

Petri Kokko, Sova3D Oy

CityGML  
OpenBIM (IFC)

3D

3Dkunta

# Avoimet standardit

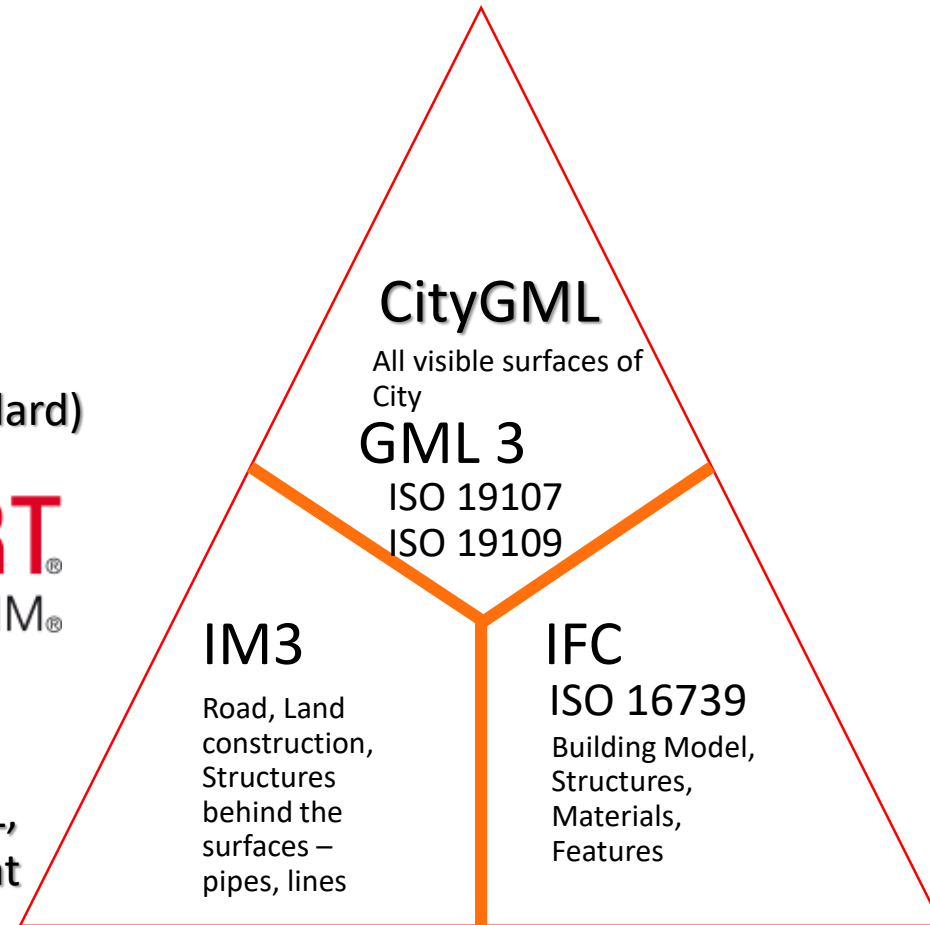


CityGML = OGC (Open Geospatial Standard)

