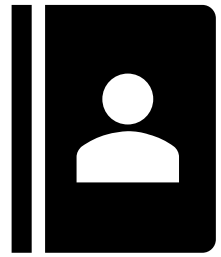

SAMSU

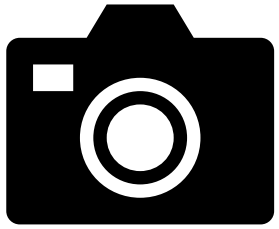
Specifications

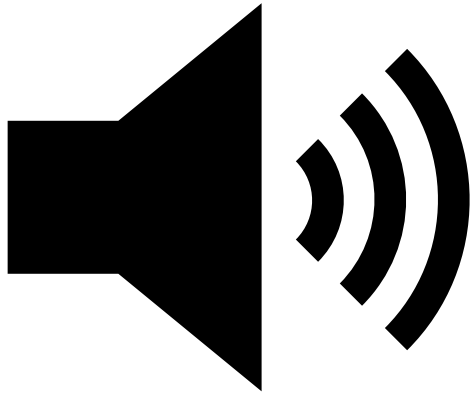
Hardware

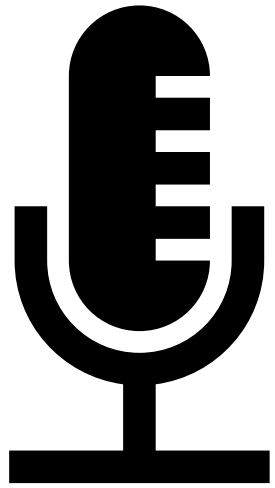
Video call

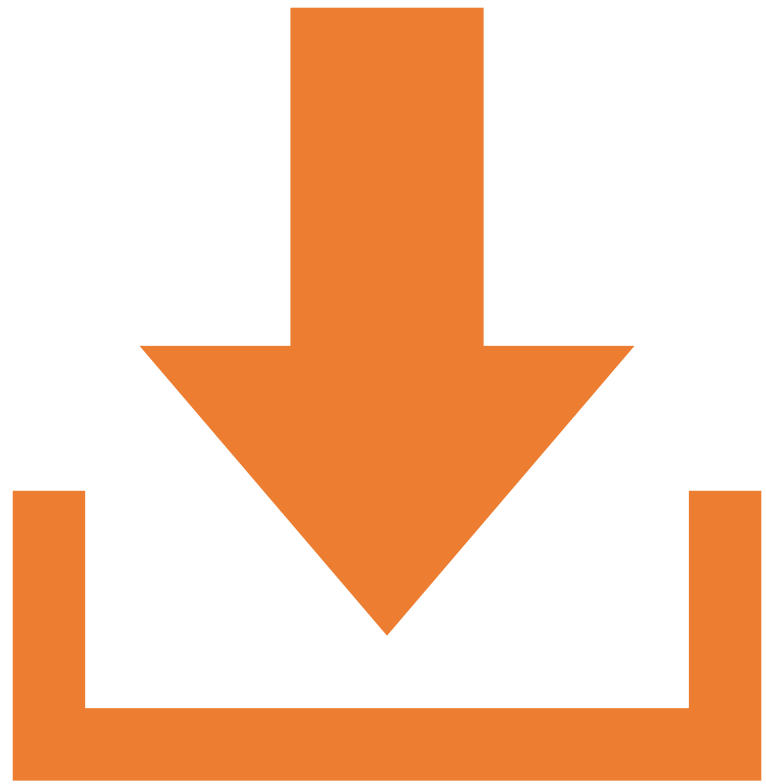
?











Further Development of a QGIS Plugin for the CityGML 3D City Database

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Supervisor 2: Camilo Leon-Sanchez

