2nd Joint SIG 3D and OGC Workshop - CityGML EnergyADE for building energy calculation

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Working group metadata

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- CityGML Metadata discussion at SIG3D and OGC
- Closer look at metadata in CityGML
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Metadata

Data

Please note: the information provided can & should be overlapping!
And though technically both can be considered as data, there are some differences:

1. **Purpose**: metadata has a cataloguing functionality
2. **Reference**: metadata should come with data it refers to
3. **Accessibility**: metadata often comes with different means to access it

ISO 19115

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From Wikipedia (since this is no scientific publication):

- "*This International Standard provides information about the identification, the extent, the quality, the spatial and temporal schema, spatial reference, and distribution of digital geographic data.*"
- "*Though this International Standard is applicable to digital data, its principles can be extended to many other forms of geographic data such as maps, charts, and textual documents as well as non-geographic data.*“
- Provides about 400 attributes describing data, about 20 of them mandatory

Content of metadata according to ISO 19115:

- http://www.geoportal.de/SharedDocs/Downloads/DE/GDI-DE/Deutsche_Uebersetzung_der_ISO-Felder.pdf;jsessionid=F5C279FBE8CB94E911B535FB4EFFE4EE?__blob=publicationFile

ISO 19139

- Metadata can be provided as an XML document. The XML encoding is regulated in ISO 19139.
- Helpful for exchanging metadata in a spatial data infrastructure with the help of catalogue services (OGC CSW) (see: http://inspire-geoportal.ec.europa.eu/)
- By the way: Since CityGML is a XML dialect it also could import metadata elements from ISO 19139 or 19156 (O&M) directly

```
<?xml version="1.0" encoding="UTF-8"?>
<gmd:MD_Metadata xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xml
    <gmd:fileIdentifier>
        <gco:CharacterString>2c52a18c-7f95-4c76-9c8c-5ad842979e21</gco:CharacterString>
    </gmd:fileIdentifier>
    <gmd:language>
        <gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-2/" codeListValue="eng"/>
    </gmd:language>
    <gmd:characterSet>
    <gmd:contact>
        <gmd:CI_ResponsibleParty>
    </gmd:contact>
    <gmd:dateStamp>
    <gmd:metadataStandardName>
    <gmd:metadataStandardVersion>
    <gmd:spatialRepresentationInfo>
    <gmd:referenceSystemInfo>
    <gmd:identificationInfo>
        <gmd:MD_DataIdentification>
            <gmd:citation>
                <gmd:CI_Citation>
                    <gmd:title>
                        <gco:CharacterString>Eger Digital Surface Model</gco:CharacterString>
                    </gmd:title>
                    <gmd:date>
                        <gmd:CI_Date>
                            <gmd:date>
                                <gco:DateTime>2014-02-05</gco:DateTime>
```

INSPIRE Metadata

- Basically took ISO 19115, 19119 and 19139 as a starting point
- Renamed some attributes, made some attributes mandatory, others optional
- See INSPIRE Portal: „INSPIRE Metadata Implementing Rules: Technical Guidelines“
- Also see presentation of Gerhard Gröger

Metadata discussion at SIG3D

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- Discussed at a SIG3D meeting (4.3.2013)
- It was decided to have a look at ISO 19115 and INSPIRE metadata
- A list of possibly interesting metadata attributes was compiled
- http://en.wiki.modeling.sig3d.org/index.php/Metadata_and_Complex_Attributes
- So the discussion started, but was delayed since OGC manages CityGML now

Metadata in CityGML 3.0 development

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Quote from the original "metadata"-change request of Gerhard Gröger: *CityGML currently lacks a standardized specification of metadata. Metadata are crucial to assess the suitability of CityGML data sets for specific applications, and to interpret spatial data. The CR13-029 (Meta data for city model) is restricted to metadata for a whole dataset. But also metadata at the level of a single feature or even a single attribute or geometry value is required. Hence, this change request complements/generalizes CR 13-029.*

Add a specification for metadata to CityGML. Metadata defined in ISO 19115 (gml encoding: ISO 19139) should be selected and extended to meet the needs of 3D city models. Metadata defined in the INSPIRE Building model which facilitate the interpretation of generalized 3D geometries (at the level of single geometries or attribute values) should be adapted." (source: https://portal.opengeospatial.org/files/?artifact_id=55987)