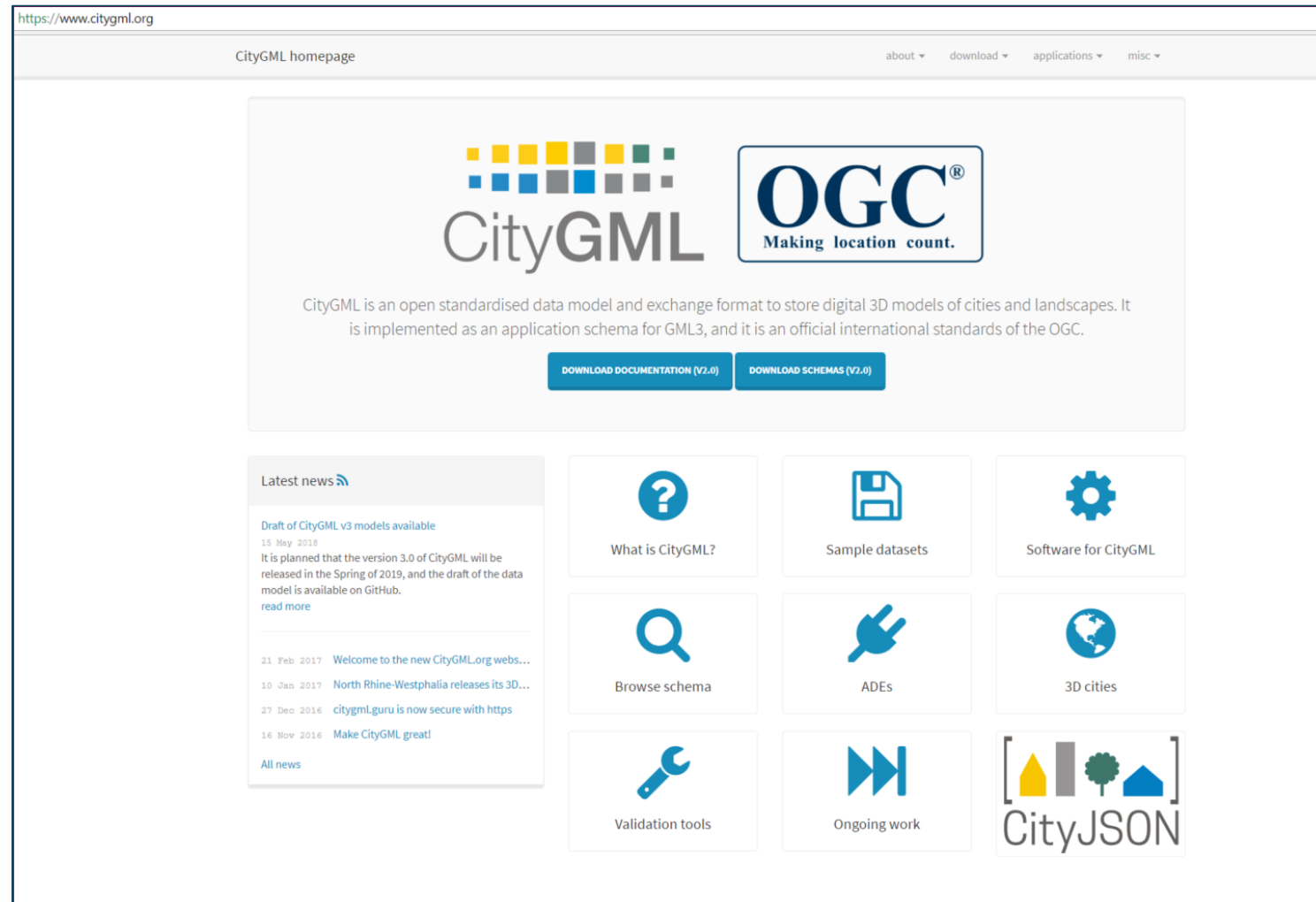


IFC = BuildingSmart standard

IM3 (InfraModel3) = based on LandXML,  
Now part of BuildingSmart development



# CityGML – OGC Standard



The screenshot shows the CityGML homepage at <https://www.citygml.org>. The page features the CityGML logo and the OGC logo with the tagline "Making location count.". Below the logos, a paragraph describes CityGML as an open standardised data model and exchange format for 3D city models. Two buttons are provided: "DOWNLOAD DOCUMENTATION (v2.0)" and "DOWNLOAD SCHEMAS (v2.0)".

**Latest news**

- Draft of CityGML v3 models available**  
15 May 2018  
It is planned that the version 3.0 of CityGML will be released in the Spring of 2019, and the draft of the data model is available on GitHub.  
[read more](#)
- 21 Feb 2017 [Welcome to the new CityGML.org webs...](#)
- 10 Jan 2017 [North Rhine-Westphalia releases its 3D...](#)
- 27 Dec 2016 [citygml.guru is now secure with https](#)
- 16 Nov 2016 [Make CityGML great!](#)

[All news](#)

**Navigation menu:**

- What is CityGML?
- Sample datasets
- Software for CityGML
- Browse schema
- ADEs
- 3D cities
- Validation tools
- Ongoing work
- CityJSON

# BuildingSmart – OpenBIM-IFC

The screenshot shows the homepage of BuildingSmart Finland. At the top, there is a navigation bar with the logo and menu items: Etusivu, Ajankohtaista, Tapahtumat, T&K, Jäsenet, Organisaatio, Ota yhteyttä, and ENGLISH. The main content area features a large banner for 'Tietomallintamisen yhteistyöfoorumi KAUPUNKI'. The banner includes a 3D grid icon and a description of the forum as a national technical modeling forum for municipalities. A 'Liity jäseneksi' button is present. To the right of the banner is a vertical list of menu items: AJANKOHTAISTA, JULKAISUT, TAPAHTUMAT, BLOGI, and Toiminta. Below the banner is a section titled 'Ajankohtaista' with three cards: 'KUTSU' (invitation to a meeting), 'HUOM!' (important notice), and 'Call for Papers on käynnistynyt - InfraBIM Open 2019'.