External Supervisor 1: Claus Nagel

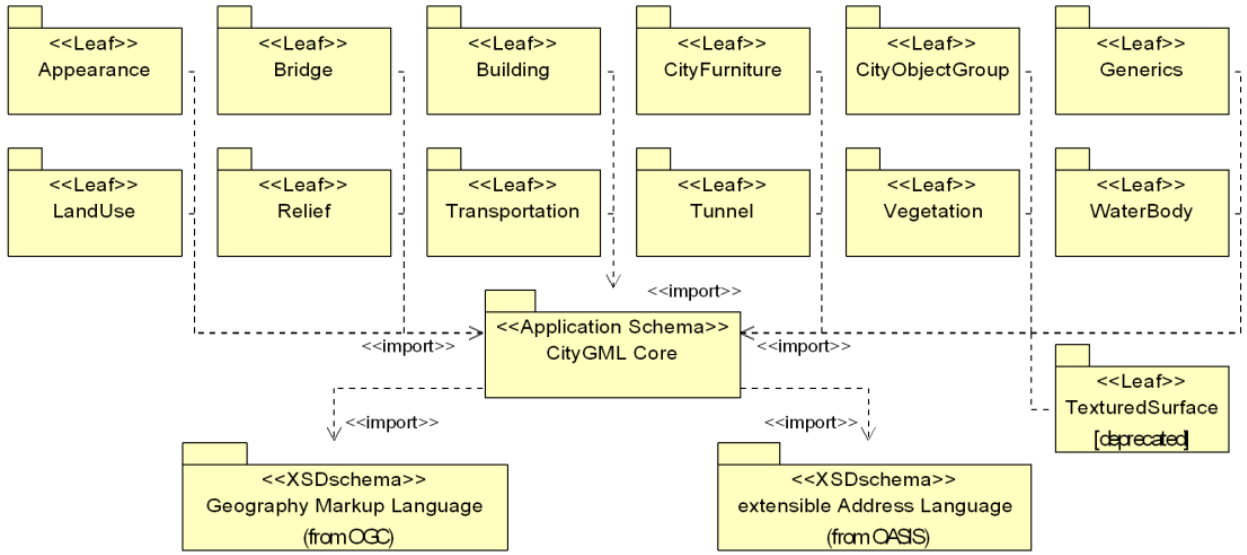
External Supervisor 2: Zhihang Yao

Co-reader: Martijn Meijers

Contents

Related Work

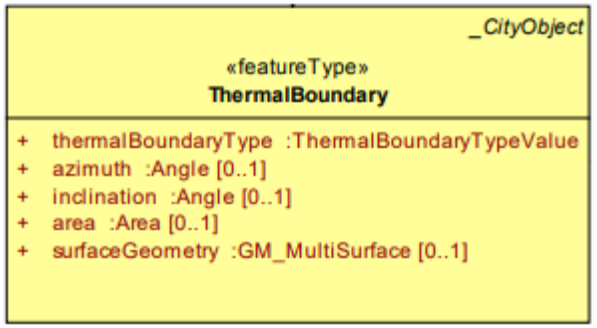
- City Geographic Markup Language (CityGML)
- Extensibility – Application Domain Extensions (ADEs)



Energy ADE

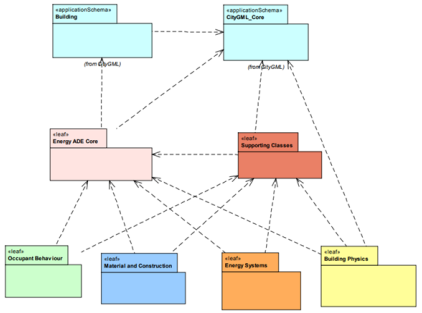
Building energy assessments

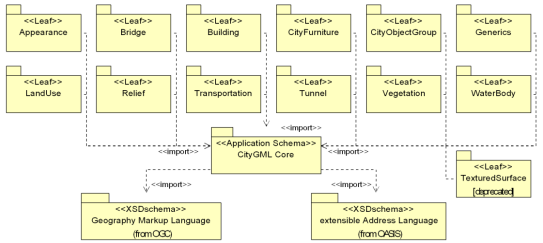
1. Solar Potential
2. Energy Demand



3D City Database

- 3DCityDB
- Relational Database
- Why?
  1. Efficient querying
  2. Access from external applications



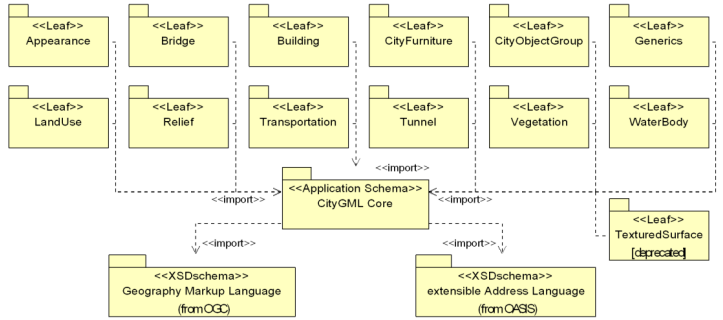


id	area	azimuth	...

id	class	usage	...

