



BIM  
CAD  
GIS  
WEB  
ULF

Månsson - SWECO

FME Certified Professional/Trainer



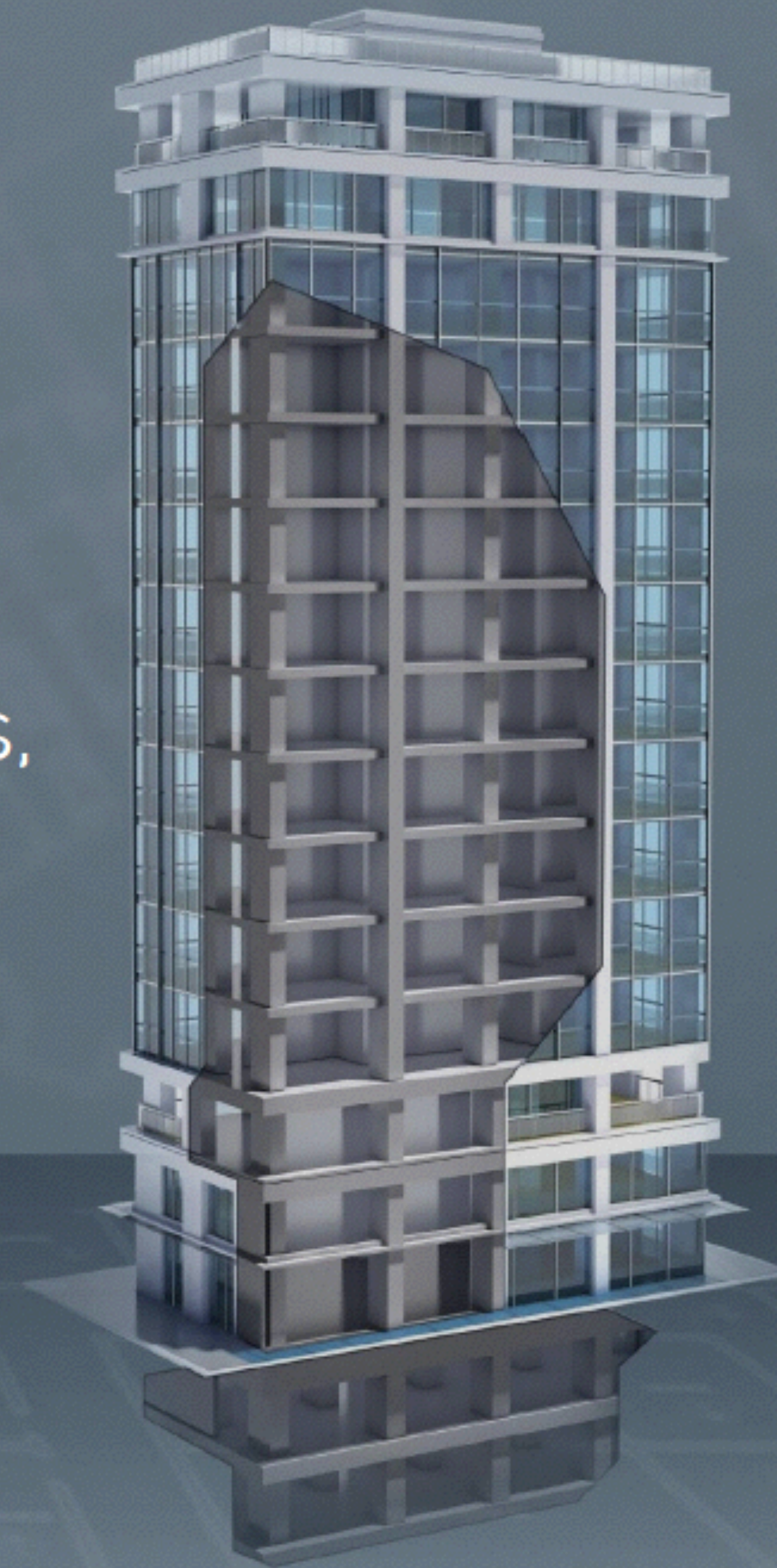
# Why use GIS?

- Map and analyze geographic features
- Uses location and imagery
- Conveys data on a large scale
- Data models, attributes, simple geometries, and domains



# Why use BIM?

- 3D digital representations of infrastructure
- Includes descriptive info (dimensions, materials, manufacturers, etc.)
- Aids in proper design, construction, operation, and maintenance
- Drawback: files size and complexity make data difficult to repurpose



(Image Safe Software)



# APP Question 1

## **How are you related to BIM?**

- A. We are married and spend our life together.
- B. BIM is my cousin. Shows up in special occasions.
- C. BIM? Never heard of her.





# DESIGNA DITT BADRUM SOM I DET DÄR SPELET



🇨🇦 Long Live the Home.

Search

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Dining

Children's IKEA

Kitchen

Plan your kitchen in 3D

How to...

Prepare for planning

Plan your kitchen in 3D

Buy a kitchen in 5 steps

kitchen installation guide

kitchen installation video

Become your own kitchen designer with the help of the IKEA 3D Kitchen Planner. Thanks to our easy-to-use software, you can choose cabinets, doors, and appliances to fit the exact measurements of your kitchen.

Get started today. When you're ready, either print out your drawings and product list at home, or save your plan to the IKEA server. At the IKEA store or over the phone through [IKEA Home Shopping](#) you can discuss your drawing with one of our kitchen experts. They'll go over the final details with you, so you can take your kitchen from drawing to reality.





## Bauhaus "Designa ditt badrum som i det där spelet"

from **ProLounge** PRO 1 year ago NOT YET RATED

I och med lanseringen av nya badrumsserien Camargue Skärgård på BAUHAUS kan du nu designa ditt badrum hemma framför datorn. Ser ut precis som i det där spelet.

(Inspirerad av F. Ekelund  
- analogi med IKEA )



FME Data Inspector

FileViewCameraToolsWindowHelp

play Control

View 1 (5846)

inspector [FFS] (5846)

☒

Beam (37)

☒

Building (1)

☒

BuildingColumn (176)

☐

BuildingElementProxy (113)

☐

BuildingStorey (5)

☒

Covering (65)

☒

CurtainWall (34)

☐

Door (101)☒☒☐☐☐☐☒☐☒☒☐☒☒☐☐

View 1

| Name                                                 | ObjectType      | Tag    | Constraints.Host         | Constraints.Level       | Co |
|------------------------------------------------------|-----------------|--------|--------------------------|-------------------------|----|
| M_Chair-Breuer:M_Chair-Breuer:180618                 | M_Chair-Breuer  | 180618 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Chair-Breuer:M_Chair-Breuer:180619                 | M_Chair-Breuer  | 180619 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Chair-Breuer:M_Chair-Breuer:180621                 | M_Chair-Breuer  | 180621 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Chair-Breuer:M_Chair-Breuer:180622                 | M_Chair-Breuer  | 180622 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Chair-Breuer:M_Chair-Breuer:180623                 | M_Chair-Breuer  | 180623 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
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| M_Table-Dining Round w Chairs:0915mm Diameter:180360 | 0915mm Diame... | 180360 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Table-Dining Round w Chairs:0915mm Diameter:180416 | 0915mm Diame... | 180416 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Table-Dining Round w Chairs:0915mm Diameter:180537 | 0915mm Diame... | 180537 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
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| M_Table-Dining Round w Chairs:0915mm Diameter:180547 | 0915mm Diame... | 180547 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Table-Dining Round w Chairs:0915mm Diameter:180564 | 0915mm Diame... | 180564 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Table-Dining Round w Chairs:0915mm Diameter:180569 | 0915mm Diame... | 180569 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Table-Dining Round w Chairs:0915mm Diameter:180574 | 0915mm Diame... | 180574 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Table-Dining Round w Chairs:0915mm Diameter:180581 | 0915mm Diame... | 180581 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |
| M_Table-Dining Round w Chairs:0915mm Diameter:180586 | 0915mm Diame... | 180586 | Level : 01 - Entry Level | Level: 01 - Entry Level | No |



## D. Diagrams

### D.1 Schema diagrams

#### D.1.5 Core data schemas

##### D.1.5.1 IfcKernel

##### D.1.5.2 IfcControlExtension

##### D.1.5.3 IfcProcessExtension

##### D.1.5.4 IfcProductExtension

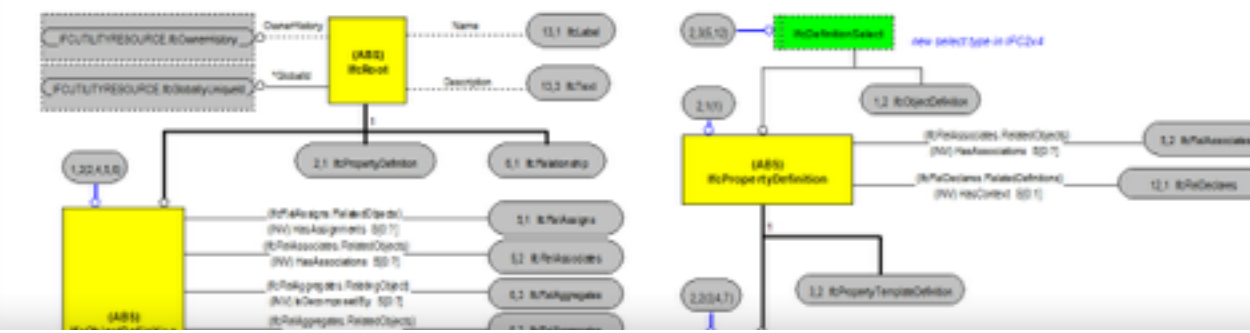
#### D.1.6 Shared element data schemas

##### D.1.6.1 IfcSharedBldgElements

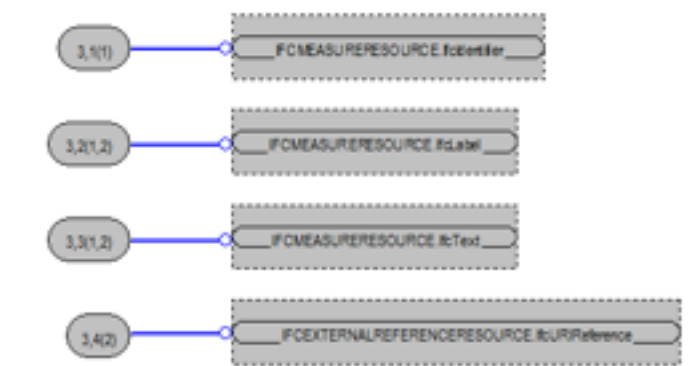
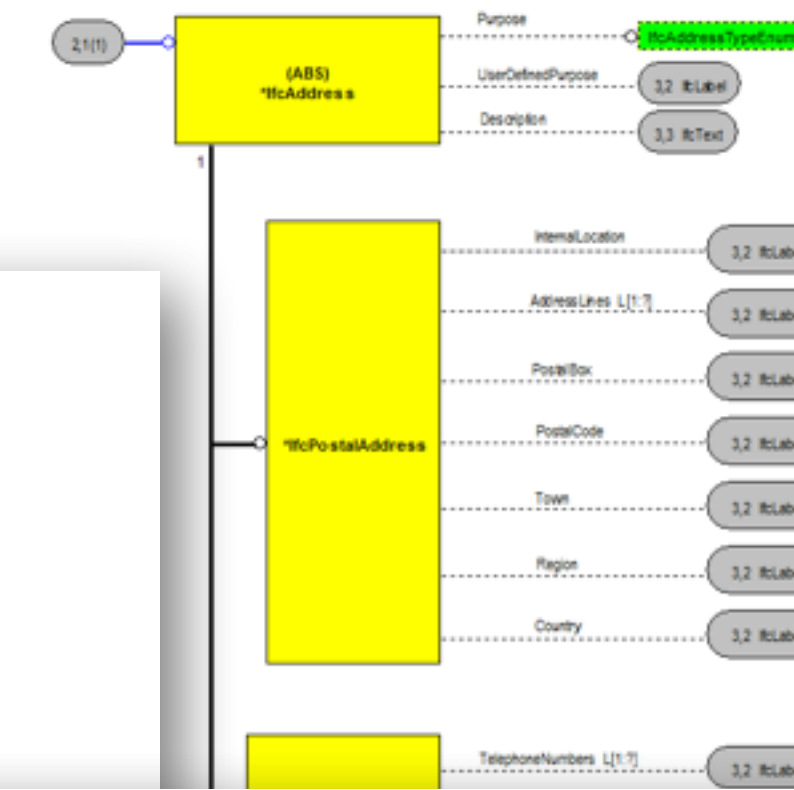
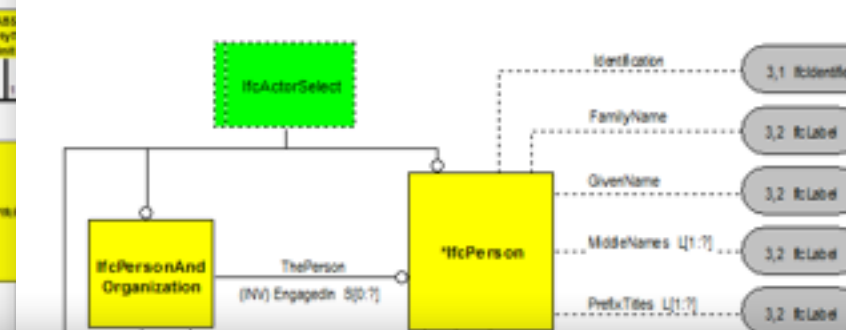
##### D.1.6.2 IfcSharedBldgServiceElements