buildingSMART  
FINLAND

Etusivu Ajankohtaista Tapahtumat T&K Jäsenet Organisaatio Ota yhteyttä ENGLISH

## Tietomallintamisen yhteistyöfoorumi

### KAUPUNKI

Kaupunkisuunnittelun toimialaryhmä on kaupunkien teknisen mallinnuksen tärkein kansallinen asiantuntijoiden yhteistyö- ja tiedonvaihtofoorumi. Ryhmä edistää kansallisen tason tiedonvaihtoa ja yhteistyötä ja toimii linkkinä kansainvälisiin hankkeisiin ja kehitystyöhön.

Liity jäseneksi

- AJANKOHTAISTA
- JULKAISUT
- TAPAHTUMAT
- BLOGI
- Toiminta

### Ajankohtaista

#### KUTSU

Infran standardointiryhmän työpaja pe 24.8. klo 9-12 Sitowisessä

#### HUOM!

MaisemaBIM-hankkeen raporttiluonnos kommentoitavana 15.8.2018 saakka

#### Call for Papers on käynnistynyt - InfraBIM Open 2019

Ajankohtaista: Infra Kaupunki Koulutus

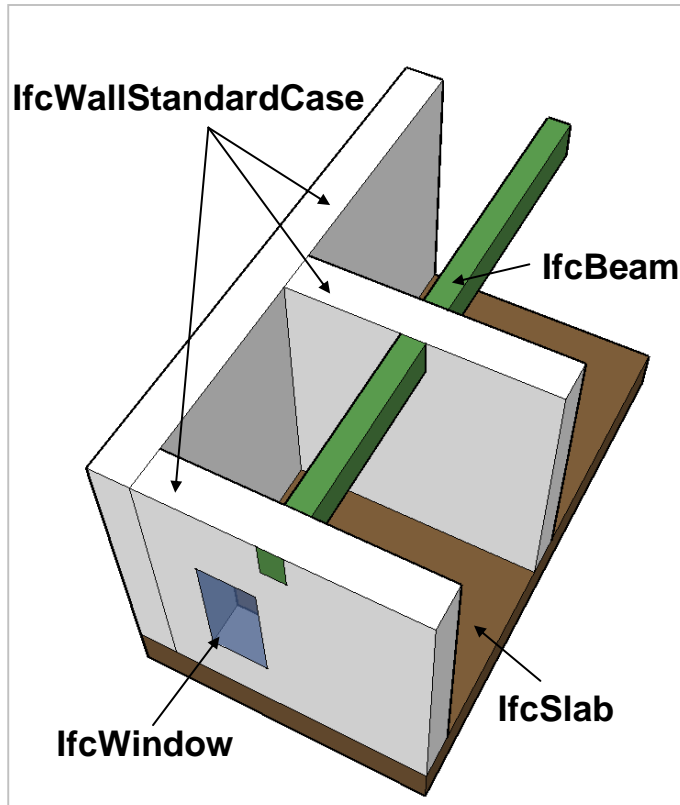
# New version under way CityGML 3.0

- CityGML Conceptual Model specification 3.0 (publication target January 2019)
- CityGML GML encoding specification 3.0 (publication target March/April 2019)
  
- Multi representation concept (MRC) that enables a user-defined definition of LoDs
- ADE Overview of Developments

