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# 3D Web Mapping

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Yes, We Can!

FOSS4G 2010

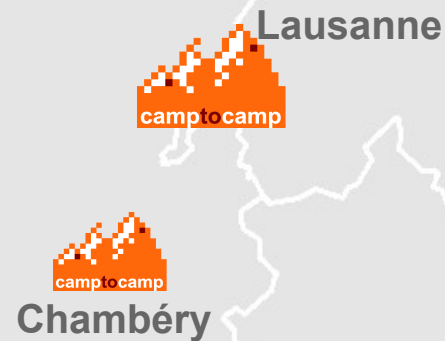
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# Agenda

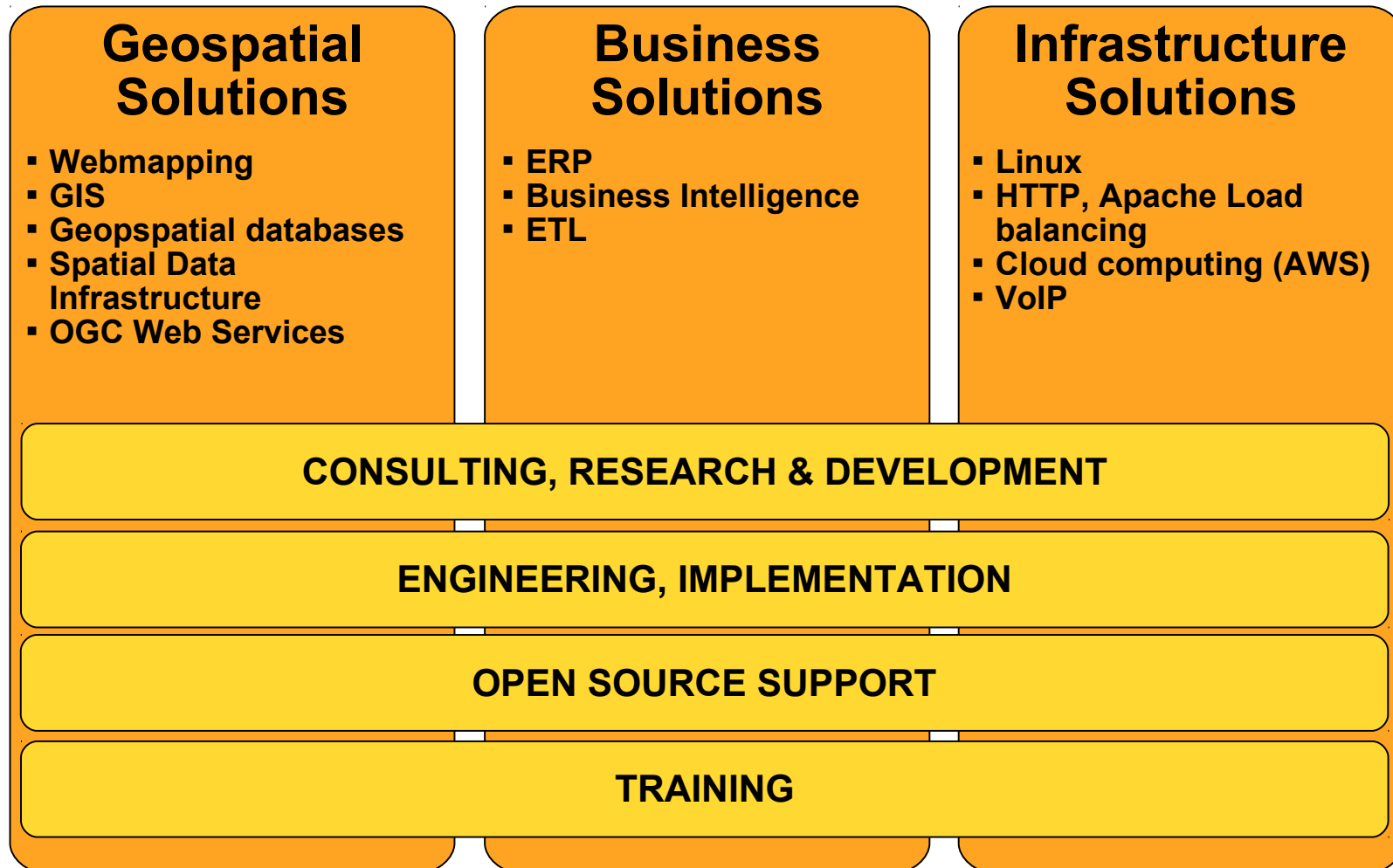
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- Camptocamp
- Why 3D Maps?
- 3D Models With Textures
  - ✓ Data acquisition
  - ✓ 3D models
  - ✓ Textures
- 3D Web Viewer
  - ✓ Integration
  - ✓ Interaction with 2D maps
- Questions