##### D.1.6.3 IfcSharedComponentElements

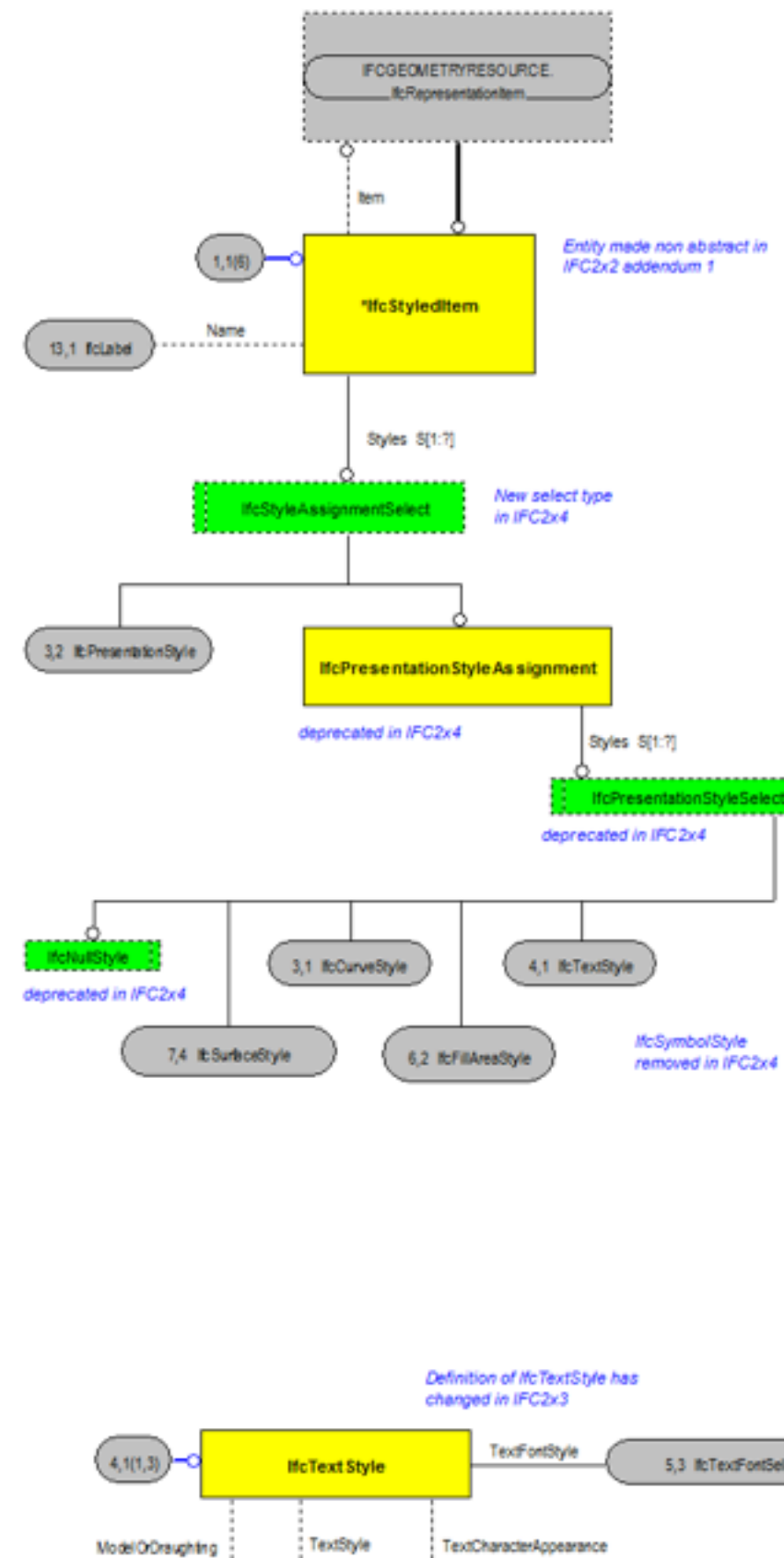
### D.1.8.1 IfcKernel



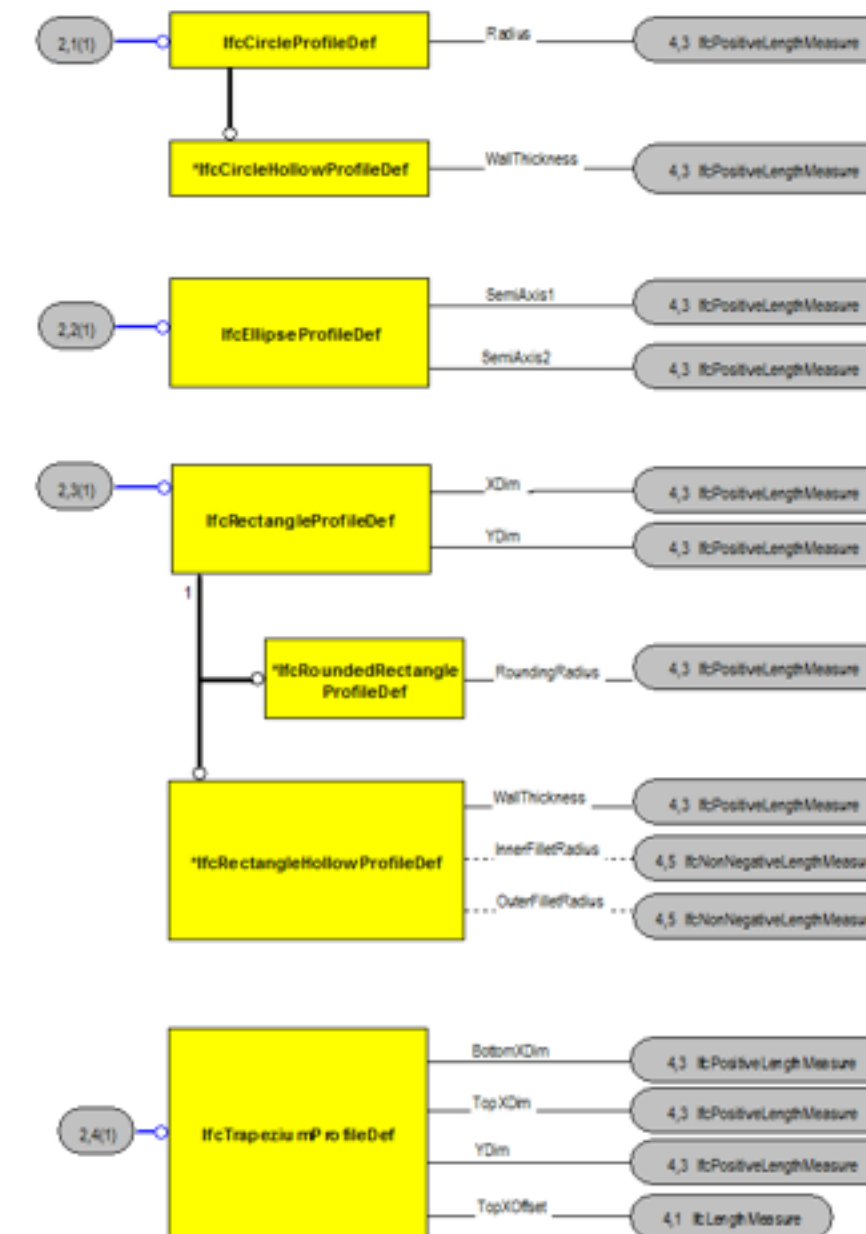
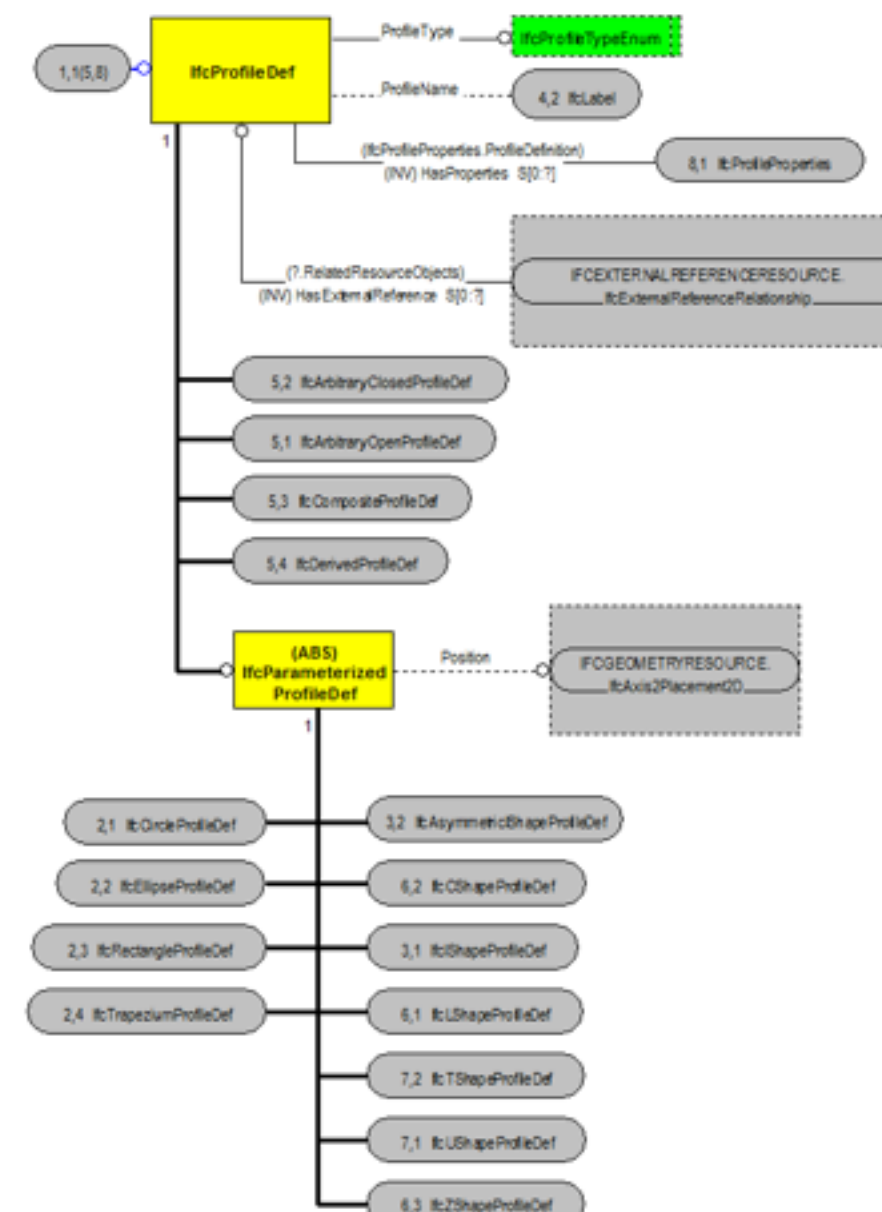
### D.1.8.1 IfcActorResource