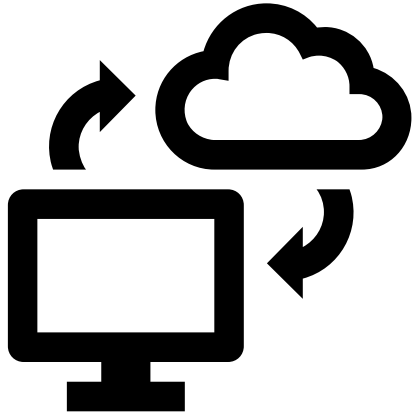
3D City Database

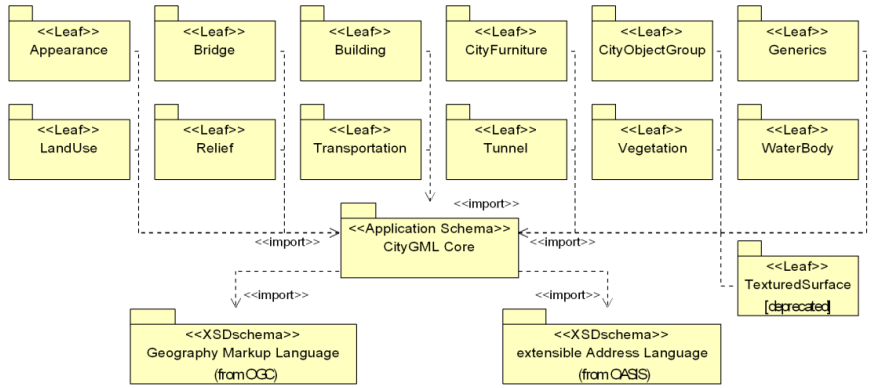
- **But, 3DCityDB structure is complex.**
- **66 tables**
- **So, why not QGIS?**



