Documentation). The BauDataWeb ontology specifies building products while referencing the GoodRelations ontology. The GoodRelations ontology is understood to be an ontology that can be generically used to capture commercial activities around offering products to market. BauDataWeb appears to have a focus on capturing more the material properties of materials, rather than capturing actual building elements. In that sense, our Product ontology should be complementary.

Previous minutes

https://docs.google.com/document/d/15rVYY486_YmhmZ5Q5MOR9NN-LIXm8ump6sIQKbJdwZM/

Next Calls

7 September 2017 17:00 CEST