



Linking IndoorGML with CityGML

June 21, 2013

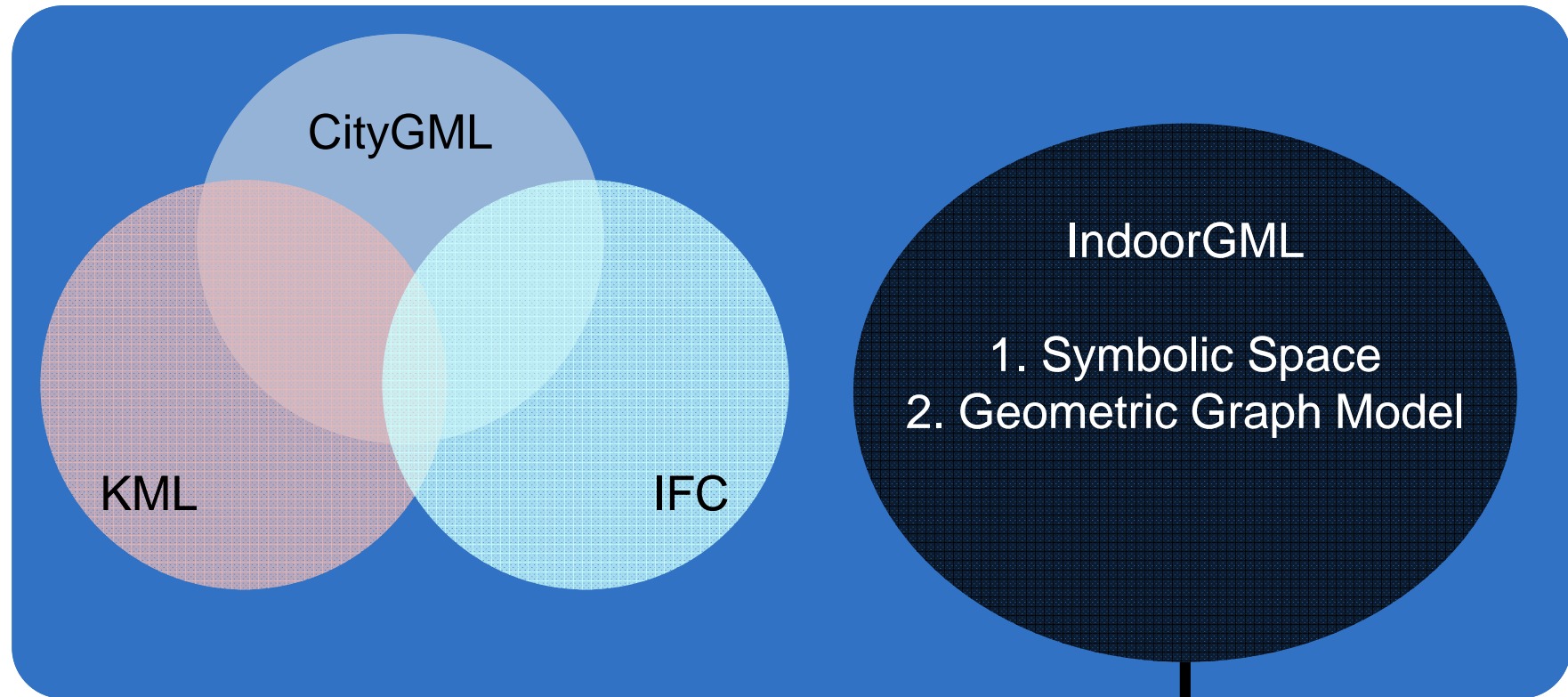
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Pusan National University