### D.1.8.12 IfcPresentationAppearanceResource



### D.1.8.15 IfcProfileResource



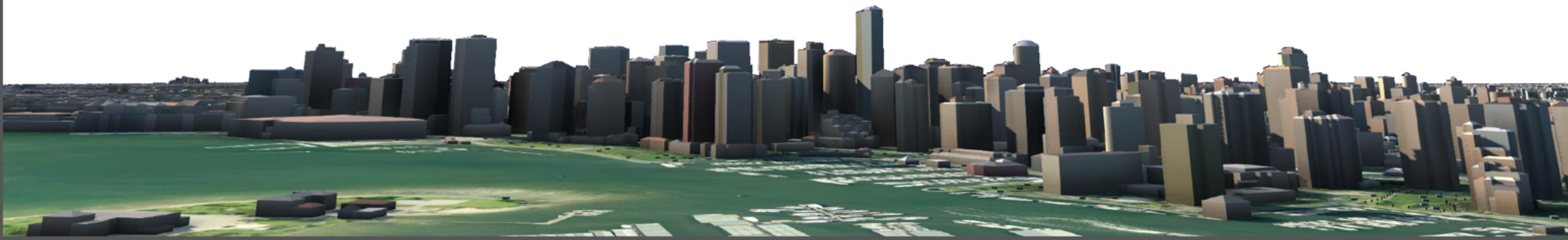
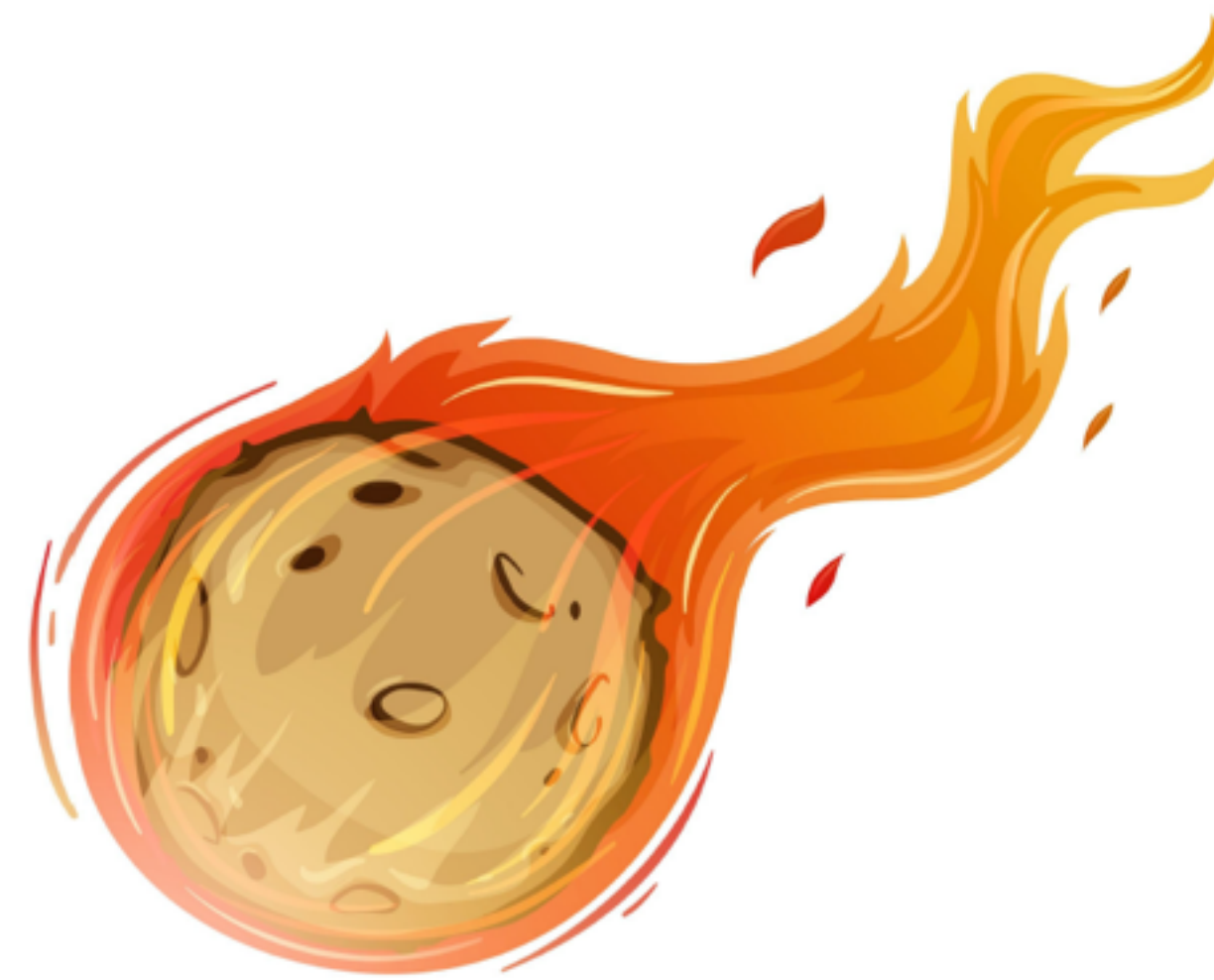


# BIM in GIS



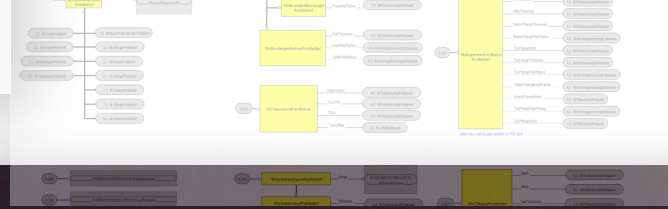
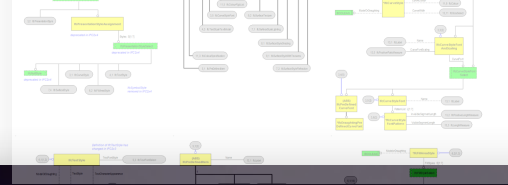
“One BIM Model uses  $\frac{1}{4}$  the space of my entire 3D City Model!”

*Dan Campbell,  
City of Vancouver*



(Image Safe Software)