# Differing Modeling Paradigms

## BIM (e.g., IFC)

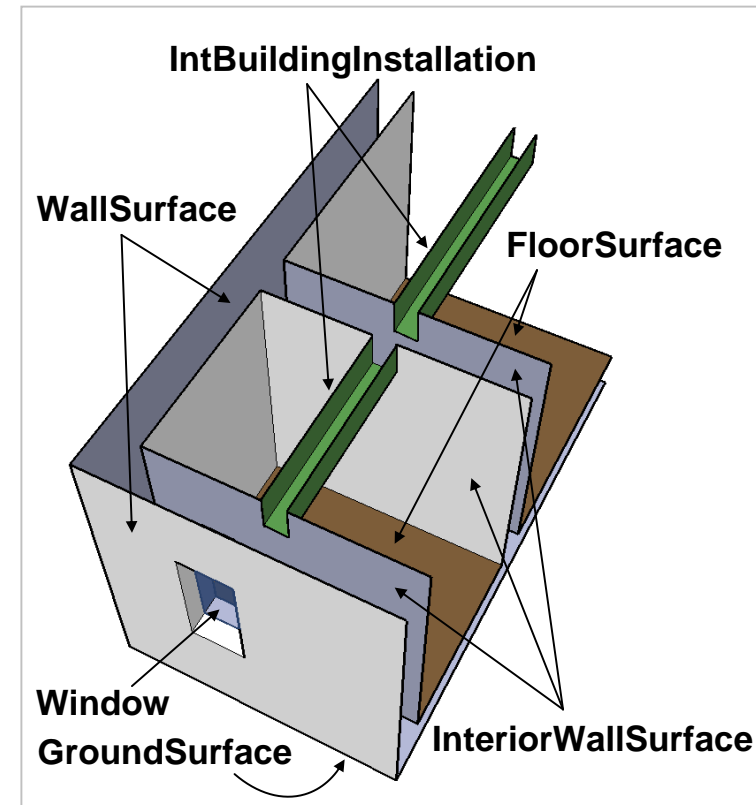
Constructive Solid Geometry



Volumetric, parametric primitives representing the structural components of buildings