Agenda

- Overview on IndoorGML
- Linking IndoorGML with CityGML

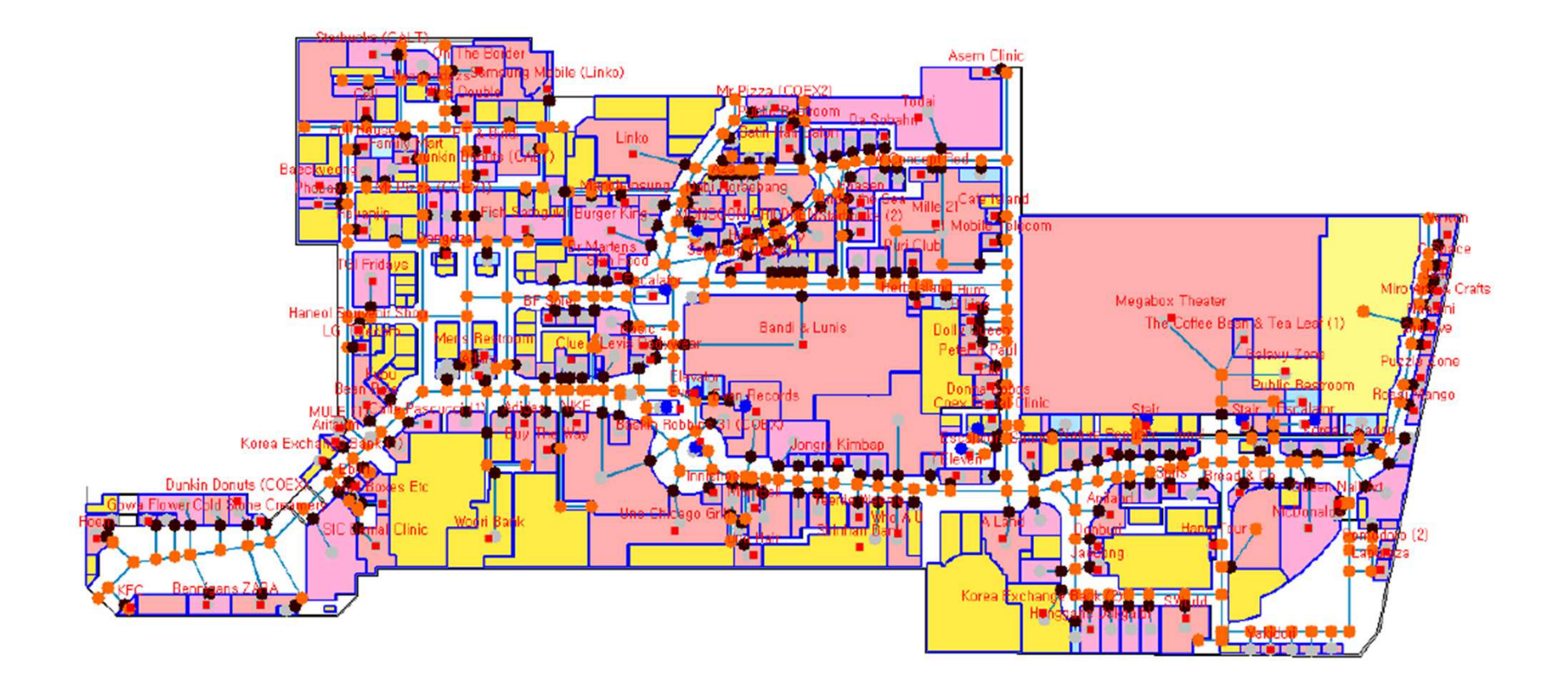