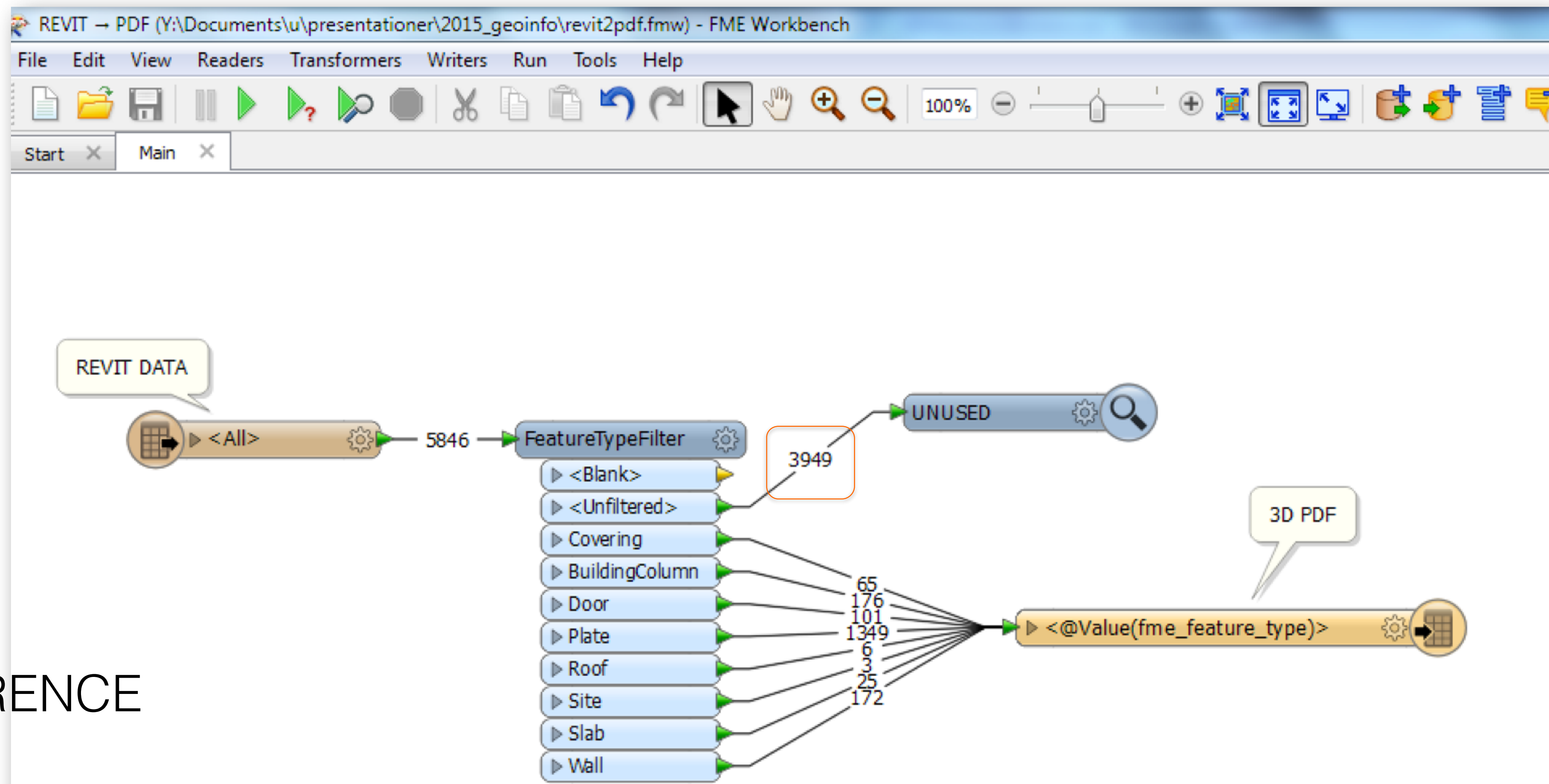






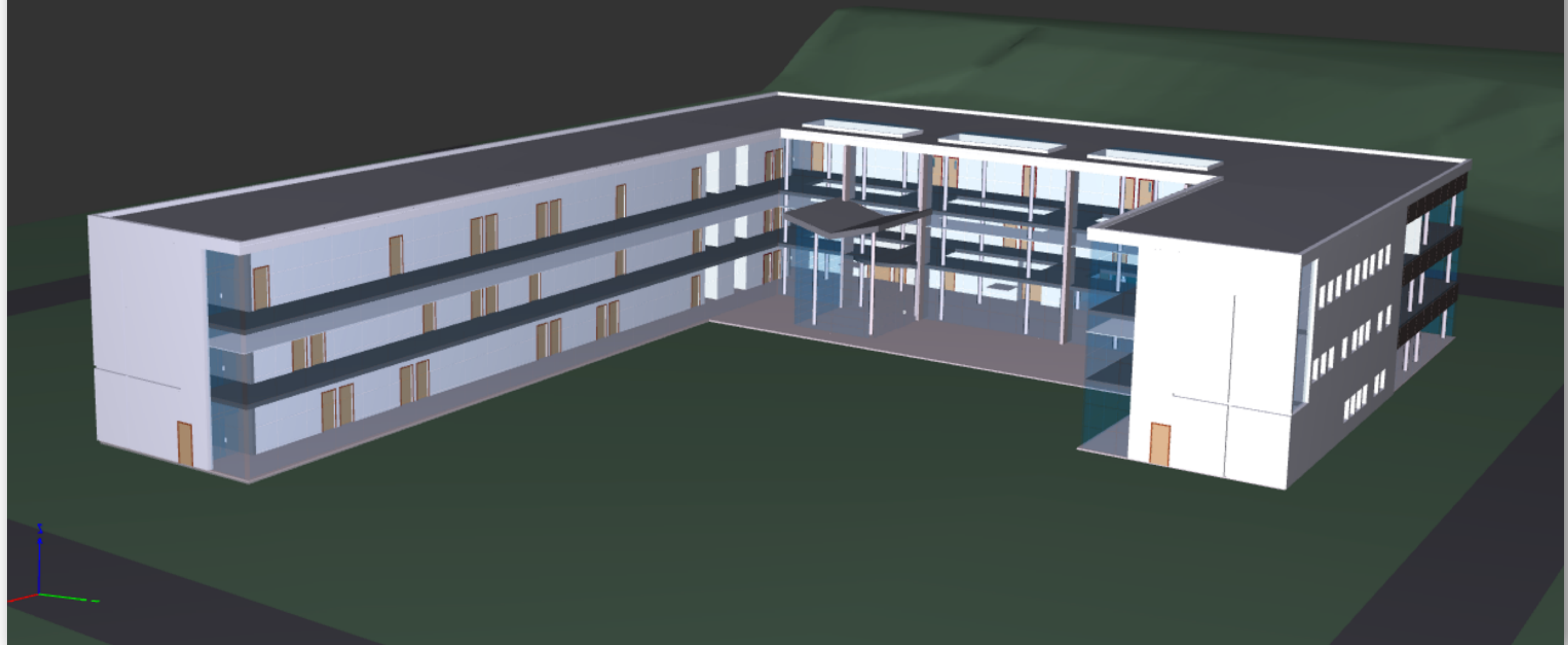
# BIM -> GIS

- SIMPLIFY
- FILTER
- GEOREFERENCE

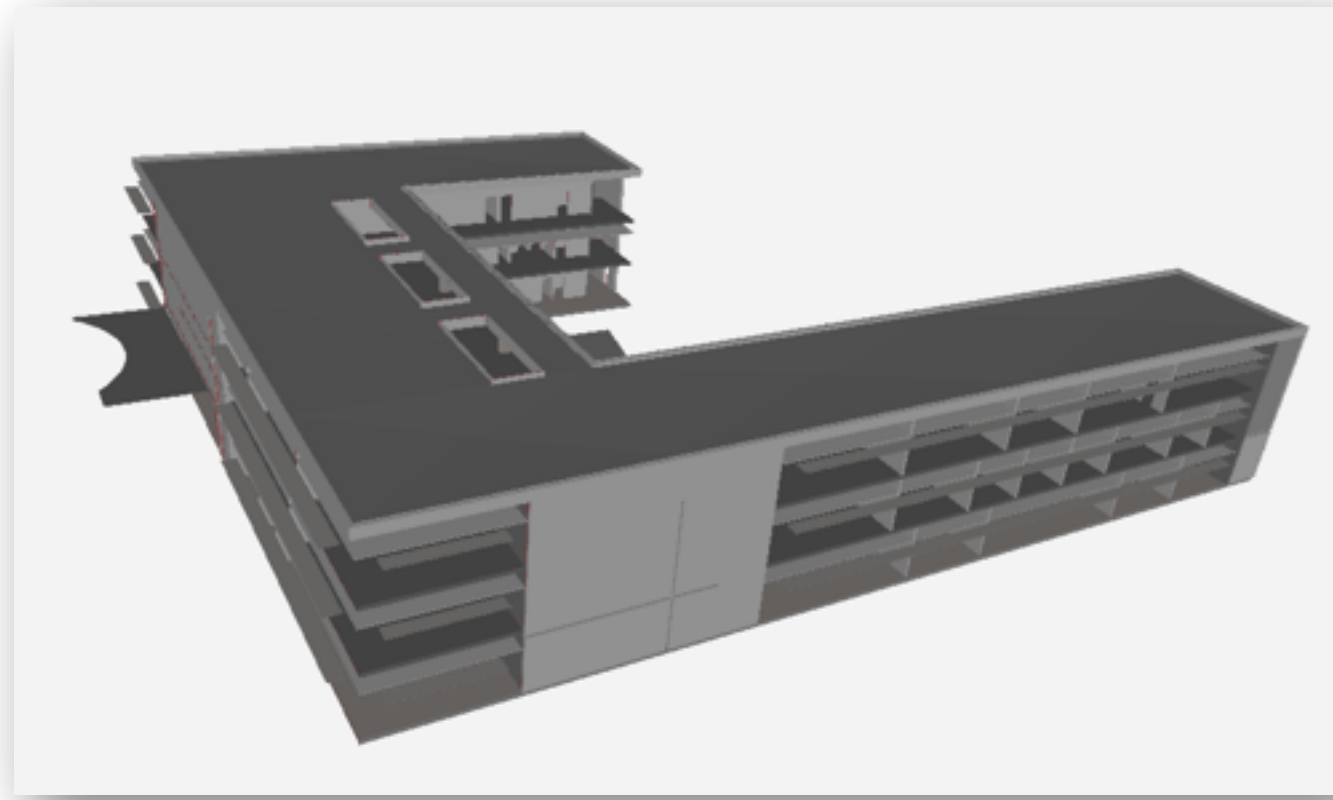




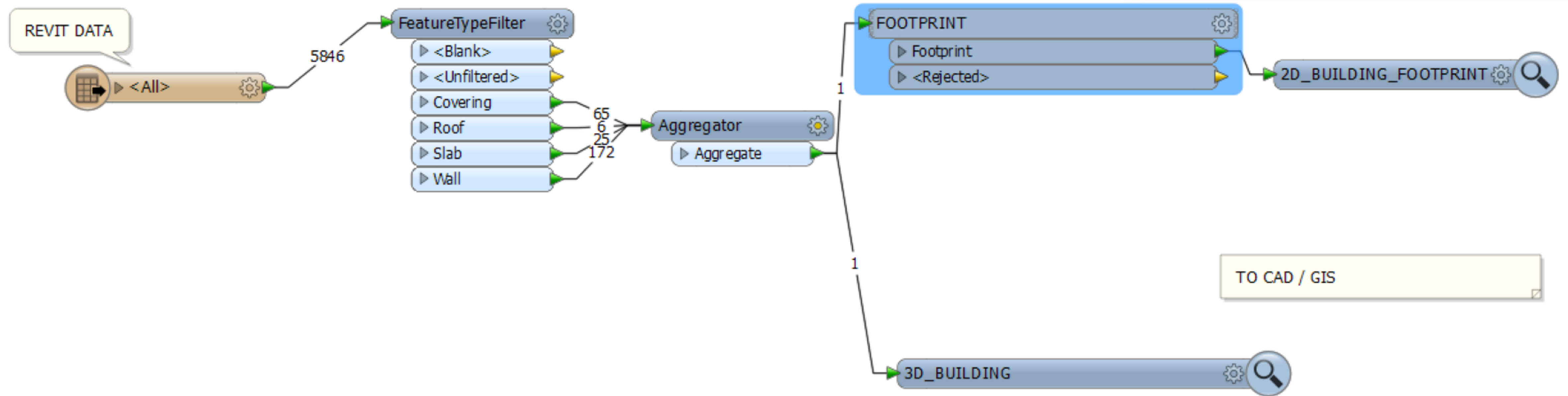
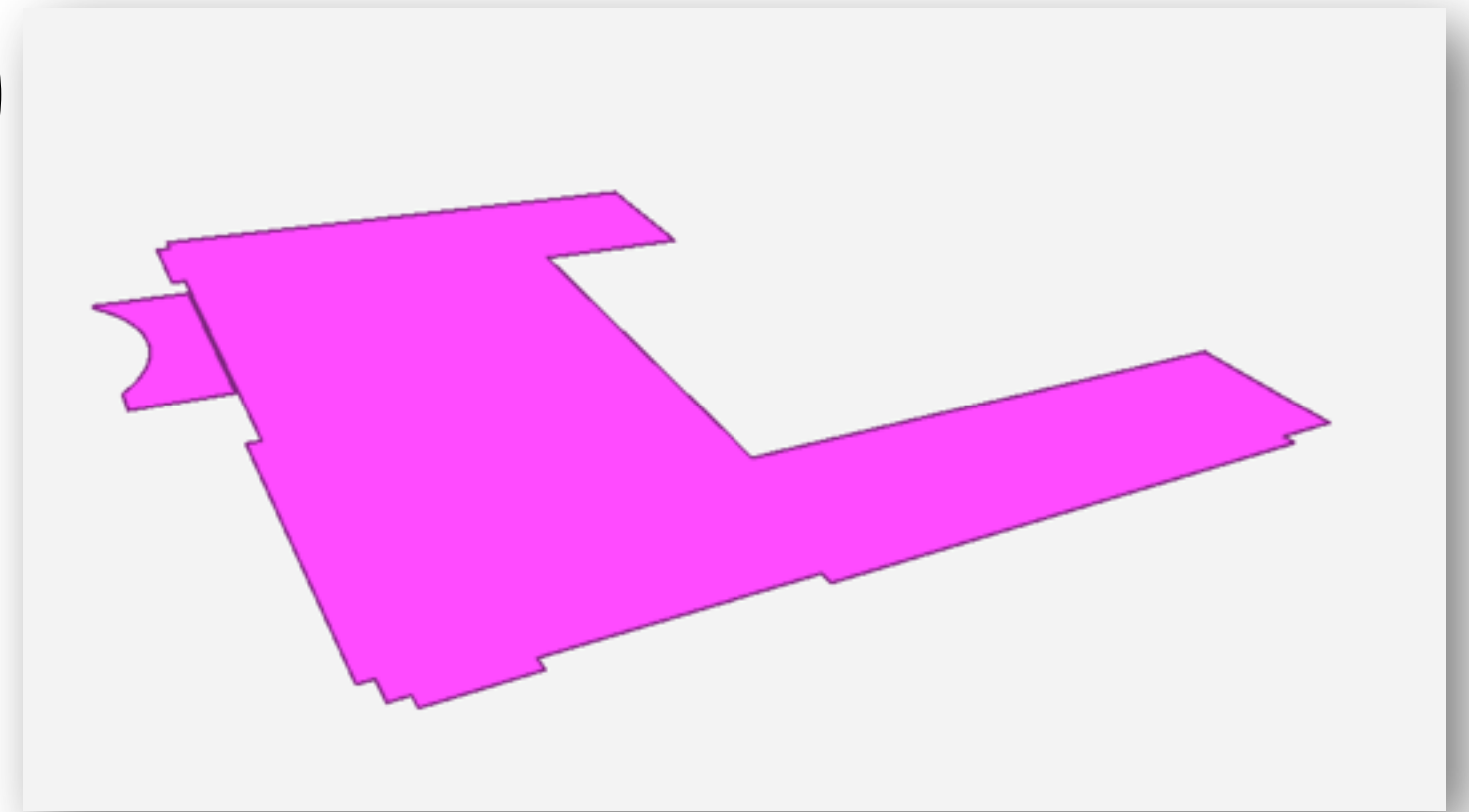
# 3D PDF





