CityGML

Minutes of the 4th WP 03 meeting (Web Conference)
- Draft-

Date: Monday, September 22nd, 2014

Start: 14.00 pm

End: 16.00 pm

Chair: Gerhard Gröger

Minutes: Gerhard Gröger

Participants:

Andreas	Donaubauer	Gerhard	Gröger
Kijoune	Li	Egbert	Casper
Lutz	Ross	Heinrich	Geerling
Joachim	Benner	Ben	Drinkwater
Filip	Biljecki	Jee-In	Kim
Karl-Heinz	Häfele		

Notation: **!** → decisions, ToDo's etc.

1. Date of next meeting

The next meeting shall take place at weeks 43 and 44 (end of October). A doodle poll will be initiated to agree on a date and a time (The result of the poll was 21st of October, 2 – 4 pm).

2. Minutes, Communication, documentation

The issues of meeting minutes, documentation of the WP 03 results and communication (email discussions) were raised. The record (audio and screen) of the last web conference (29th of August) will be provided as wmv-file soon. The current meeting is also recorded (it turned out later that unfortunately the recording did not work, but the minutes of the meeting have been provided).

The results of the discussion at https://github.com/opengeospatial/CityGML-3.0/wiki/WP%2003%20Home can be extended by any member; there is a history function to keep track of changes (however, the name of the member should be added to the text in order to explicitly assign changes to persons).

For discussions the mailing list citygml.swg-wp03@lists.opengeospatial.org should be used. Participants have to subscribe to this list at the internal OGC pages. For non-OGC-members, a workaround has been defined.

3. Discussion of modified LoD concept

After the presentation of alternative approaches and of the requirements of use cases, a number of discussion items have been identified in the last meetings (see https://github.com/opengeospatial/CityGML-3.0/wiki/WP%2003%20Discussion) One of the most crucial issues is the question whether the CityGML specification shall define concrete LoDs, or shall provide a mechanism for defining LoDs by communities. This issue was discussed first:

- All participants agreed that the geometrical aspects of the LoD shall be defined in the specification. Hence, it was discussed whether the semantical levels should be left upon the users or communities or should be defined in the specification. Two options were considered: a) semantics of an LoD is defined in a flexible way be specifying a list of feature types together with the geometrical level, i.e. a list of pairs (feature type, geometrical detail level). This list is defined by the user of by communities. This essentially is the proposal from Claus Nagel (see the presentation at the 1st meeting, 9th of July 2014). This option a) is called Nagel approach henceforth. The other option b) is the definition of subsets of feature types in the specification (in addition to the geometrical levels) and defining labels for such subsets. This essentially is the KIT approach (see the presentation at the 2nd meeting, 28th of July 2014). The pros and cons of both options are discussed:
  - The question is discussed whether an (ordinary) user exactly knows the feature types he needs and is able to specify this list for option a). There are users which are not able to provide this list; a labelled set of pre-defined lists would support such users. On the other hand, a flexible list allows for a tailored specification for each use case. Interoperability is supported by option b) and its standardized levels, whereas in a), data sets cannot be compared easily with regard to their levels.
  - Multiple representations (multiple LoD in the same model simultaneously) are possible in both options.
  - The extension of the LoD concept to cover attributes is discussed. This extension is possible, but a simple labeling of such subsets of attributes seems to be impossible. The reason is that there is no order or hierarchy in the list of attributes. The use of additional metadata is recommended to indicate attributes. This is possible with both options a) and b).
  - The complexity of both approaches is discussed controversially. In the Nagel approach, the specification of a particular LoDs is complex (list), in the KIT approach the specification (labelling) is simple (4 numbers for geometrical/semantical exterior and geometrical/semantical interior LoD). The constraints are more complex in the KIT approach (there are no constraints in the Nagel approach). However, the constraints in the KIT approach can be released without changing the core idea of approach significantly.
  - The degree of deviation from the current LoD concept is discussed. With regard to the label concept, the KIT approach is much closer to the current concept. The current and the KIT concept both define an LoD for the whole building (including substructures). In the Nagel approach, for each substructure

the LoD has to be given explicitly. A mapping from the current to the new concept is possible for both options.

- o Both options are identical with respect to the definition of the geometrical level. Both definitions correspond to the current definition, which is not precise. The definition should be made more precise and more compulsory in the modified approach.
- o A geometrical sub-level between LoD1 and LoD2 is proposed. As criterion for the geometrical LoD definition, a minimum size of a feature of a particular type is proposed.
- o It is discussed whether all use cases are enabled by the concepts a) and b). For a) this is clearly the case, since it is flexible and can be tailored to any use case. For b) there is no indication that use cases are not covered; this issue will be a topic of the next meeting.
- o In order to compare the two options, a specification of the LoDs for each of the use cases discussed in the last meeting should be provided for the next meeting.
- o For option b), the UML diagram already has been discussed in the modelling group of the SIG 3D. In this diagram, some additional feature types (storeys, …) are represented, which are currently under discussion (there types have to be ignored for the LoD discussion). There is no UML diagram for the Nagel approach (a) yet.

- The second crucial issue raised in the preceding meetings is how obligatory and precise the LoD definition should be. Both approaches a) and b) are compulsory with respect to semantics/feature types: if a feature type is listed in the definition, it must be represented in the data if it occurs in the real world (of course, the imperfection and detection rates of current acquisition methods for buildings have to be taken into account). In the current LoD concept, semantics is not compulsory.

- Topics for the next meeting:
    - o Further discussion of the options a) and b). Deliverables:
        - UML diagram for the Nagel approach (VCS)
        - UML diagram for the KIT approach (as presented in the modelling group of the SIG 3D with some modifications)
        - Specifications of the LoDs for the use cases discussed in the last meeting (both options)
    - o Definition of the geometrical aspects of the modified LoD concept
        - presentation by Philip Biljecki
        - presentation by Jee-In Kim