IndoorGML as a Complement



Indoor positioning and geometry are not main focus

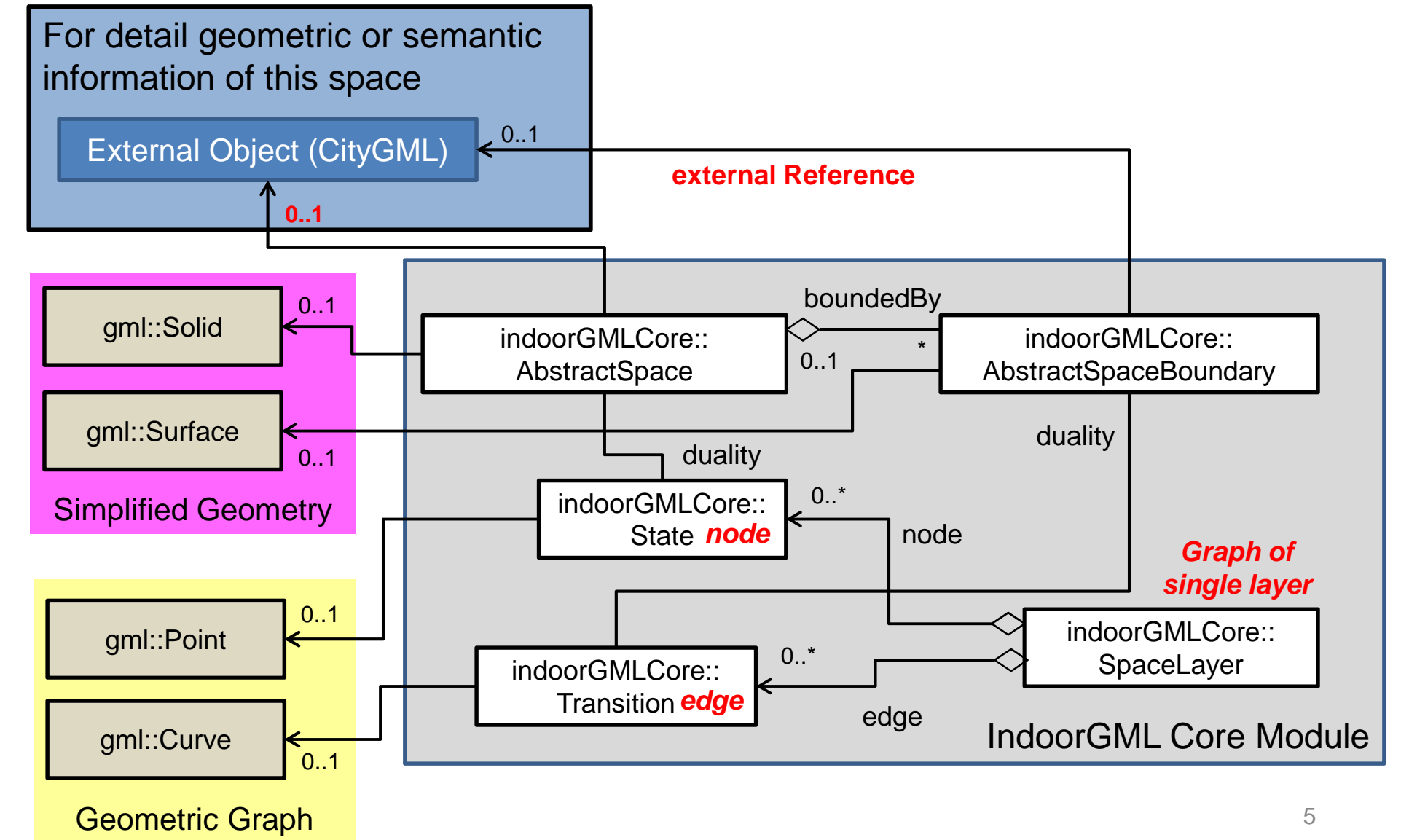