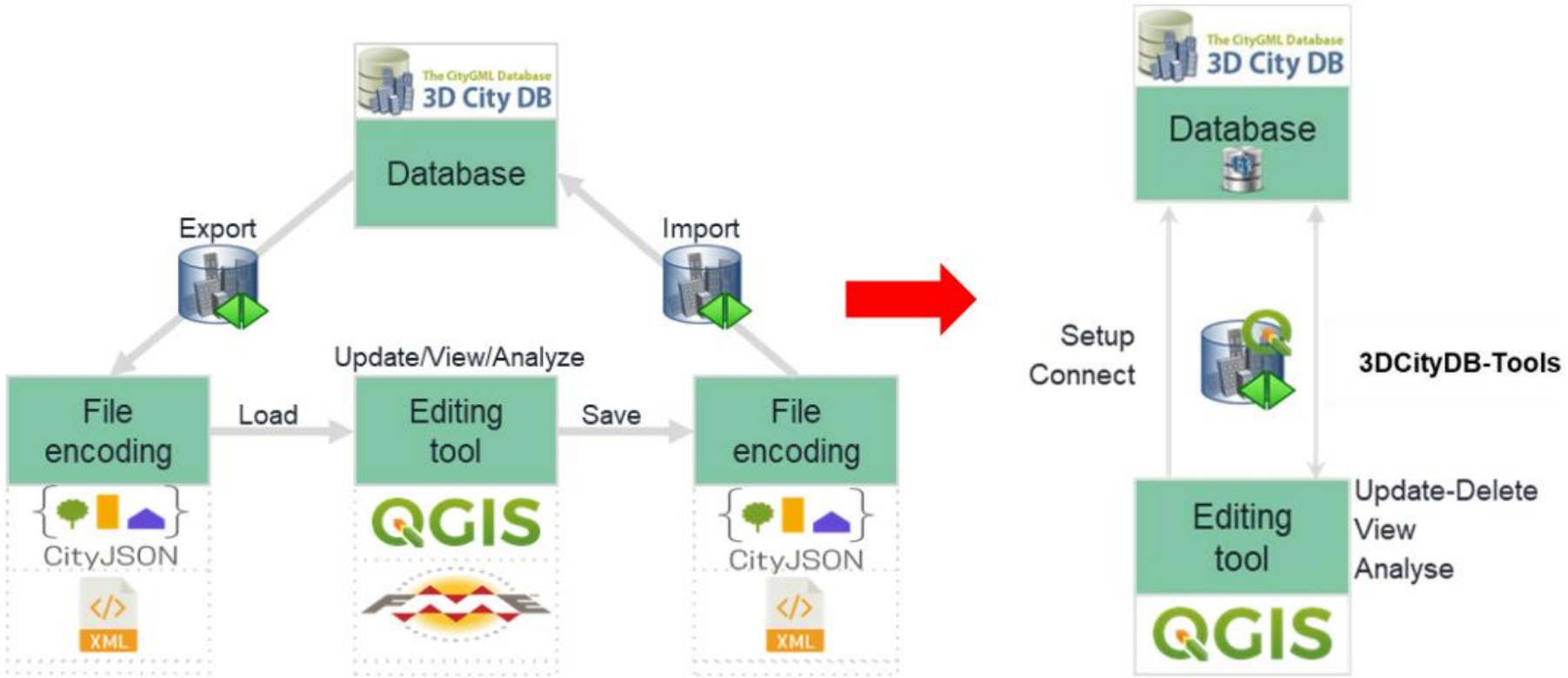
id	class	usage	…

3DCityDB-Tools





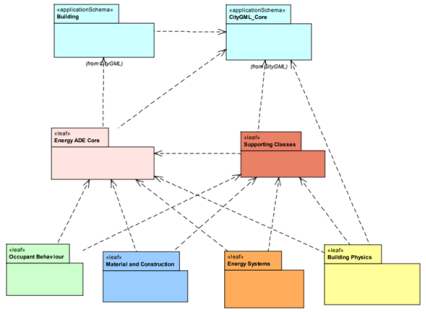
3DCityDB-Tools



Source: Agugiaro and Pantelios (2022)

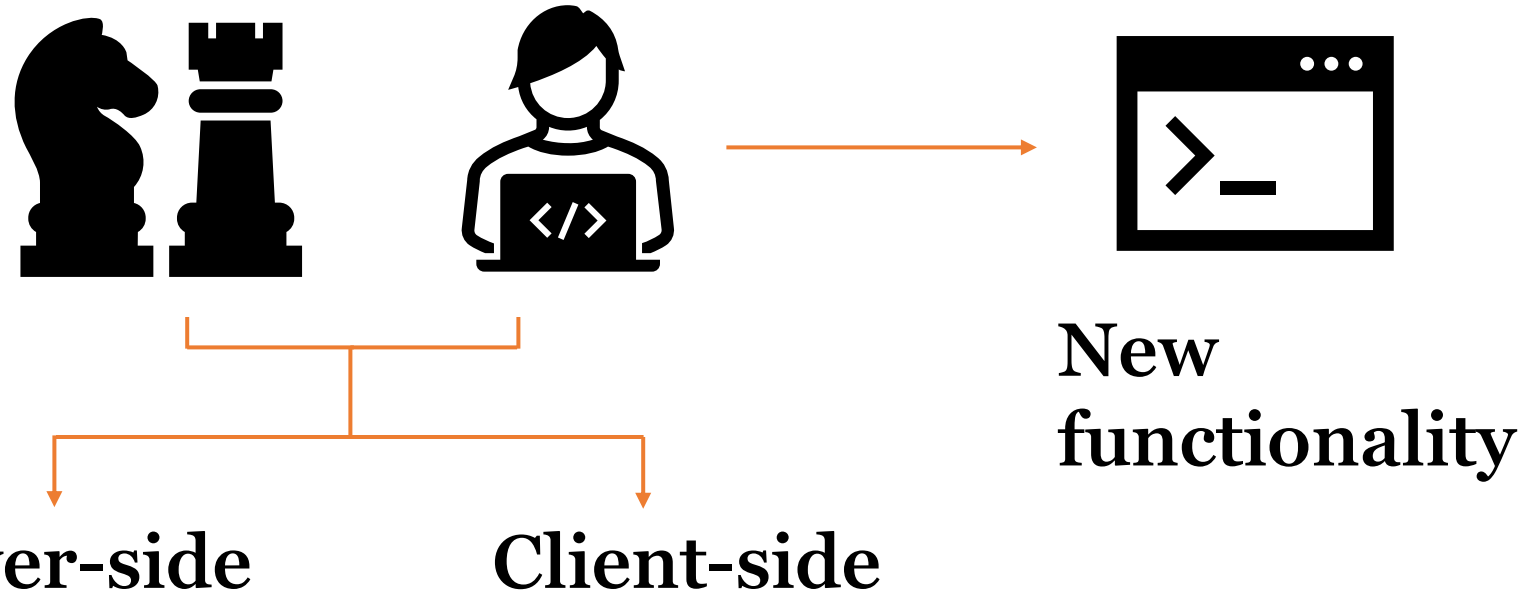
Motivation

- ADE required for specific use cases
- 33 additional tables in 3DCityDB
- No ADE support in 3DCityDB-Tools