- **Open Source solutions provider as editor and integrator**
- **Staff of 35 in Switzerland and France**
- **Camptocamp helps you move forward with the latest Open Source technologies**



# Camptocamp Domains of Activity



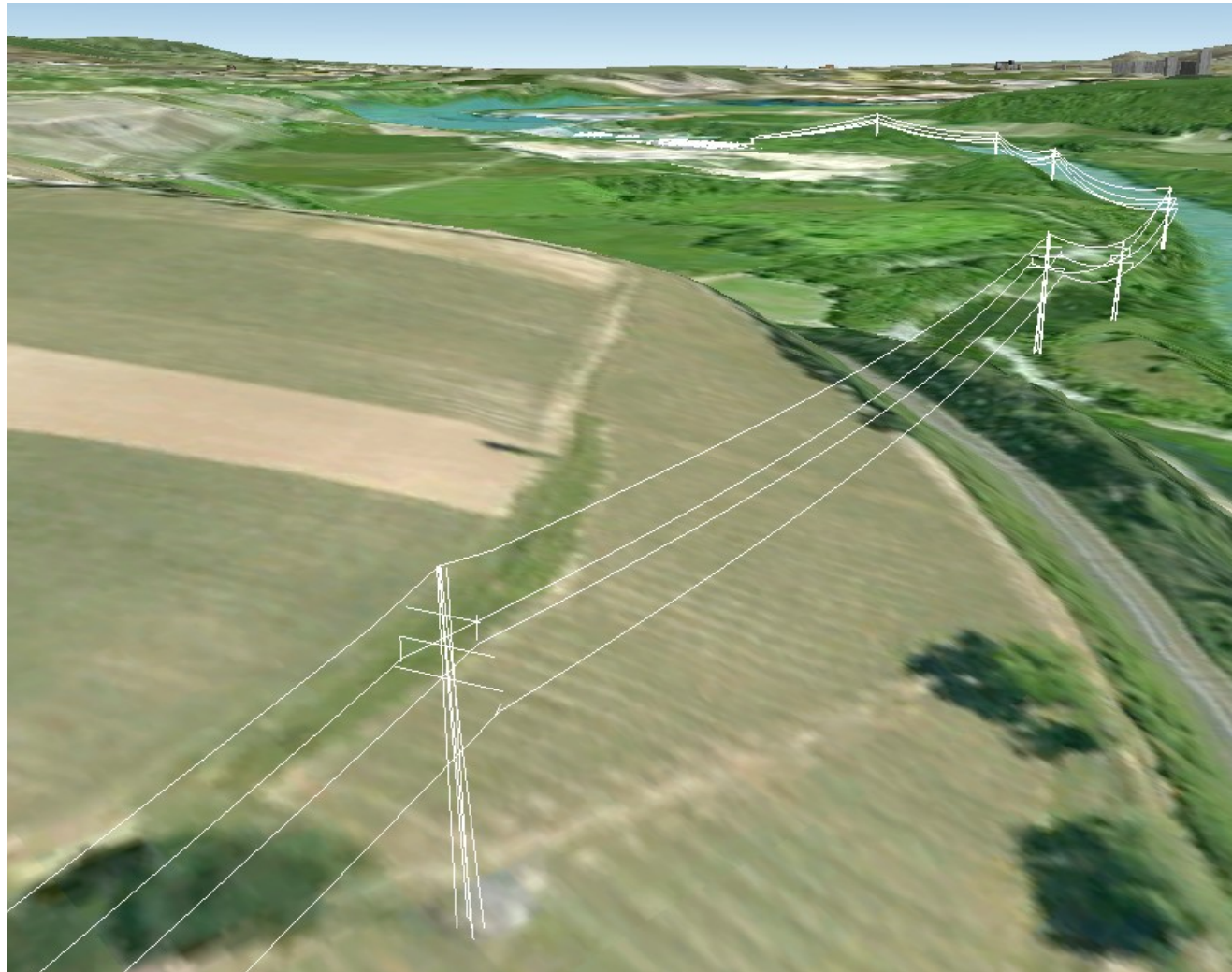
# Why 3D Maps?