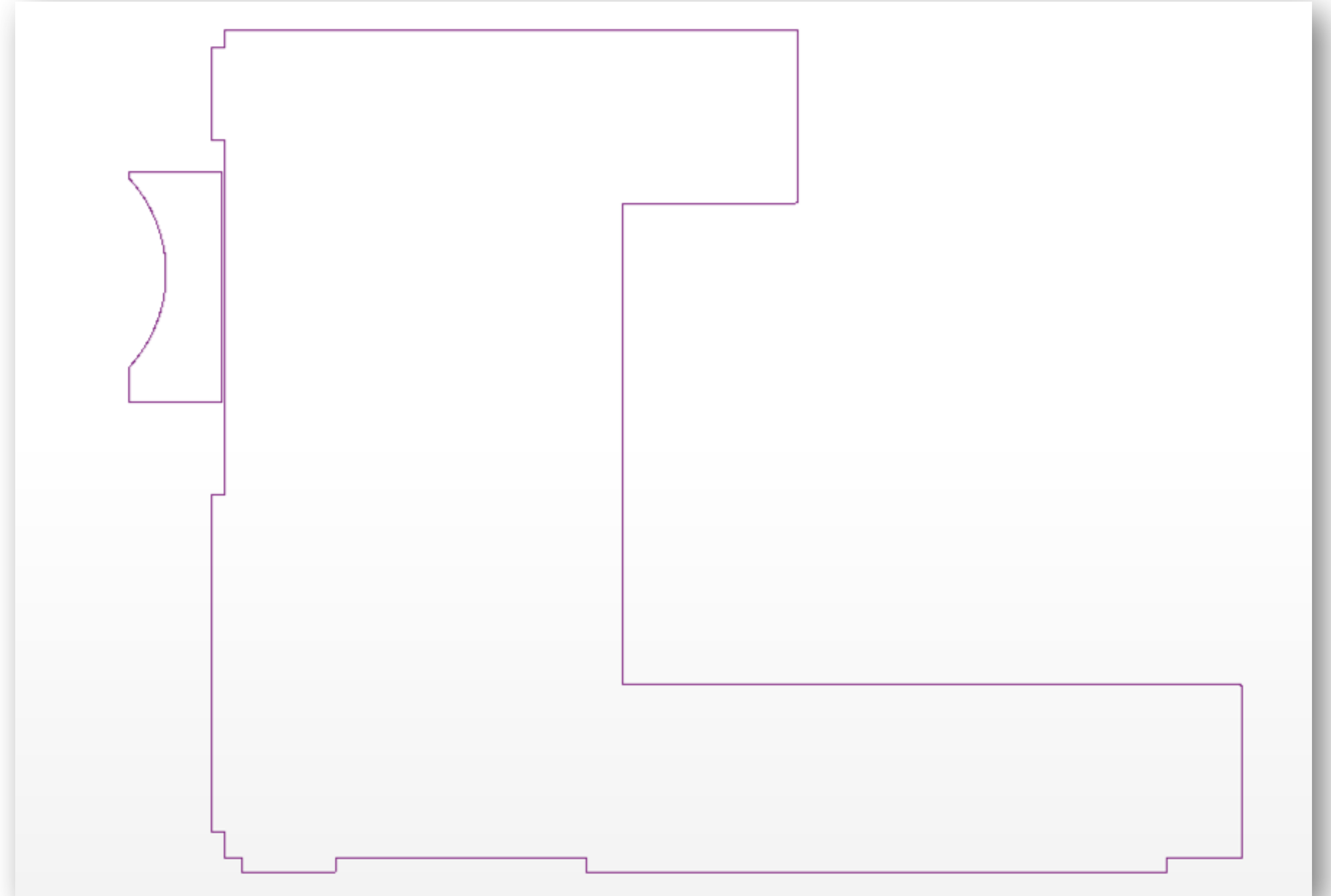
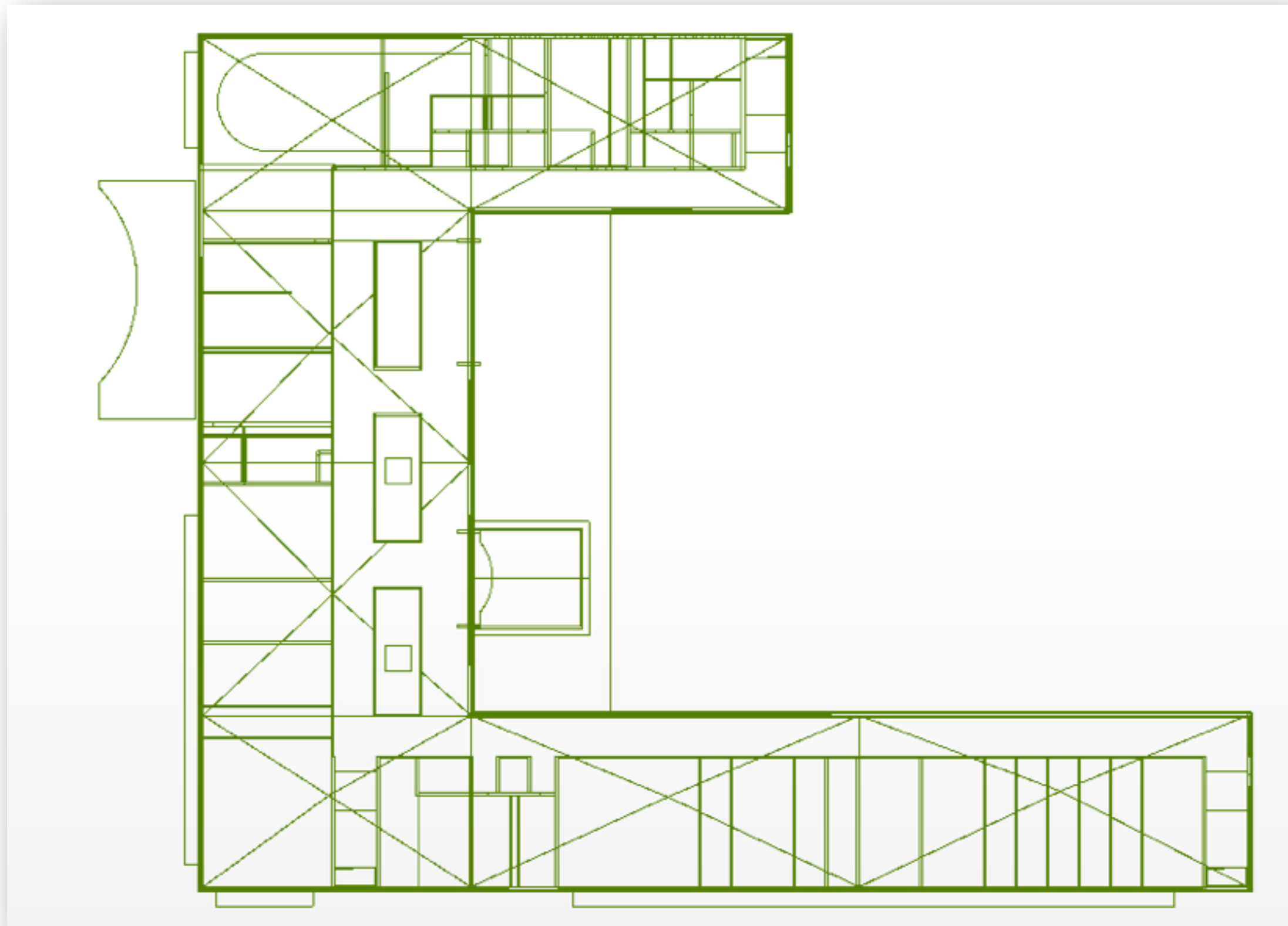


# BIM -> CAD



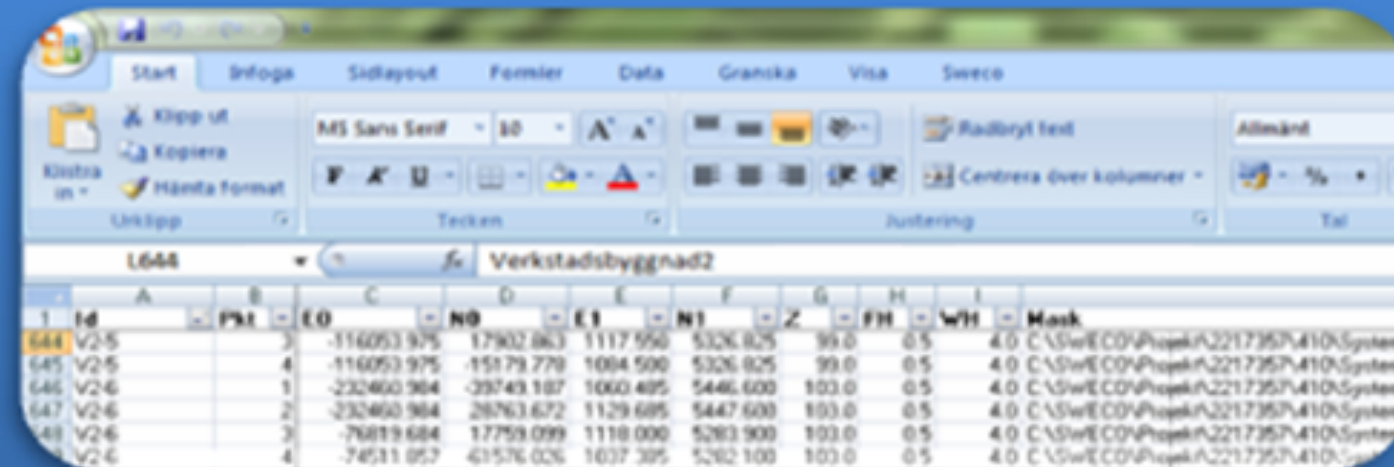
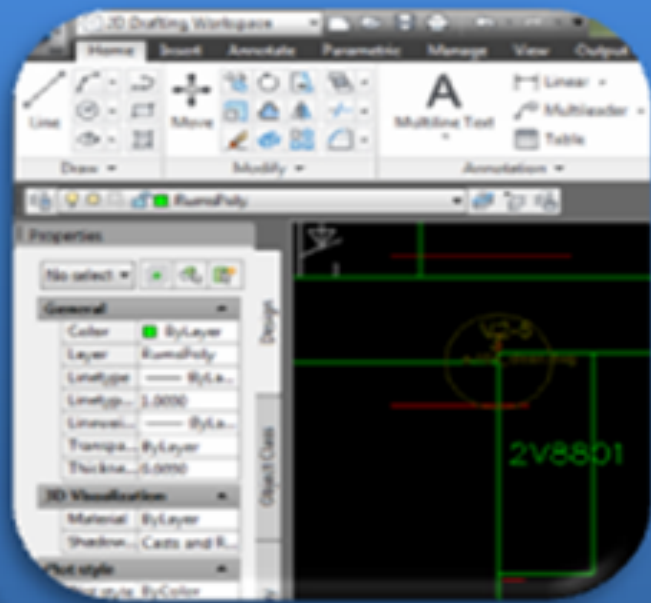