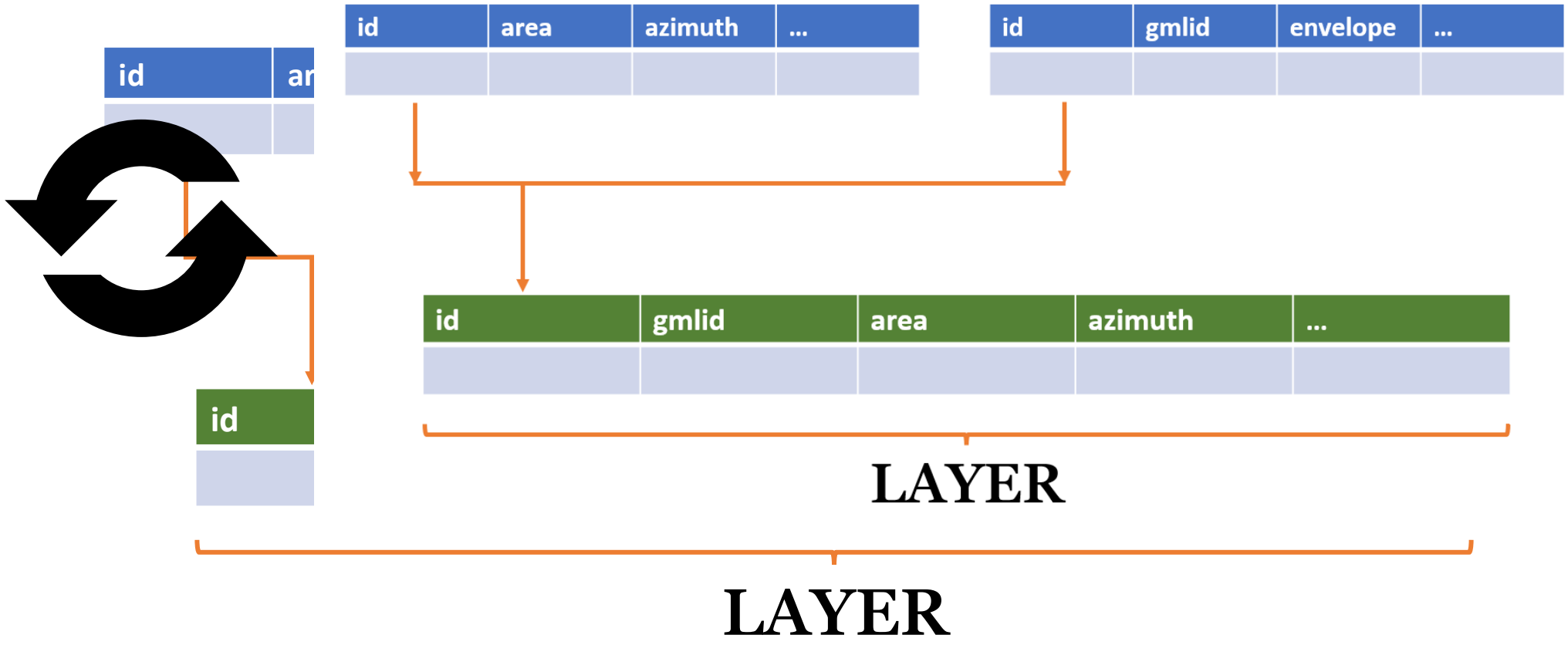


id	area	azimuth	...