- Because it's cool (and clients like cool stuff)



# Why 3D Maps?

- Because it can help understand current and future 3D data



# 3D Models With Textures

- An example: EPFL campus in Lausanne, Switzerland

The screenshot displays a web-based map interface for the EPFL campus in Lausanne, Switzerland. At the top left is the EPFL logo (ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE). A search bar with a 'Find' button is located at the top center. Below the search bar are navigation and utility buttons: 'Points of Interest', 'Routing', 'Print', 'Measure', 'Links', and '?'. On the right side, there are language options for 'Français' and 'English', and a 'URL' field.

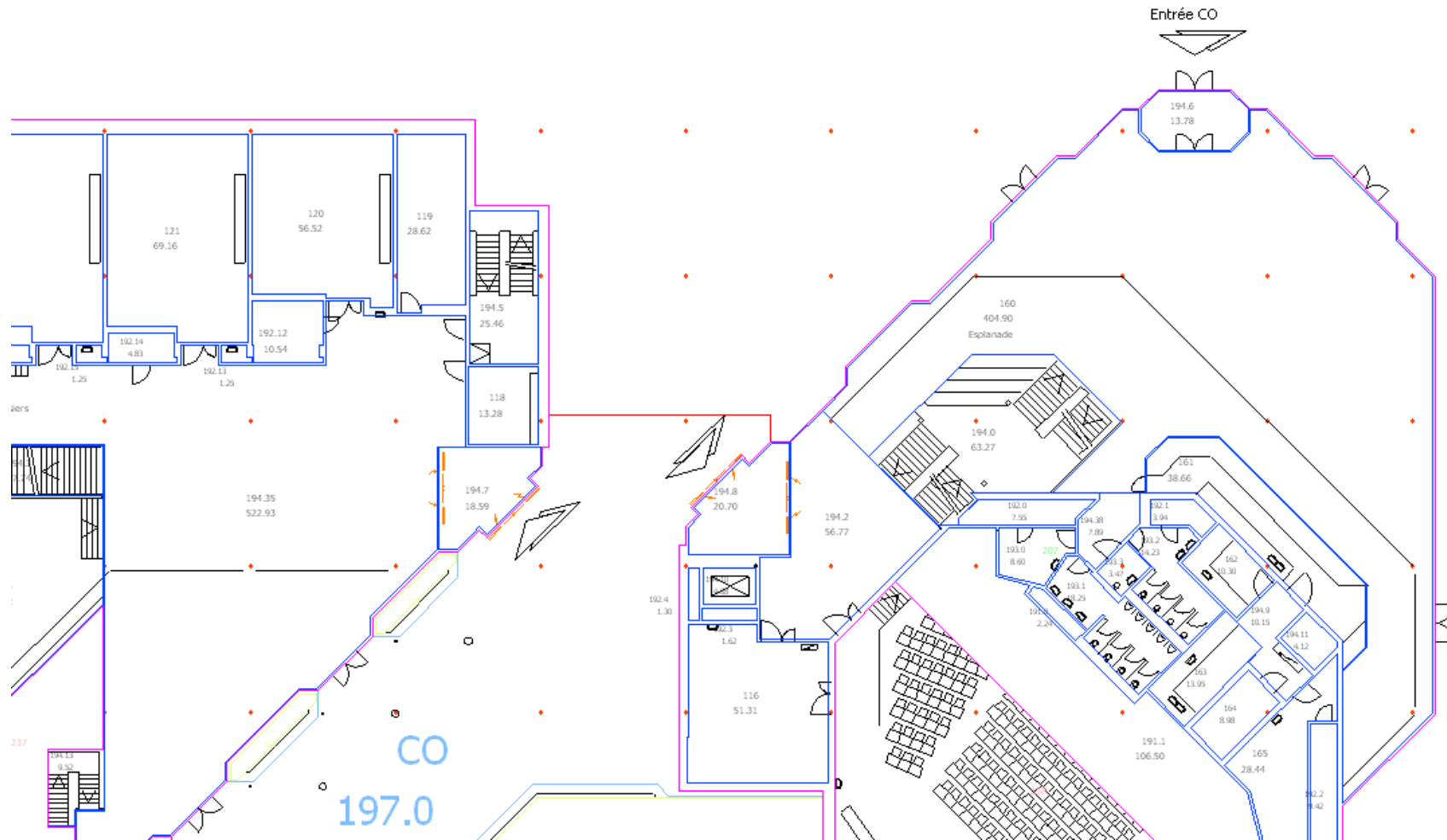
The main map area shows a 3D view of the campus buildings. A 'Floors' control on the left allows users to view different levels, ranging from 'Sky' to '-4'. A 'Zoom' control on the right offers various levels of detail: Room, Building, Quarter, Campus, City, and more. A list of points of interest is visible on the left side of the map, categorized into folders like 'Access', 'Education', 'Services', 'Utilities', and 'Infrastructure'. Specific items include Schools, Auditorium, Libraries, Restaurants, Snack bars, Machines, Shops, Caretakers, Associations, Culture, EPFL Services, Secretariats, Workshops, Hotels, and Student housing.

