Kanishk Chaturvedi
09.07.2015

Minutes of Meeting
CityGML 3.0 WP06 Twelfth Meeting

Participants

- Thomas H. Kolbe, TU Munich
- Gilles Gesquière, LIRIS
- Steve Smyth, OpenSitePlan
- Kanishk Chaturvedi, TU Munich

Agenda of the meeting

- Discussion on modified approach of supporting patterns within dynamic data schema.
- Summarization of concepts discussed for development of dynamic data schema
- Finalization of dates for the next meeting.

Modified approach for supporting patterns

- The presentation was given by Kanishk on the modified approach of supporting patterns within dynamic data schema.
- The presentation includes
    o Need for supporting patterns
    o The current state of support of absolute and relative time points. The relative time points only supports comparative operations on time periods, but not arithmetic or metric operations.
    o The discussion on how the repetitive patterns are supported in different calendars such as Google or Outlook.
    o The proposed approach of supporting different patterns within the dynamic data schema.
- In the proposed approach, the timeseries are extended to support atomic timeseries (defined only once) and composite timeseries (timeseries of arbitrary depths). The advantage with this approach is that it allows to define patterns having sub-patterns of arbitrary depths. Also, any interval can be used for defining patterns.
- In the end, various examples of atomic and composite timeseries have been provided.

Summary on Dynamic Data schema

- The second presentation was given by Kanishk summarizing all the concepts (which have been discussed so far) towards the development of the dynamic data schema
- The concepts described were
    - Coverages, having a temporal domain set, a range set and a coverage function which maps the time values in the domain set to the range values according a function.
    - WaterML2.0 Timeseries, which may allow various timeseries to be defined within the domain set of the coverages. The advantage with this approach is that it allows defining interpolation types for derivation of values at unsampled time points.
    - Supporting patterns by extending the timeseries
- In the end, the UML model is proposed integrating all the three concepts mentioned earlier. A new feature type 'Dynamizer' is defined which utilizes the GML implementation of ISO19123 AbstractCoverage. It, thus, consists of (i) a temporal domainSet, (ii) a rangeSet (having time-varying attribute values), and (iii) a coverageFunction, which maps the time values in the domain set to the range values accroding to a function.
- Utilizing XPath mechanism, the dynamizer, can then, refer to a specific property of a static city model feature which value can be then overridden or replaced by the dynamic value specified in the dynamizer feature.
- The dynamizers currently support timeseries domain whose values can be mapped to the dynamic attributes. This feature is further extended to support complex patterns utilizing composite design patterns.
- Furthermore, a first approach to link sensors to a city object is also presented as future work.
Discussions:
- Currently, the dynamizer feature is a part of city object, which means every city object may have a list of dynamizers. However, it should also be possible for dynamizers to be a part of AbstractFeature.
- Should we extend or reuse WaterML2.0 timeseries in our approach?
- Can the proposed approach be used as an Application Domain Extension (ADE)?
- How can the dynamic data schema be overlapped with earlier proposed versioning schema?

Next steps

- Kanishk will work on questions discussed and present the modified version of the dynamic data schema.
- Steve will present on time representation defined within calendars.
- Gilles and his team is currently working on temporal ADE based on versioning schema. If ready, Gilles will present on the developments of temporal ADE.

Next meeting

- The next teleconference will take place on September 1, 2015 (5pm-7pm CEST).