# BIM -> CAD

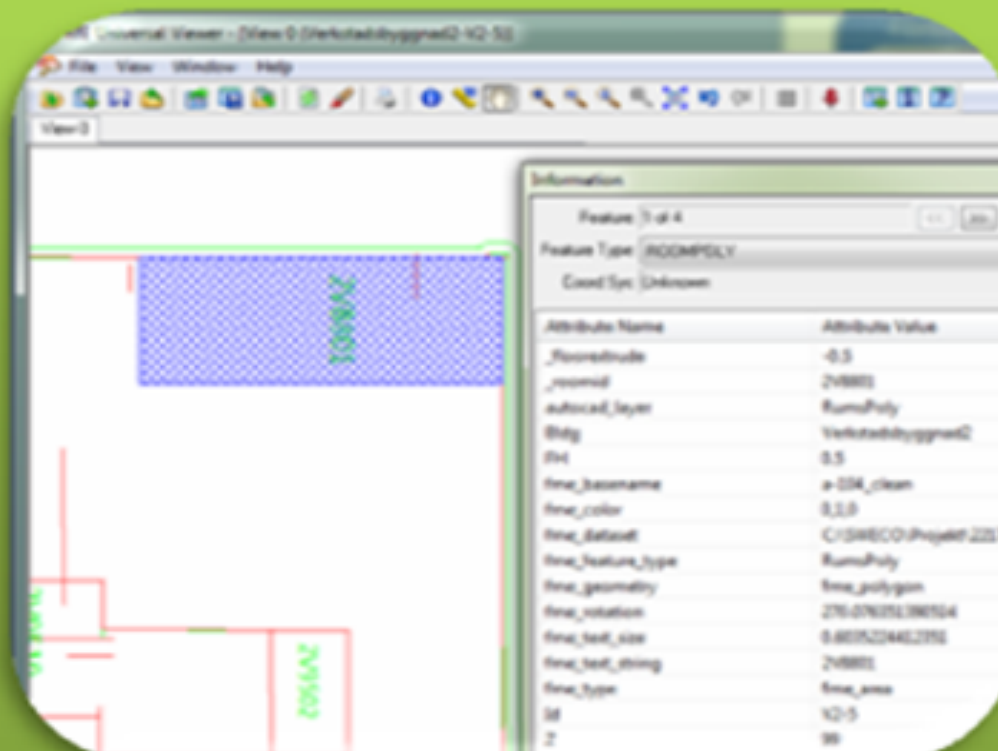




## Förberedelser



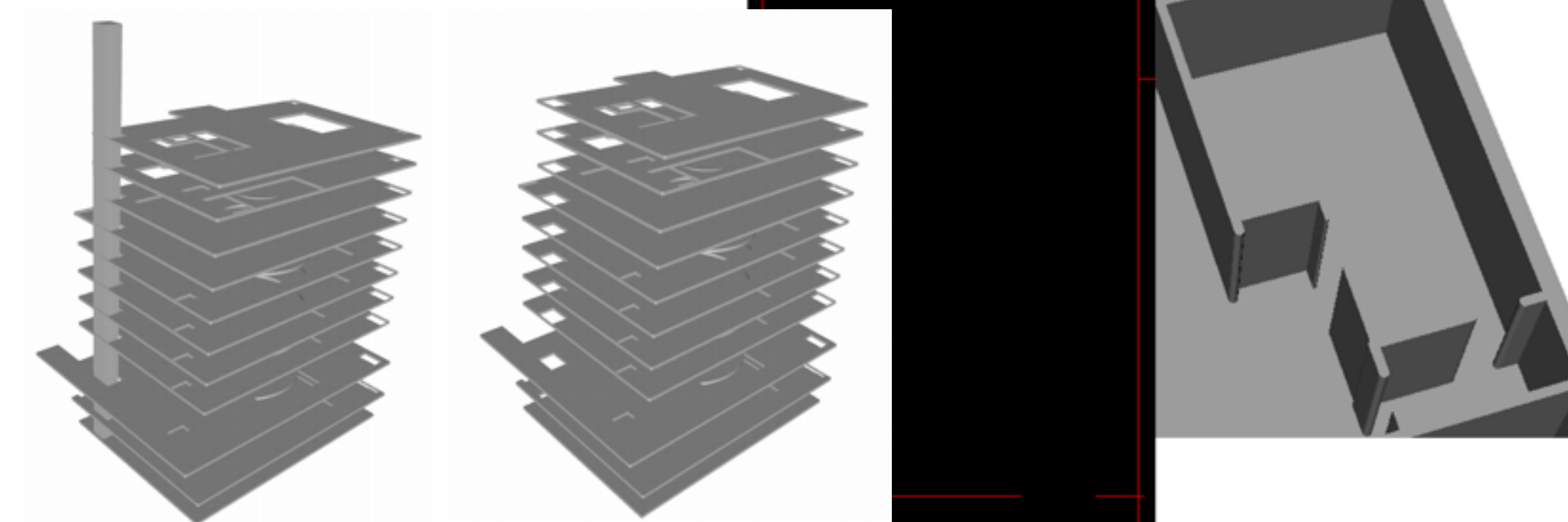
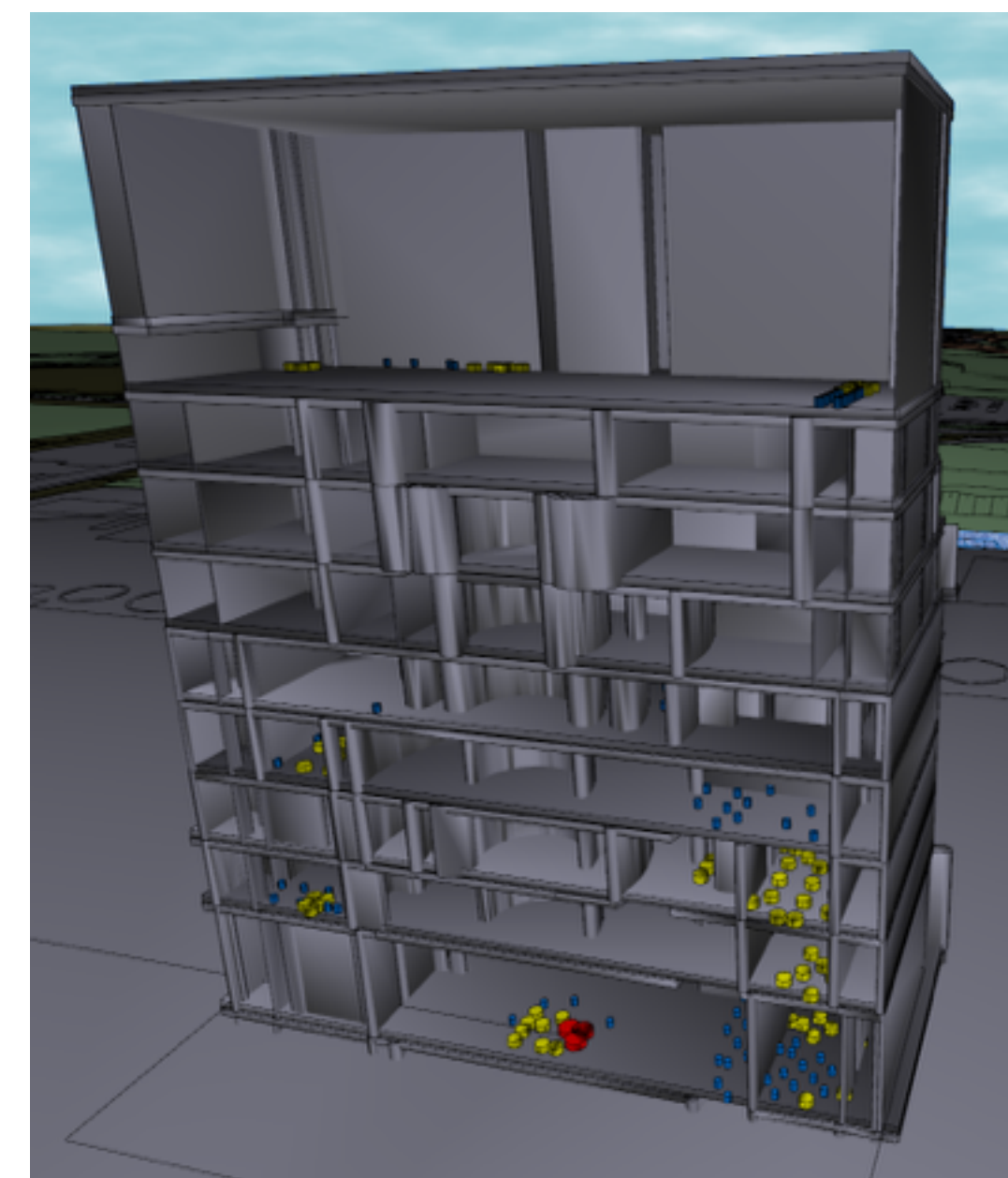
## Transformation & höjdangivelse



## 3D-modeller & layouter



GIS -> BIM  
(SLIM  
BIM)





three.js<sup>r72</sup>

featured projects

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[download](#), [cdn](#)

[getting started](#)

[documentation](#)

[chat](#)

[help](#)

[github](#)

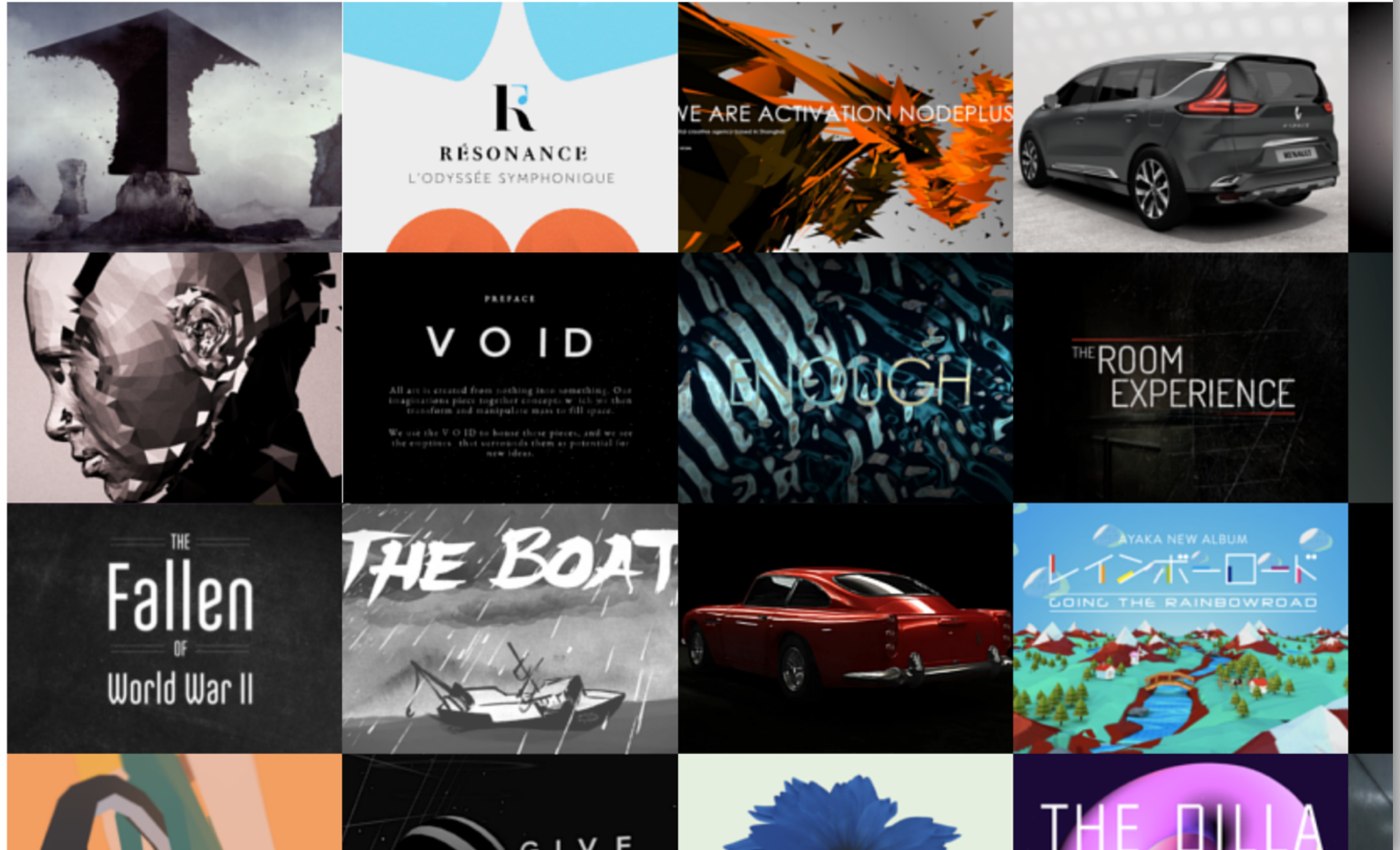
[contributors](#)

[wiki](#)

[issues](#)

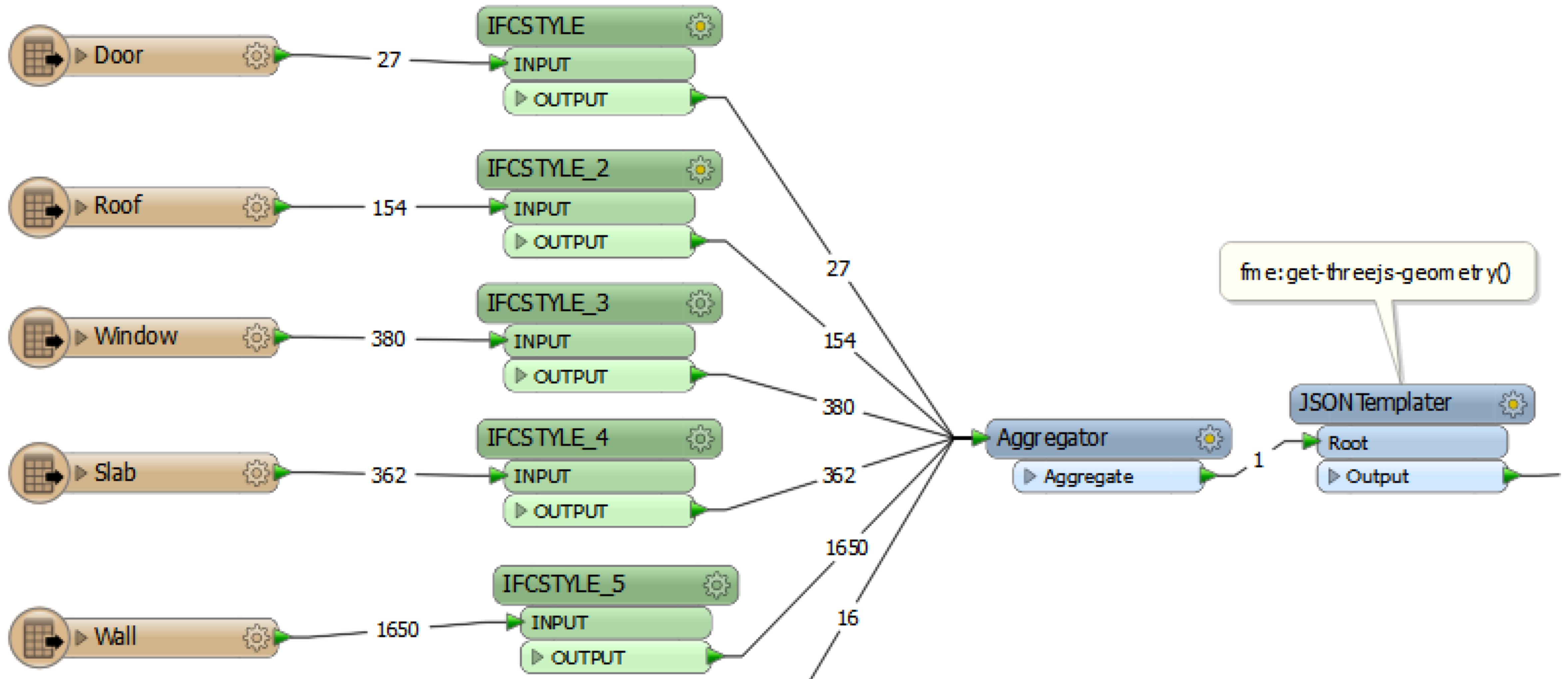
[editor](#) (beta)