Geometric Graph

Coex Indoor Map : B1F

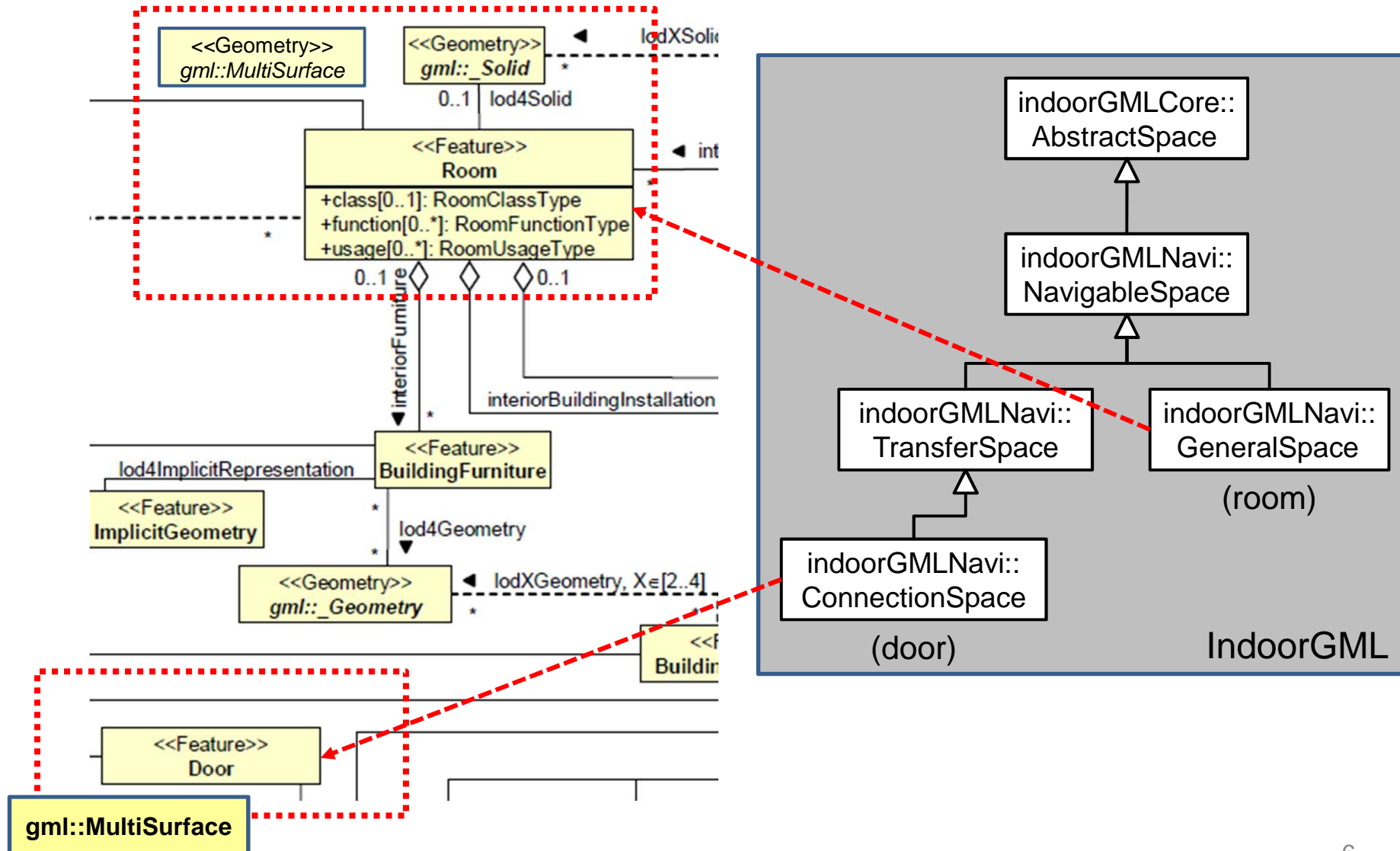


[D.K Suh, IndoorGML Workshop, Seoul, 2012]