Metadata WP for CityGML 3.0 development

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- Discussed in WP 12
- Beginning of 2015
- Lead: Gerhard Gröger
- For progress of CityGML 3.0 metadata WP have a look at: https://github.com/opengeospatial/CityGML-3.0/wiki/WP%2012%20Home

“External” and “internal” metadata

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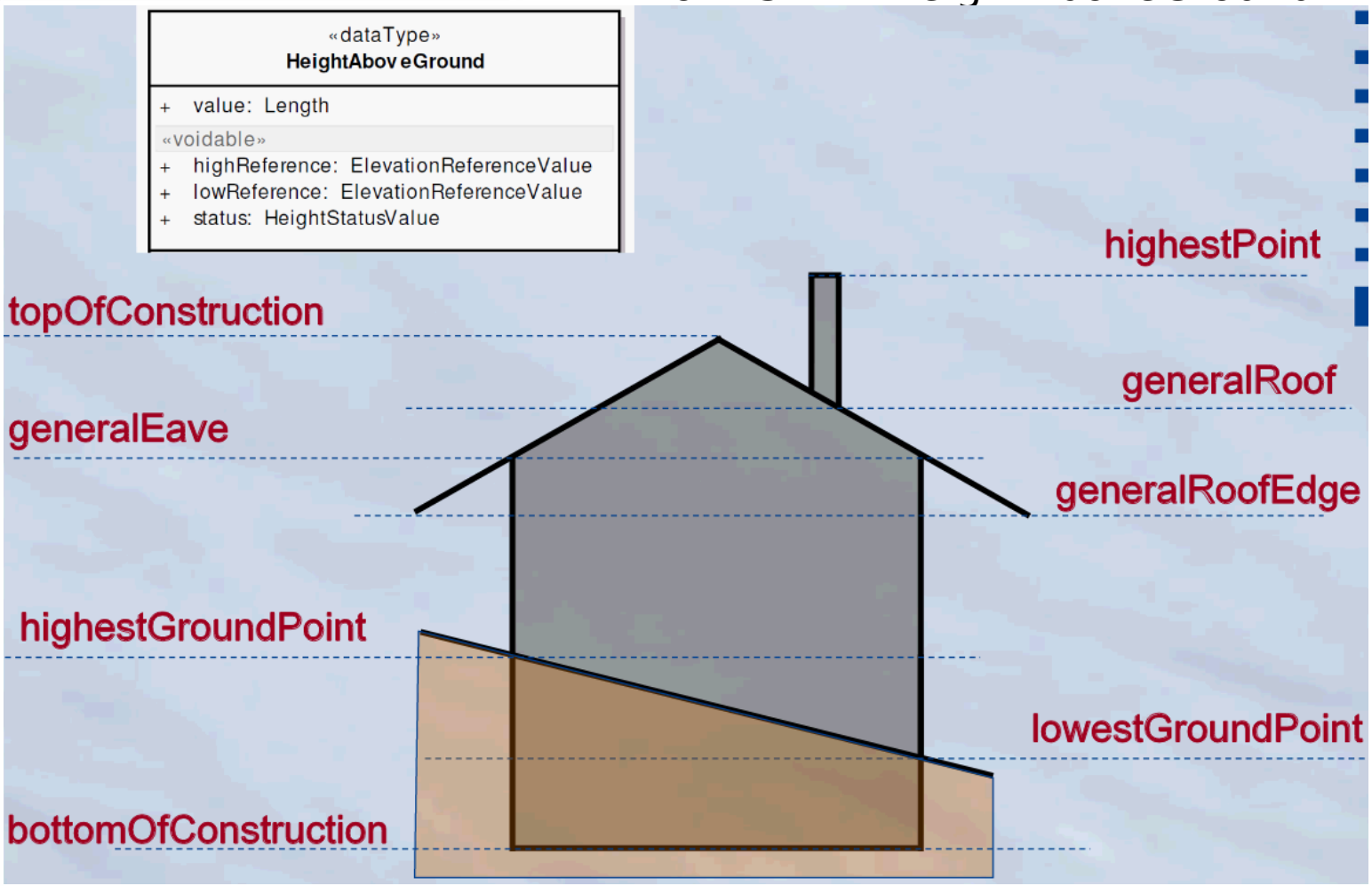
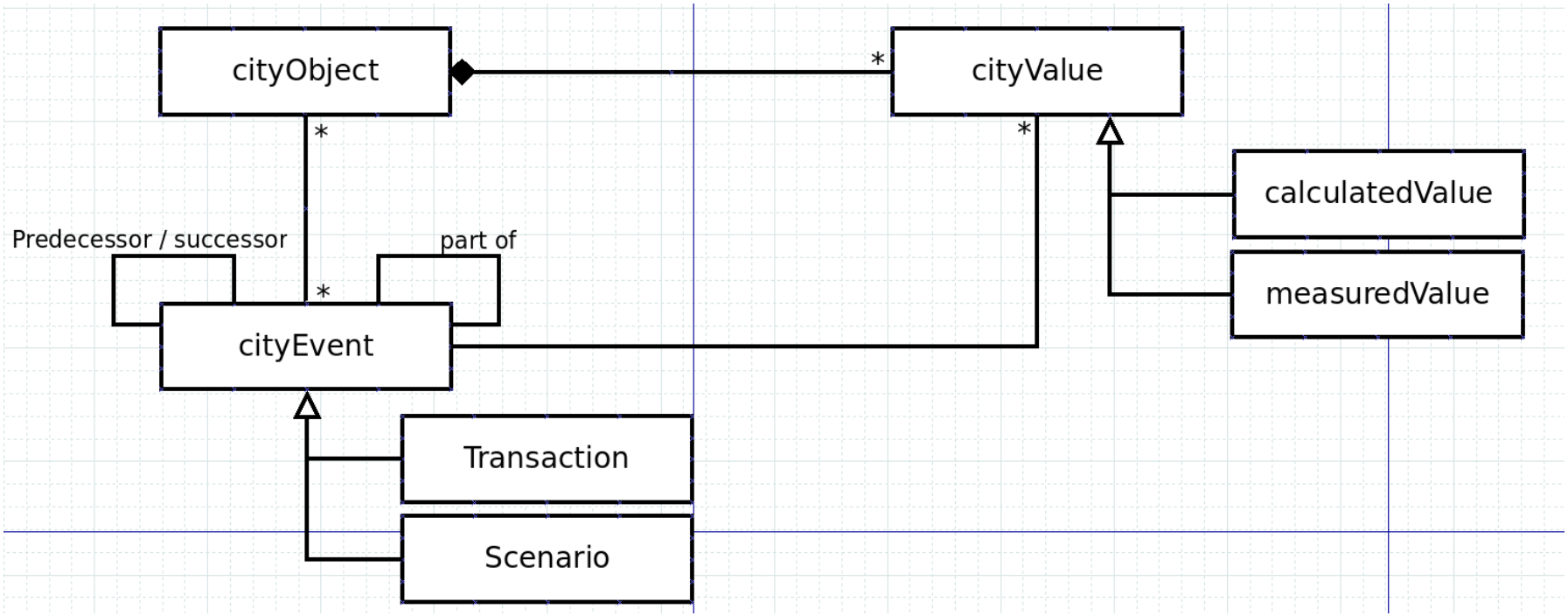
- To my understanding metadata always should have the external aspect (like with the booklet and the CD)
- If the band announces its name in the beginning of the track I wouldn´t be able to tell without the means to read the CD. Also searching for a certain CD would be really annoying.
- None the less it might be desired to include certain (meta) information into the dataset as well (e.g. contact person, height reference point, how the data was captured & quality) so in case I only get a CityGML dataset I still can assess its usability
- Including the information into CityGML brings the benefit that the data can be processed as well (e.g. to derive a overall data quality for multiple features)
- Though technically this would be data! (overlapping with regular data modelling discussion)

Additional information necessary: relativeHeight compared to INSPIRE heightAboveGround



“Internal metadata” for cityValues a draft

Something like a Key-value pair



Serving amongst others as a grouping mechanism for cityValues

In case of an ADE sticking closer to original CityGML it might be easier to provide the “grouped” data in “external” metadata