Intro to WebGL  
with Three.js





<http://localhost/3js/Ettenheim.html>





http://localhost/3js/Eiffel.html

Read textured Sketchup  
from 3D Warehouse

[https://3dwarehouse.sketchup.com/warehouse/getpubliccontent?contentId=4257f3f3-9955-479c-bc30-c7d6975480d1&fn=eiffel\\_tower2.skp](https://3dwarehouse.sketchup.com/warehouse/getpubliccontent?contentId=4257f3f3-9955-479c-bc30-c7d6975480d1&fn=eiffel_tower2.skp)

Convert to 3JS with texture path  
taken from pub parameter

JSONTemplater

Root

Output

Set output JSON file location

AttributeCreator\_2

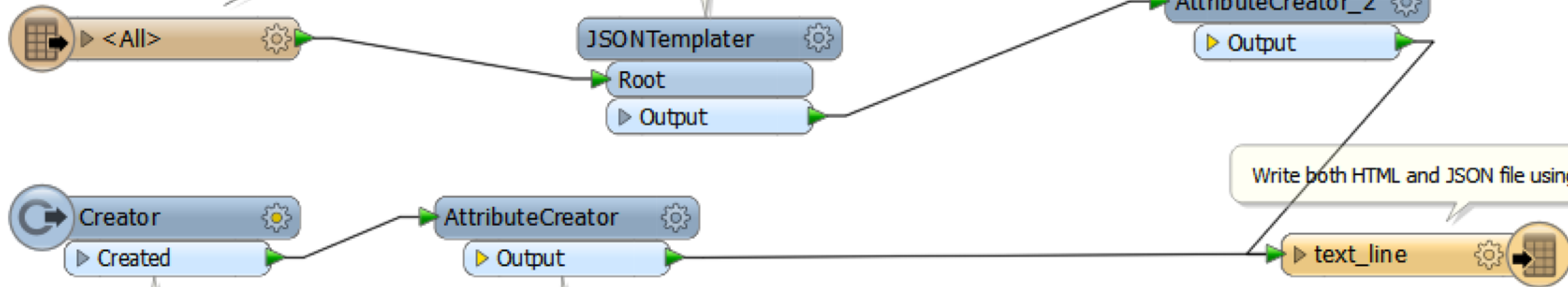
Output

Write both HTML and JSON file using dataset fanout

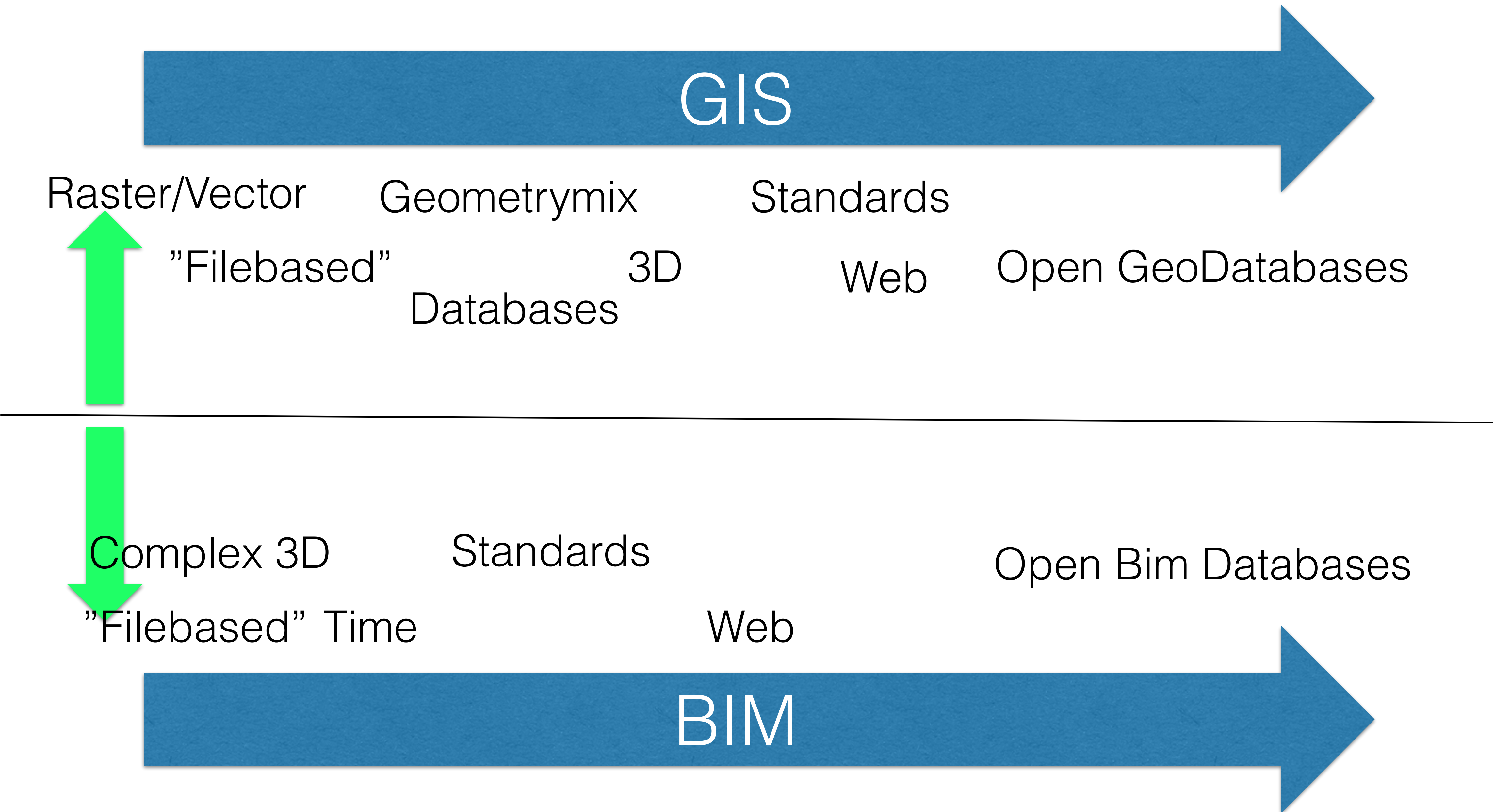
text\_line

Create feature

Set HTML code to display 3JS model  
and output HTML filename from pub  
parameter



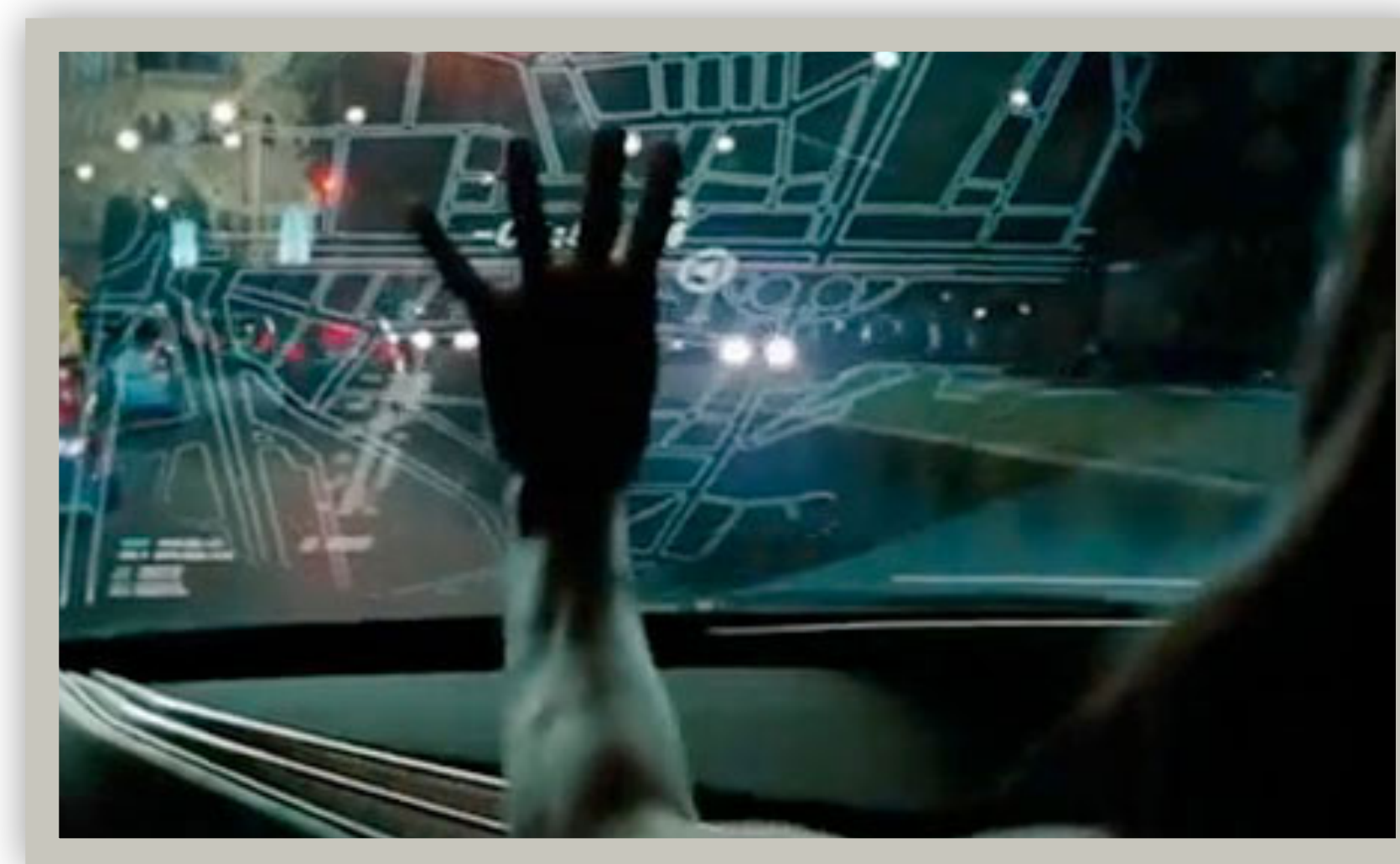






”Really Smart Cities will rely on the connection of  
GIS and BIM data.