Three ways to represent geometry

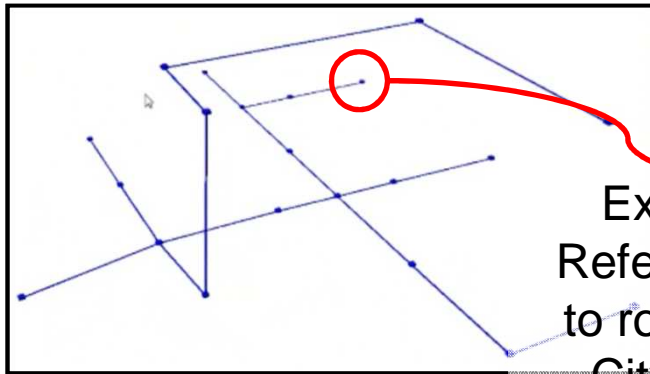


External Reference to CityGML Object

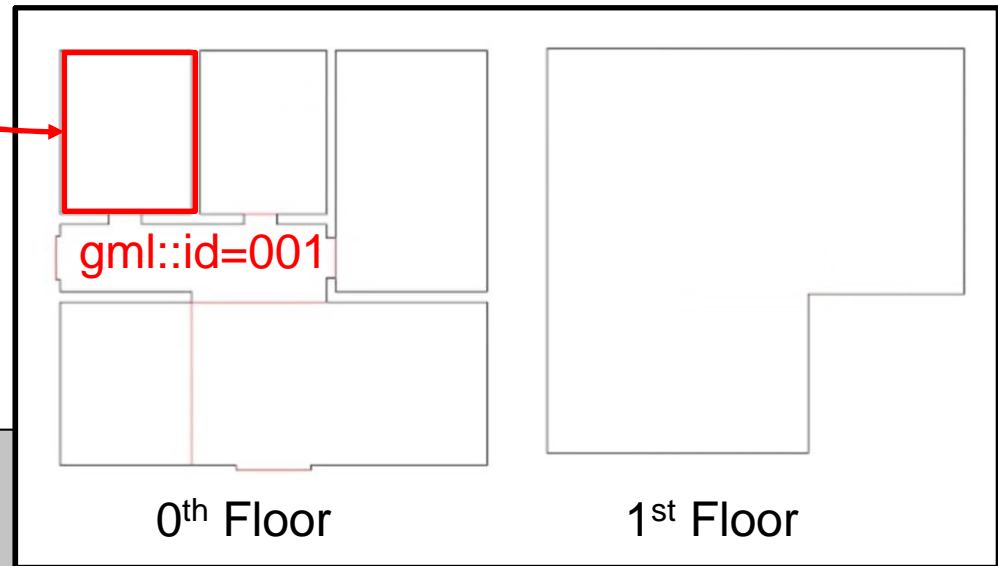


Linking IndoorGML with CityGML

IndoorGML



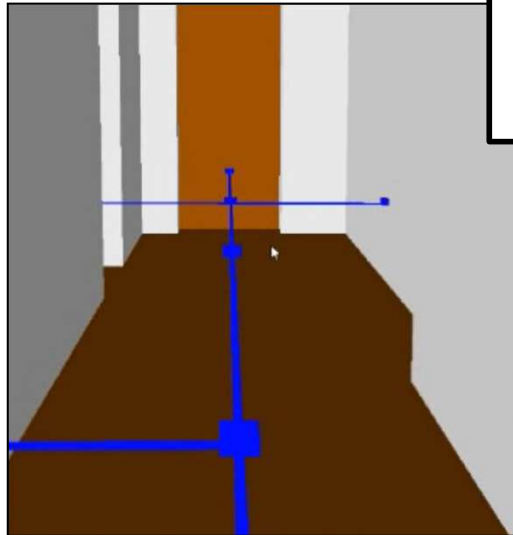
External
Reference
to room in
CityGML



0th Floor

1st Floor

CityGML



Issues

- Geometry
- N:1 mapping
- Virtual Division
- Synchronization

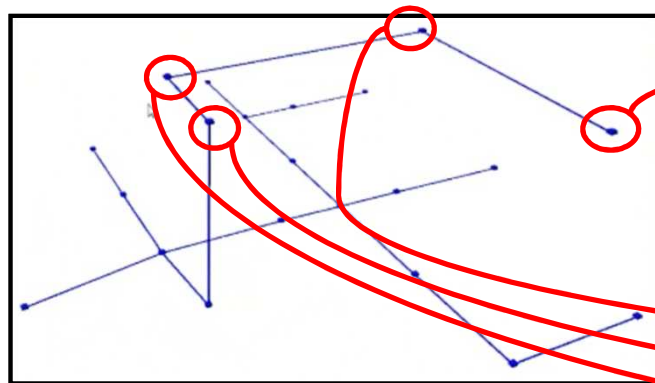
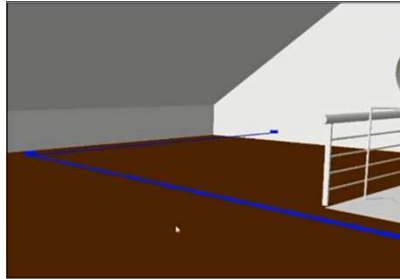
Geometry

- In CityGML
 - Room: Solid or MultiSurface
 - Door: MultiSurface
- In IndoorGML
 - Room: Solid in 3D (or Surface in 2D)
 - Door

	3D space	2D space (e.g. floor plan)
Thick Door	<i>GeneralSpace</i> : Solid <i>ConnectionSpace</i> : Solid	<i>GeneralSpace</i> : Surface <i>ConnectionSpace</i> : Surface
Thin Door	<i>GeneralSpace</i> : Solid <i>ConnectionSpace</i> : Surface	<i>GeneralSpace</i> : Surface <i>ConnectionSpace</i> : Curve