Including events or values would make CityGML more abstract

…you can imagine that this will become a bigger discussion.

e.g. “vom statischen zum dynamischen Stadtmodell” T. Kolbe at the 14. Seminar GIS und Internet (UniBW München, September 2014)

Possible goals of the energyADE working group metadata

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Proposed goals for the energyADE metadata group: Since the OGC CityGML 3.0 working group will start in the beginning of next year with the development of a metadata concept for CityGML standard and since the working groups are working use case driven, the goal of the Energy Working Group G4 could be:

- to gather metadata which is generated from and needed for energy modelling
- optionally including suggestions where this metadata might be stored
- consider requirements for data quality management
- to prepare use case documents which can be handed over to the OGC CityGML metadata working group

Source: http://en.wiki.energy.sig3d.org/index.php/Group_Metadata_and_scenarios_%28G4%29

To be more specific

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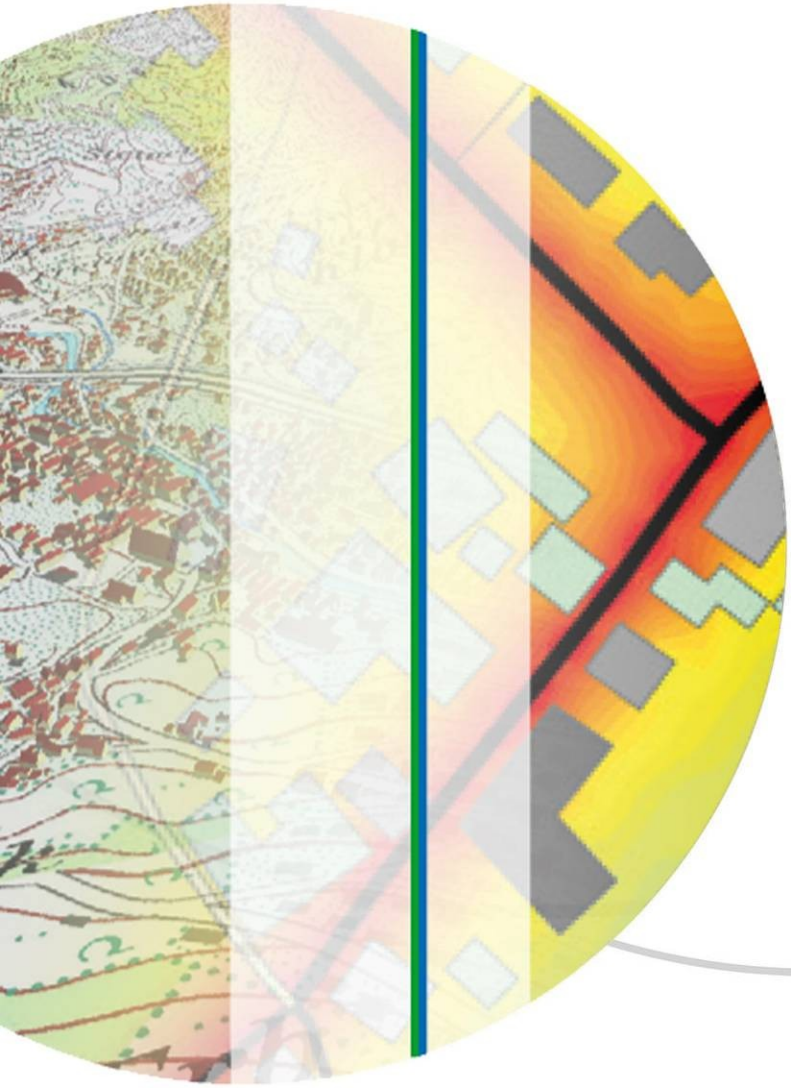
- identify topic where “meta-information” is needed for energy modeling [now!]
- Compile & collect more detailed lists for specific models [till next meeting, preferably a few days earlier]

Topics which need to be addressed by metadata for CityGML ...from an energyADE perspective

- ???

In case you can contribute by compiling a list of necessary metadata – please send it to vkraut@moss.de or eben better: add it to our wiki!
http://en.wiki.energy.sig3d.org/index.php/Group_Metadata_and_scenarios_%28G4%29



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Thank you for
your attention!

And hopefully also
contribution...

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