## 3D GIS (e.g., CityGML)

Boundary Representation

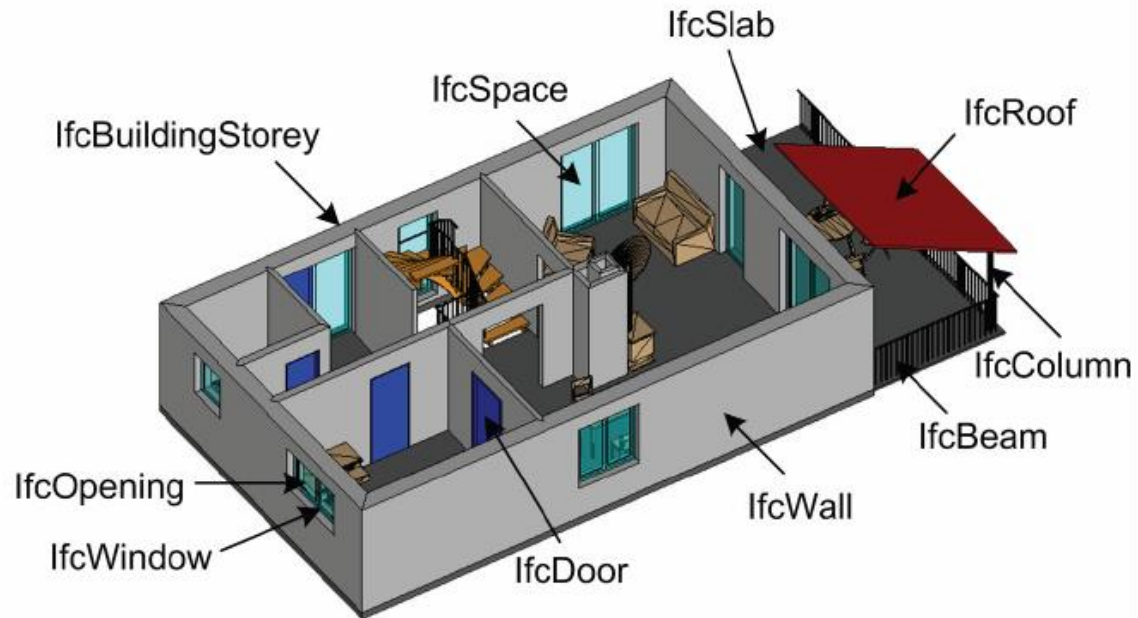


Accumulation of observable surfaces of topographic features

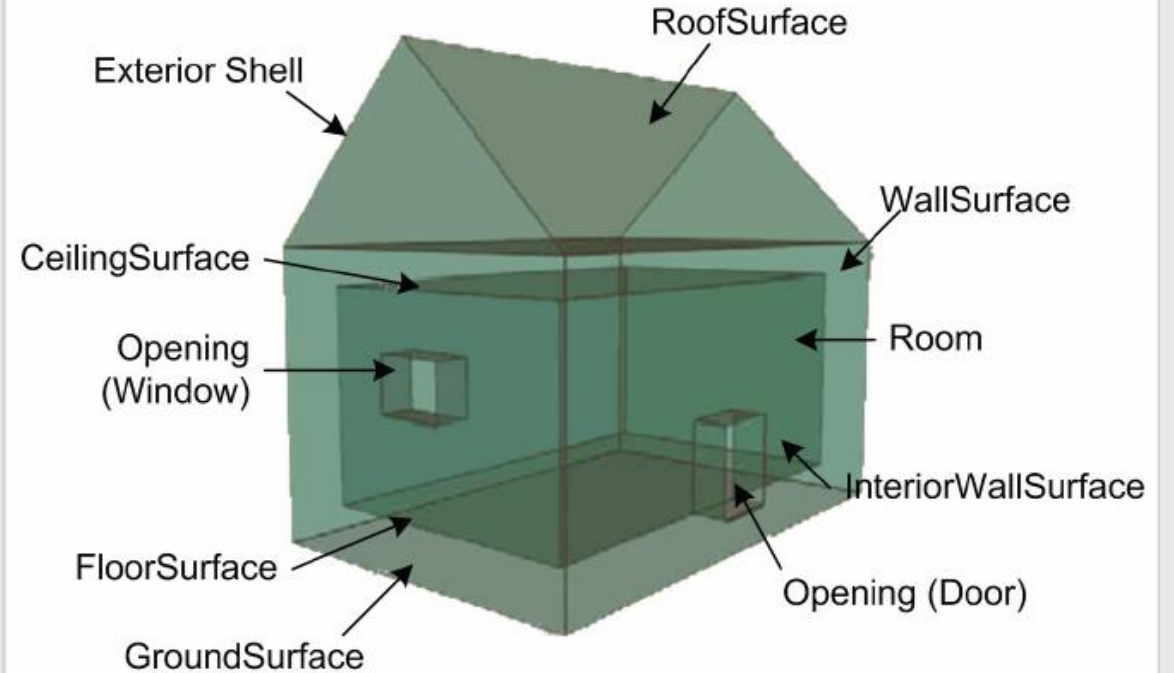
(C) slide from: Thomas H. Kolbe - joint work with Claus Nagel & Alexandra Stadler



## Element-based volume model (IFC)

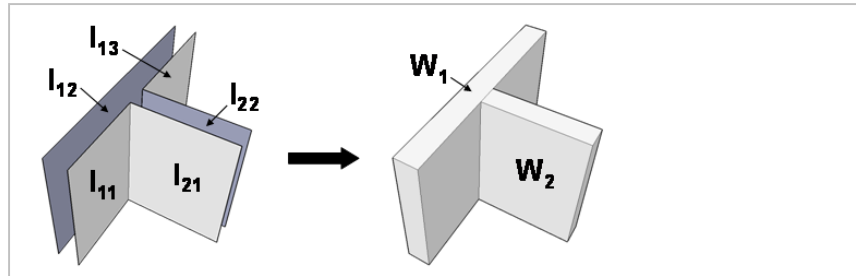


## Surface model (CityGML)

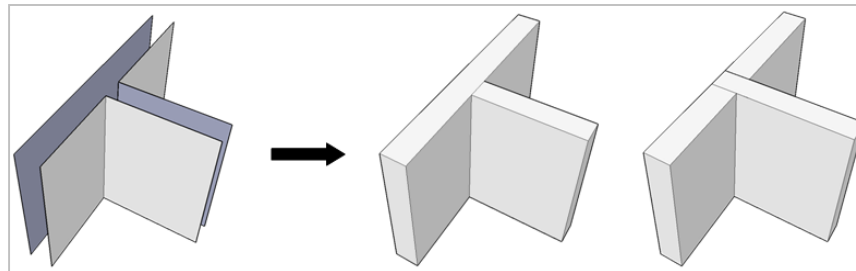


# Matching between CityGML and IFC Entities

- Generation of IFC element hypotheses from CityGML entities
  - Semantic information as a priori knowledge
  - Evaluation of geometric-topological relations between CityGML entities
- $n$  CityGML entities may represent **one** IFC element



- $n$  CityGML entities may result in  $m$  competing IFC elements



- Further **1:1** and **1:m** relations possible  
→ **High combinatorial complexity**

(C) slide from: Thomas H. Kolbe -  
joint work with Claus Nagel &  
Alexandra Stadler



# Ohjeet BIM mallintajalle

- <https://buildingsmart.fi/wp-content/uploads/2016/11/19.5.2016.IFC2CityGMLmallinnusohjeet.pdf>
- IFC2CityGML hankkeen ideana on saada tuotettua tarkemmista IFC rakennusmalleista tietosisältöä automaattisesti CityGML standardin rakennusta ja muita mahdollisia osia kuvaaviin tietomallin osiin.



**3D**kunta