The map itself shows the EPFL campus (CAMPUS EPFL) and the UNIL-Mouline campus (CAMPUS UNIL) situated near the city of Ecublens (VD) and the city of Lausanne. The map includes street names, parking areas, and a small inset map in the bottom right corner showing the location of the campus within the region of Lausanne. At the bottom of the map, there is a copyright notice: '© 2002-2010 EPFL. Data CC-BY-SA by OpenStreetMap'. A 'Map' button and a 'Satellite' button are also present at the bottom.

# Data Sources

3D Models With Textures

- Architects floor plans and meta data

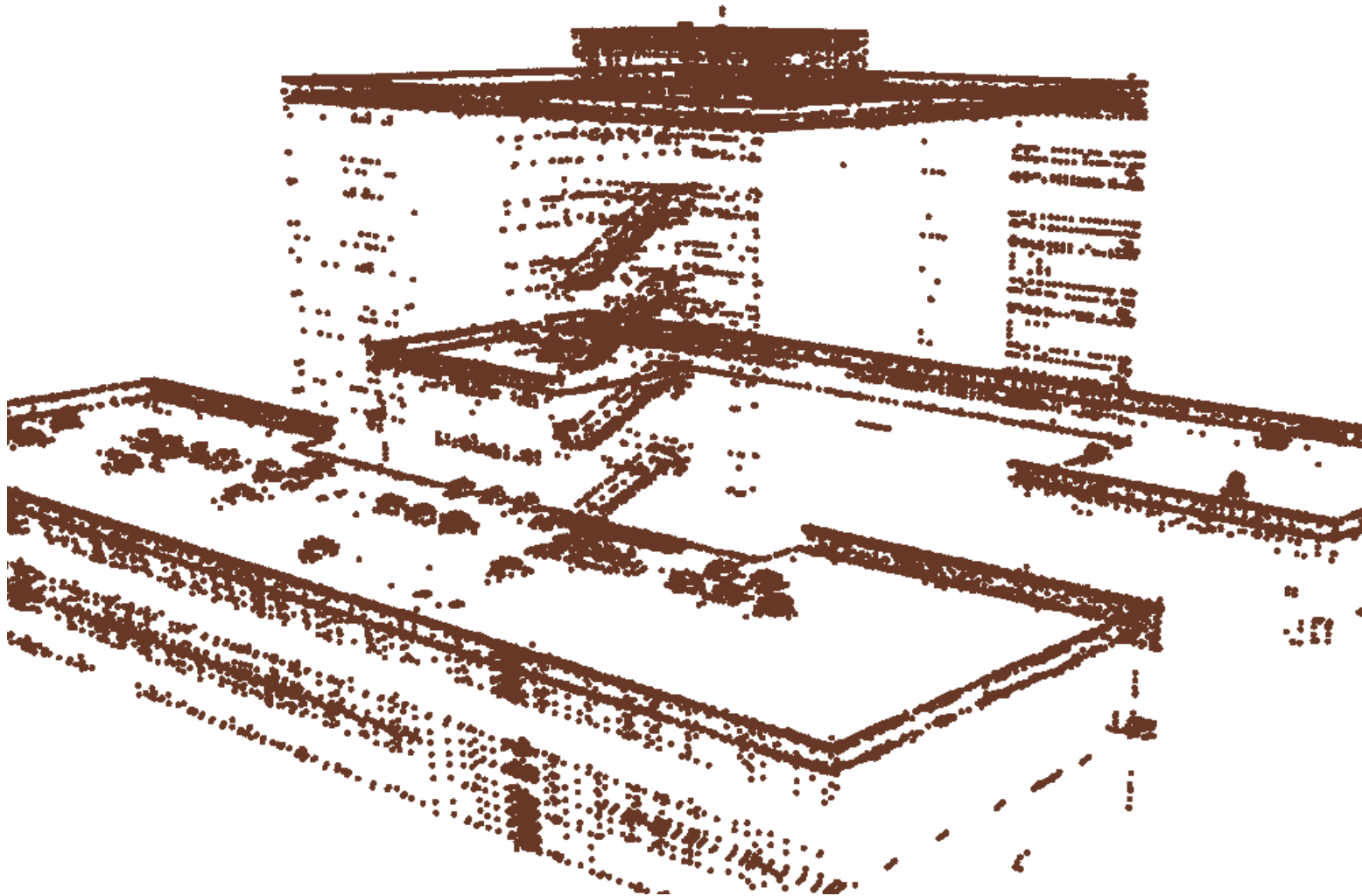




# Data Sources

3D Models With Textures

- LIDAR points clouds



# Data Sources

3D Models With Textures

- Helicopter images



# Data Sources

3D Models With Textures

- Drone (UAV) images

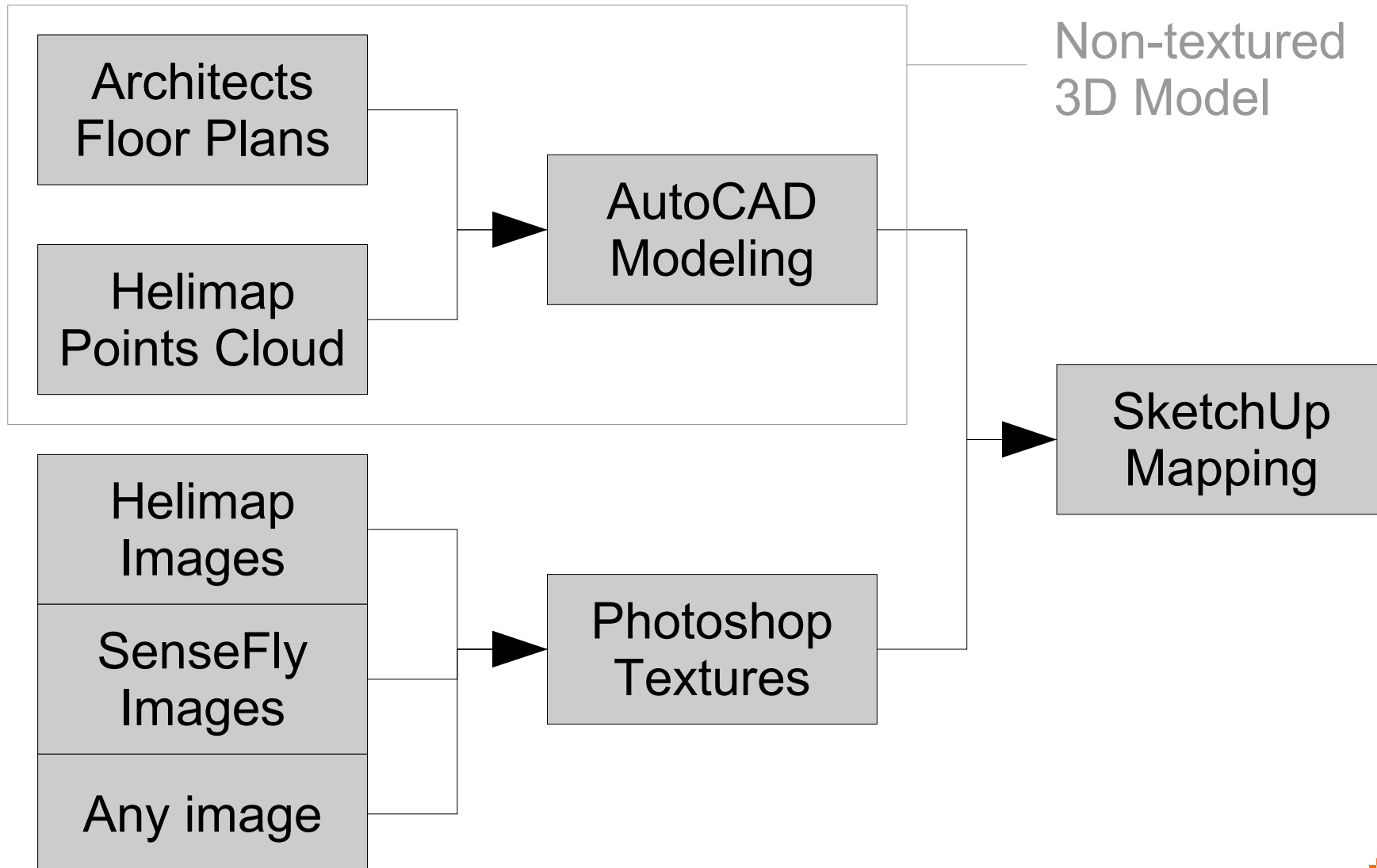


# Partners

3D Models With Textures

- EPFL
  - ✓ Floor plans, meta data [www.epfl.ch](http://www.epfl.ch)
- Helimap
  - ✓ Helicopter images and LIDAR points cloud [www.helimap.ch](http://www.helimap.ch)
- SenseFly
  - ✓ Drone images [www.sensefly.com](http://www.sensefly.com)
- CVLAB (Computer Vision Laboratory, EPFL)
  - ✓ Camera position and angle out of drone images [cvlab.epfl.ch](http://cvlab.epfl.ch)
- IGN (Institut Géographique National, France)
  - ✓ Model textures and automatic model generation [www.ign.fr](http://www.ign.fr)
- Camptocamp
  - ✓ Everything else! [www.camptocamp.com](http://www.camptocamp.com)
  - ✓ Global project management