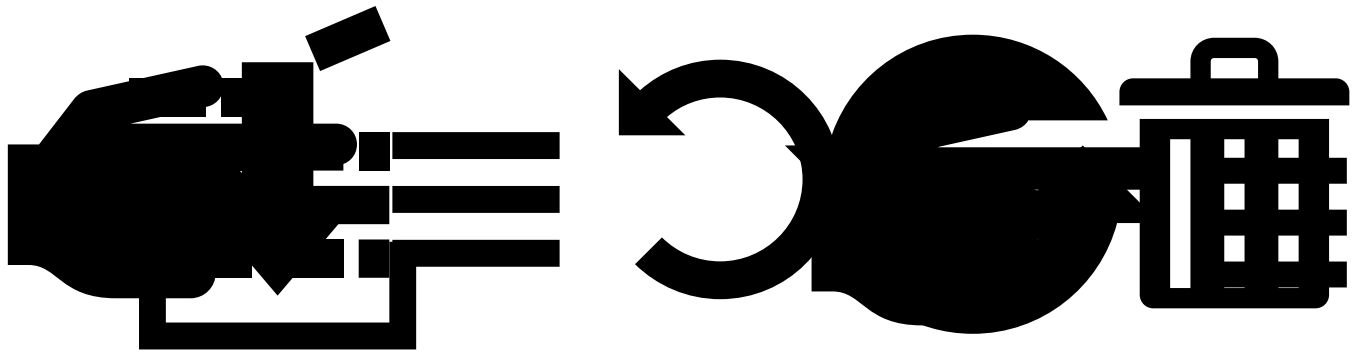
Research Objectives



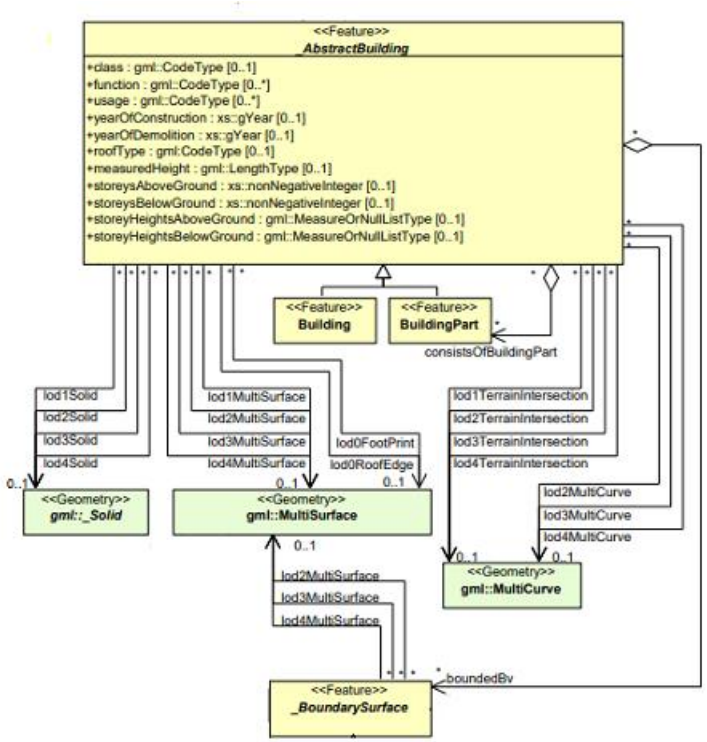
Server-Side



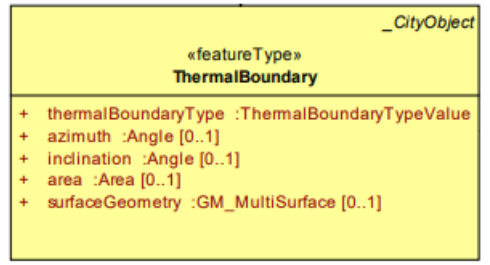
Client-Side

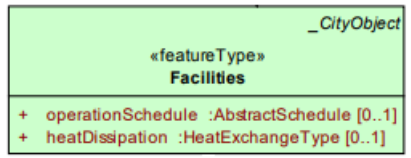


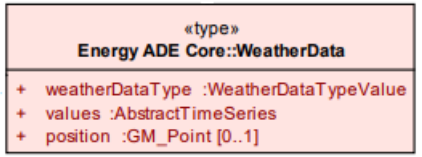
ARE ALL LAYERS THE SAME ?

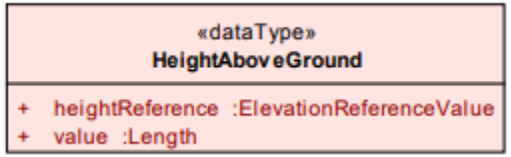


	CityGML	Energy ADE
CityObject	✓	?
Geometry	✓	?
Level of Detail	✓	?
Layer Type	VectorLayer	?

