Kanishk Chaturvedi
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Minutes of Meeting
CityGML 3.0 WP06 Thirteenth Meeting

Participants

- Thomas H. Kolbe, TU Munich
- Gilles Gesquière, LIRIS
- Jérémy Edert, LIRIS
- Kanishk Chaturvedi, TU Munich

Agenda of the meeting

- Updates on the paper related to versioning schema
- Presentation on Temporal ADE based on versioning schema
- Discussion on modified approach of supporting patterns within dynamic data schema.
- Finalization of dates for the next meeting.

Update on the paper on versioning schema

- The paper on versioning schema titled ‘Managing versions and history within semantic 3D city models for the next generation of CityGML’ has been accepted as full paper by 3D GeoInfo 2015 conference.
- The conference will take place on October 28-30, 2015 in Kuala Lumpur, Malaysia and Kanishk will present the paper in the conference.

Temporal ADE based on Versioning Schema

- The presentation was given by Jérémy Edert on the ongoing work on development of Temporal ADE, which is based on versioning schema developed under the scope of CityGML 3.0.
- The AbstractCityObject and derived classes made versionable by
    - Injecting the required properties into AbstractCityObject using the ADE hooks
    - Changing the types of the members of Versions and Transactions from VersionableAbstractFeature to AbstractCityObject.
- The resulting XSD file generated using ShapeChange.
- The work is undergoing to modify the tool 3D-USE (developed by LIRIS) to parse and handle such versionable city models/objects. 3D-USE is a tool for elaborating and validating new

processes on city models. It can open many file formats like CityGML, 3ds, obj or Shapefile. It also provides 3D visualization of data coming from these files.

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
    - Need for supporting patterns
    - The current state of support of absolute and relative time points.
    - The discussion on how the repetitive patterns are supported in different calendars such as Google or Outlook.
    - 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.
- Various examples of atomic and composite timeseries have been provided.
- 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.
- How can the dynamic data schema be overlapped with earlier proposed versioning schema?
- Currently, a first approach is proposed to link sensors to a city object using the dynamizer feature. Is it useful to link sensors directly to the relative time series?

Next steps

- Kanishk will work on preparing the instance datasets demonstrating the dynamizer approach. The Dynamizer ADE will be developed as a first step.
- Kanishk will present the proposed Dynamizer approach in the next OGC TC Meeting to be held in Nottingham on September 14-18, 2015.

Next meeting

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