For this to be practical we need  
open BIM databases”





GIS

Raster/Vector

Geotrymix

Standards

"Filebased"

Databases

3D

Web

Open GeoDatabases

Complex 3D

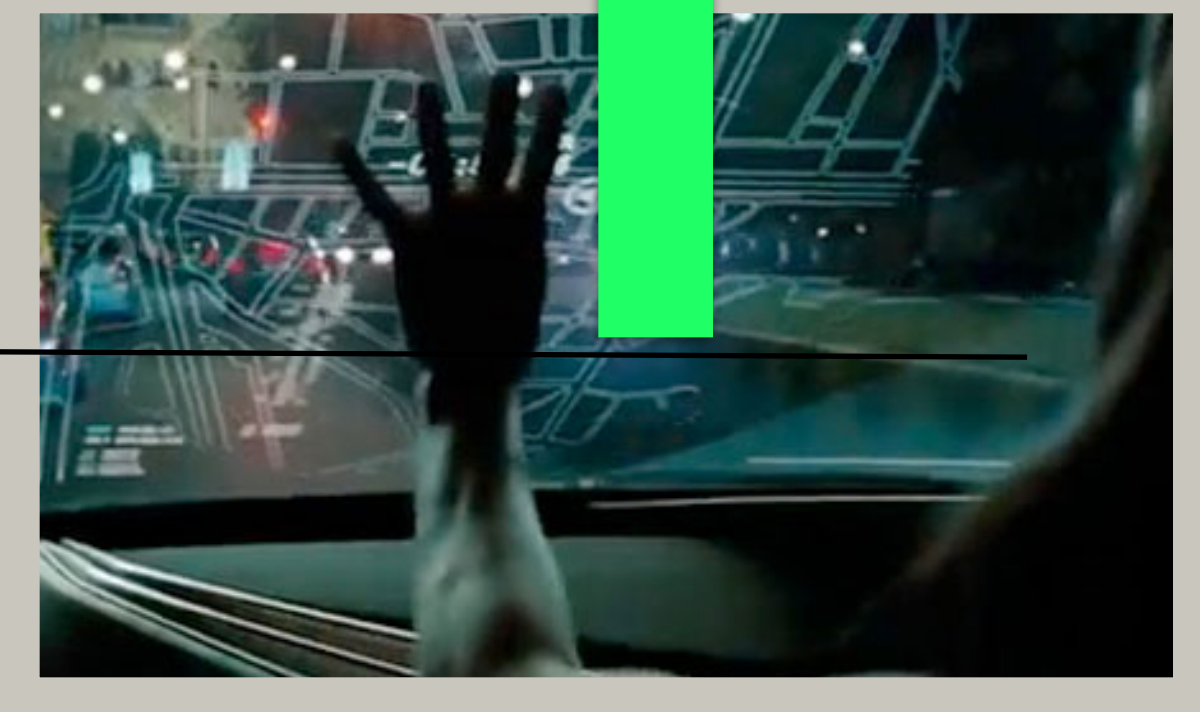
Standards

"Filebased" Time

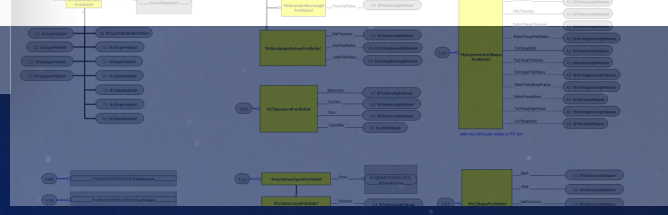
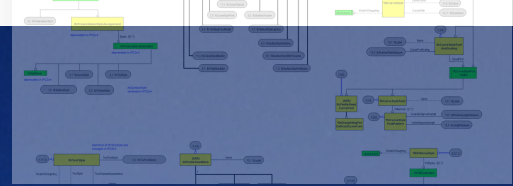
Web

Open Bim Databases

BIM









# Virtual Construction for Roads (V-Con)

The Virtual Construction for Roads (V-Con) is a European project co-funded by the 7th framework programme of the European Commission concerning standardisation and implementation of Building Information Modelling (BIM) technology in the sector of road construction and road management.

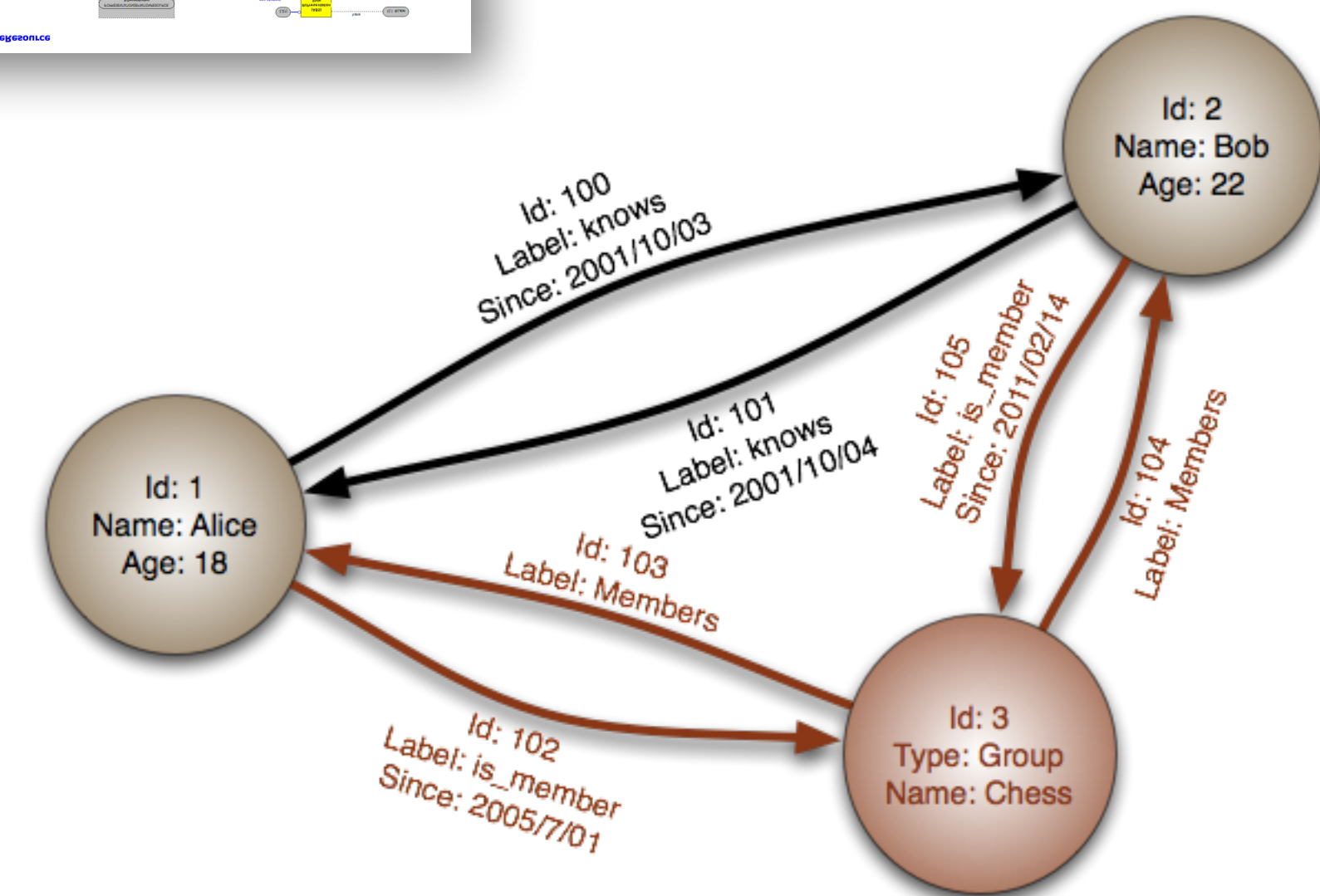
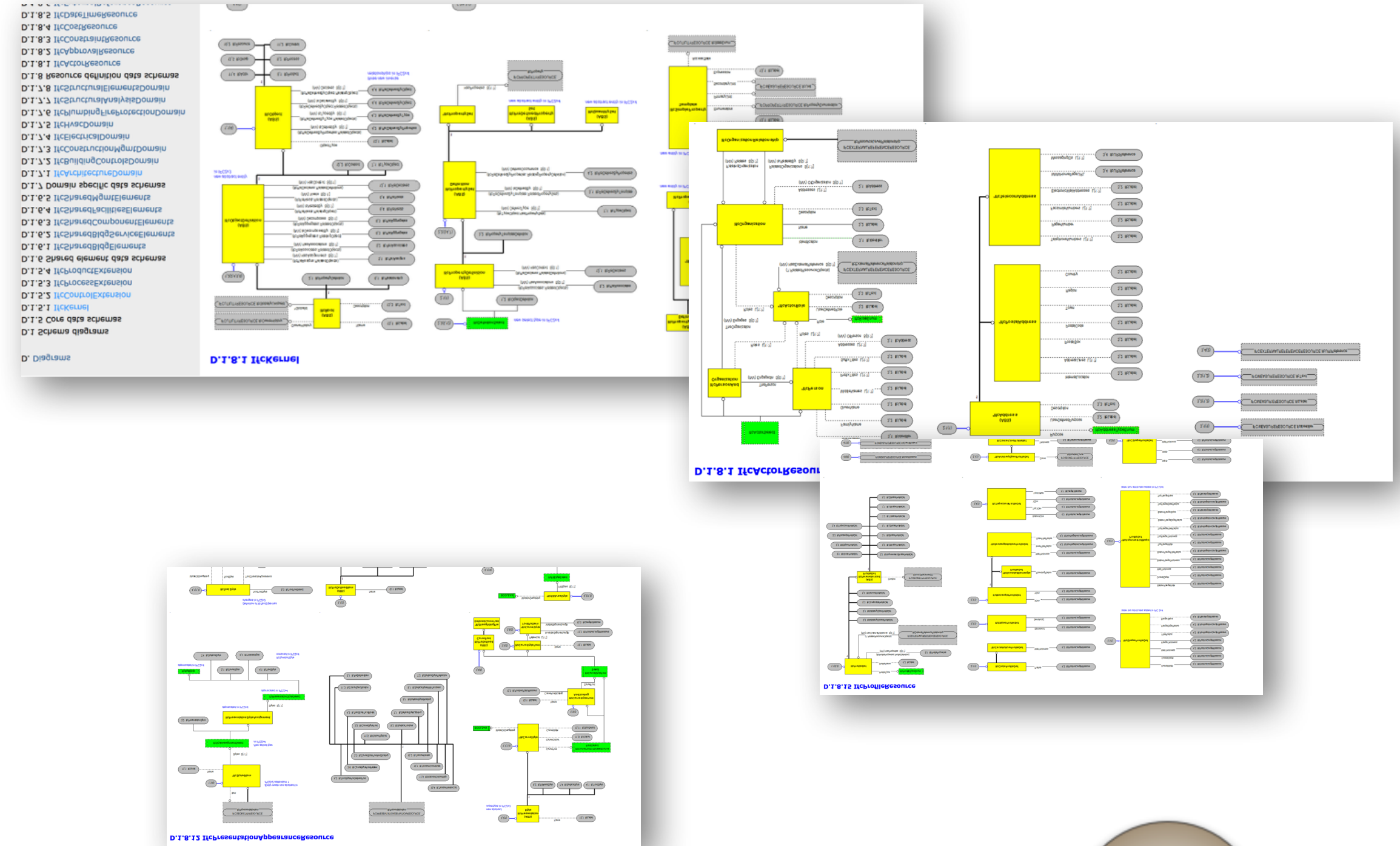
The V-Con project aims to improve the efficiency and effectiveness of the National Road Authorities by improving data exchange in the civil infrastructure sector. BIM has already been successfully implemented in other sectors and is a worldwide development.

The project consists of two parts: a development/standardisation part and a so-called Pre-Commercial Procurement (PCP) part. The duration of the project is four years and the official starting date was October 1st, 2012.

## Result of the Selection for phase 1

In phase 0 V-Con has received 14 proposals in total. The bids from the following 6 companies have been selected, in alphabetical order:

- › Arcadis/Semmtech
- › Demo Consultants
- › Jotne EPM
- › Sweco
- › TopQuadrant
- › Vianova Systems A/S





# APP Question 2

## **Beliefs about your future and BIM?**

- A. We are married and spend our life together.
- B. BIM is my cousin. Shows up in special occasions.
- C. BIM? Never heard of her.





# Thank You!

Ulf Månsson - SWECO Position

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Twitter:@Ulfme