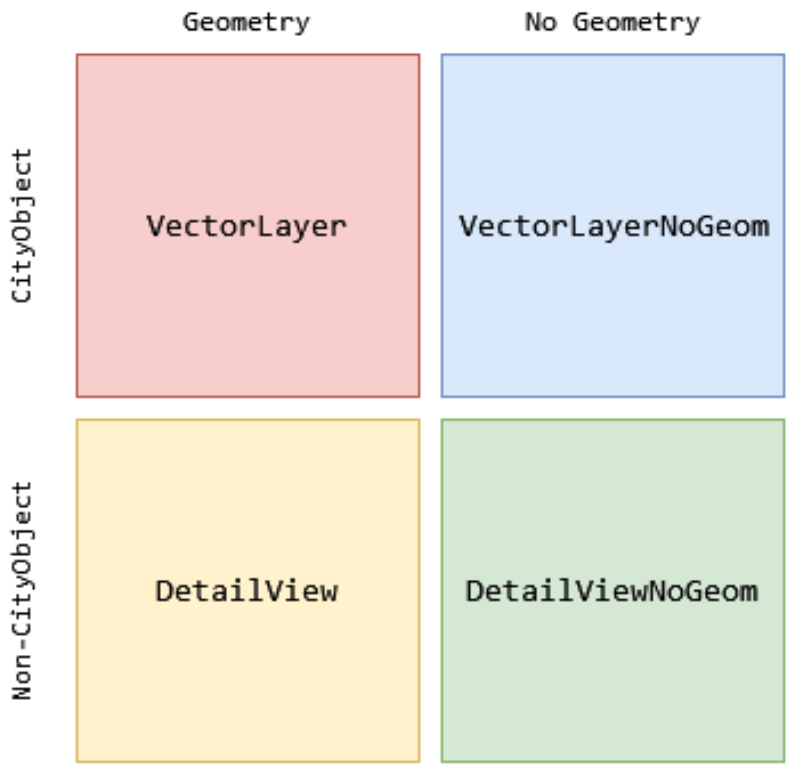








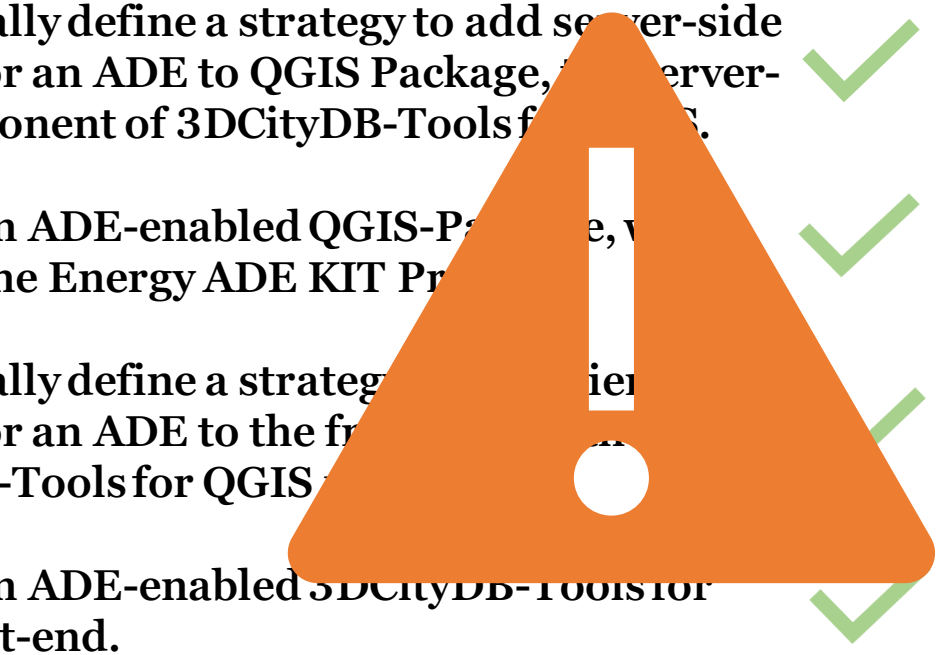
Layer Types



DEMO

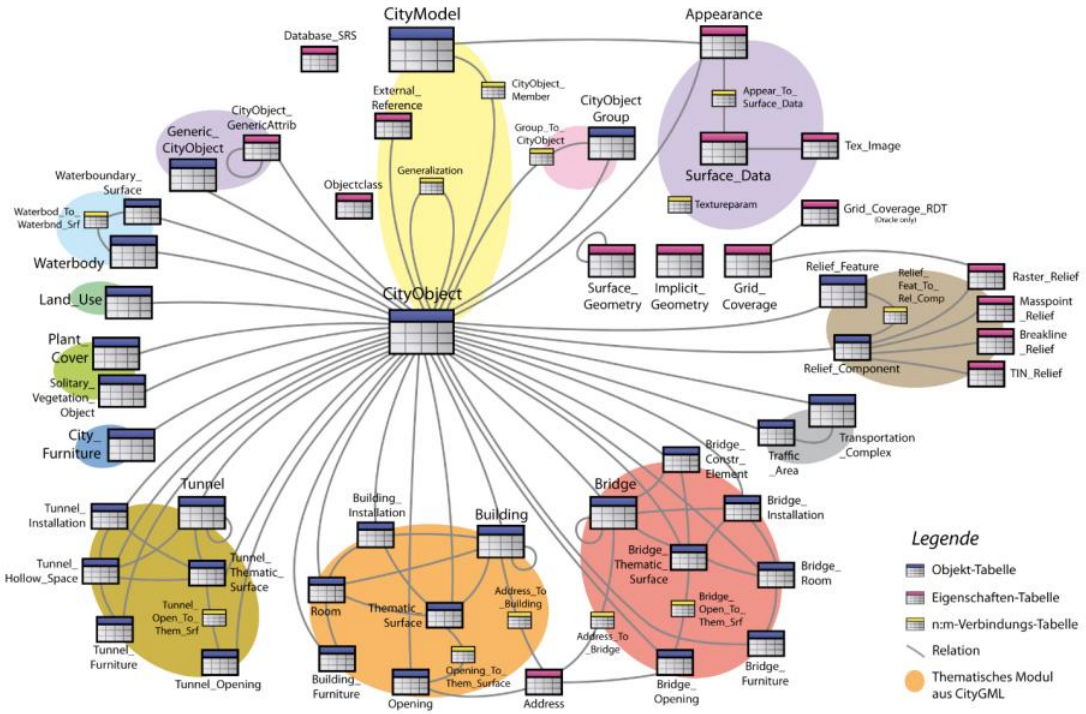
Conclusion

1. Conceptually define a strategy to add se[illegible]ver-side support for an ADE to QGIS Package, [illegible]erver-side component of 3DCityDB-Tools f[illegible].
2. Develop an ADE-enabled QGIS-P[illegible]e, v[illegible] focus on the Energy ADE KIT Pr[illegible]