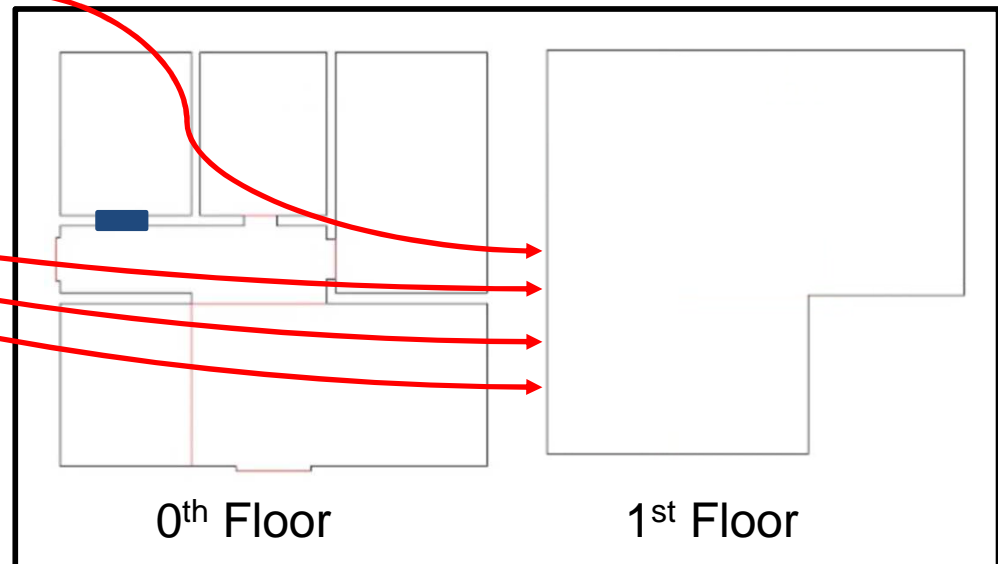
→ The geometry mismatch doesn't matter.

$N:1$ mapping



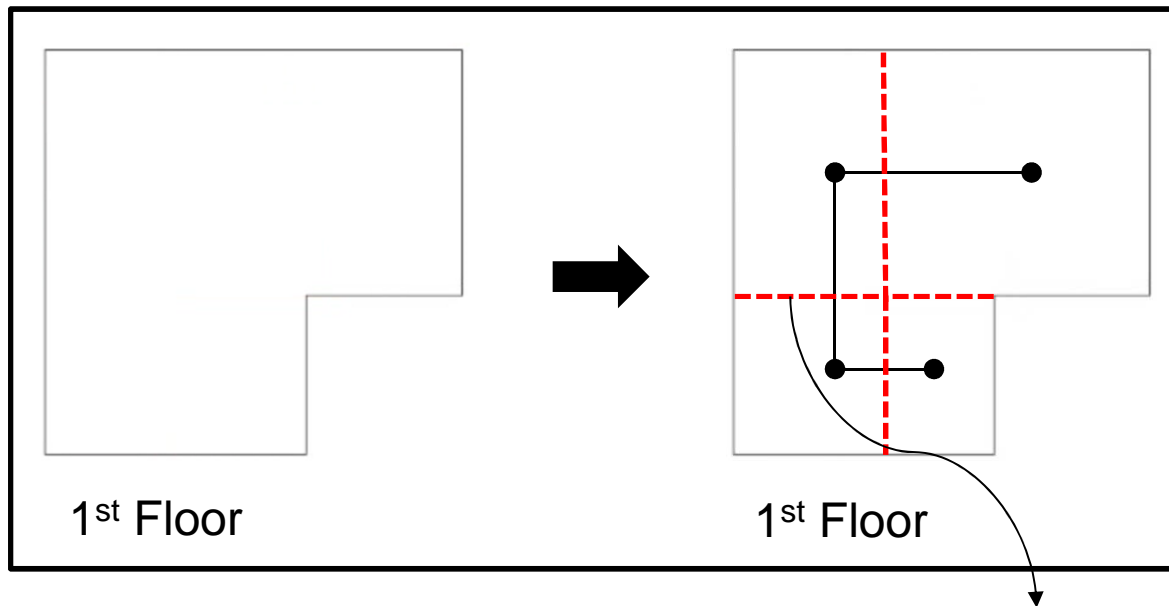
IndoorGML

CityGML



But Neither $1:N$ nor $N:M$

Virtual Division



- ConnectionSpace in IndoorGML
- ClosureSurface in CityGML

* Door also belongs to ConnectionSpace in IndoorGML

Virtual Division

- How to divide this?



[Guggenheim Museum in Manhattan]

Summary

- IndoorGML
 - A Graph Model
 - Provides a linkage with CityGML (and IFC as well) via external reference (xlink)
- Issues
 - Geometry, $N:1$ Mapping, Virtual Division
 - Synchronization between CityGML and IndoorGML
 - Not a Data Model Issue but System Issue
- Sample Data
 - Any CityGML LoD4 sample data is welcome
- References
 - IndoorGML Workshop (Oct. 9, 2012):
<http://stem.cs.pusan.ac.kr/indoorGMLWorkshop/Program.html>
 - OGC IndoorGML portal