3. Conceptually define a strateg[illegible]ie[illegible] support for an ADE to the fr[illegible] 3DCityDB-Tools for QGIS [illegible]
4. Develop an ADE-enabled 3DCityDB-Tools for QGIS front-end.



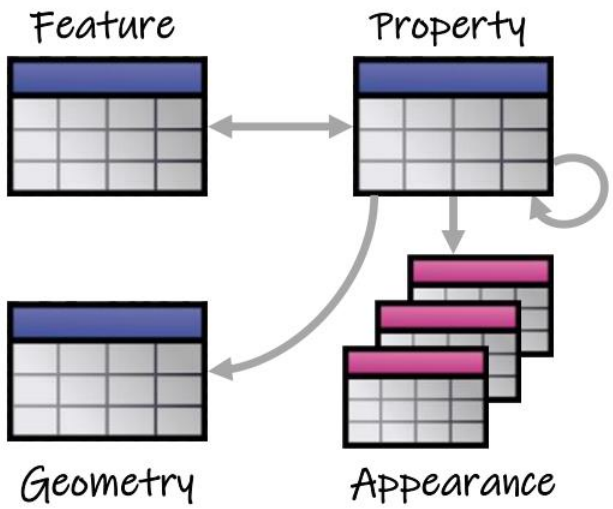
Conclusion

3DCityDB v4



Energy ADE KIT Profile

3DCityDB v5



Energy ADE

Source: Nagel and Yao (2023)

Future Work

- **Full Energy ADE**
- **At least one other ADE**
- **CityGML 3.0 and 3DCityDB 5**