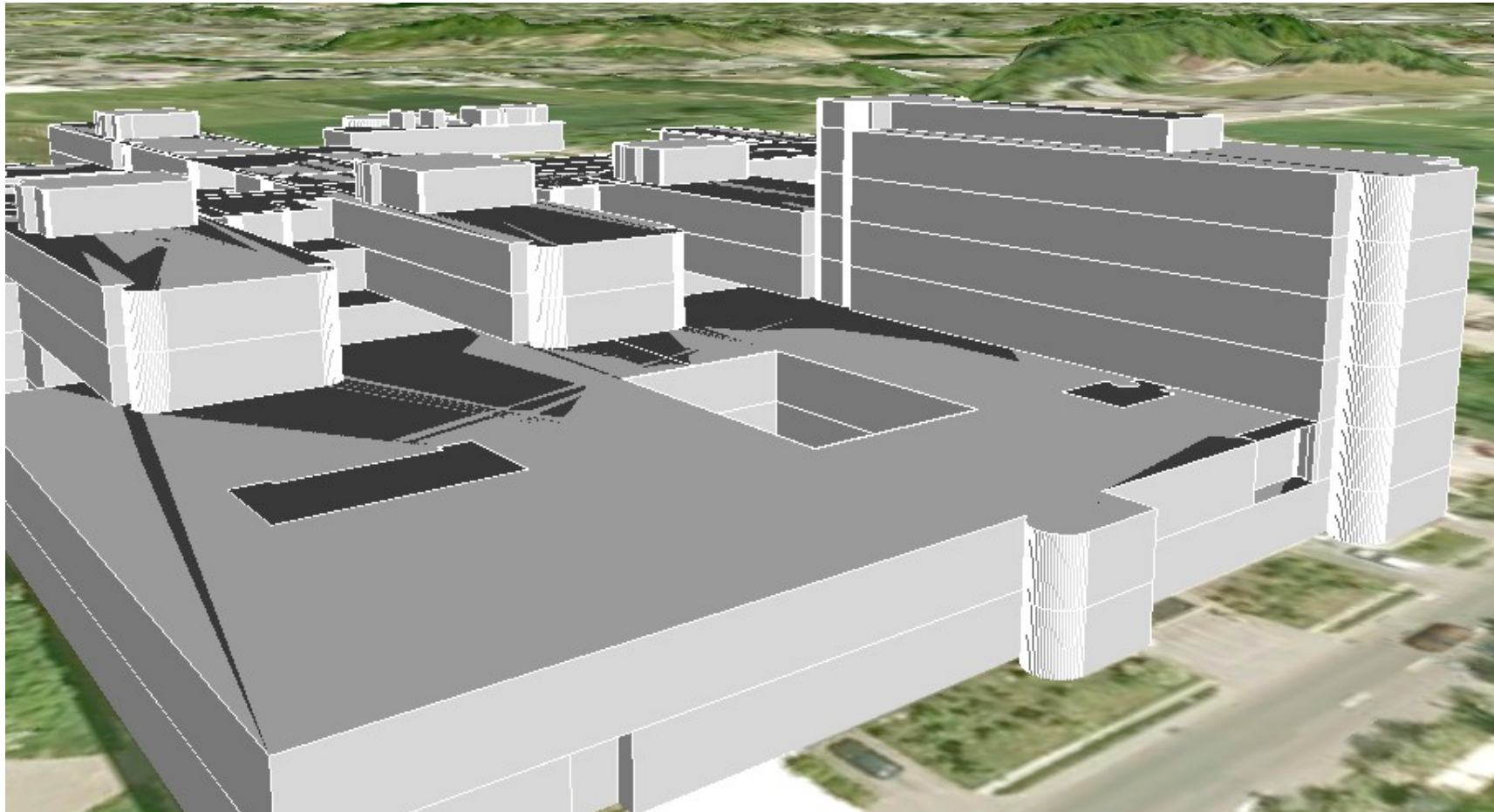
# Classical Approach



# Classical Approach

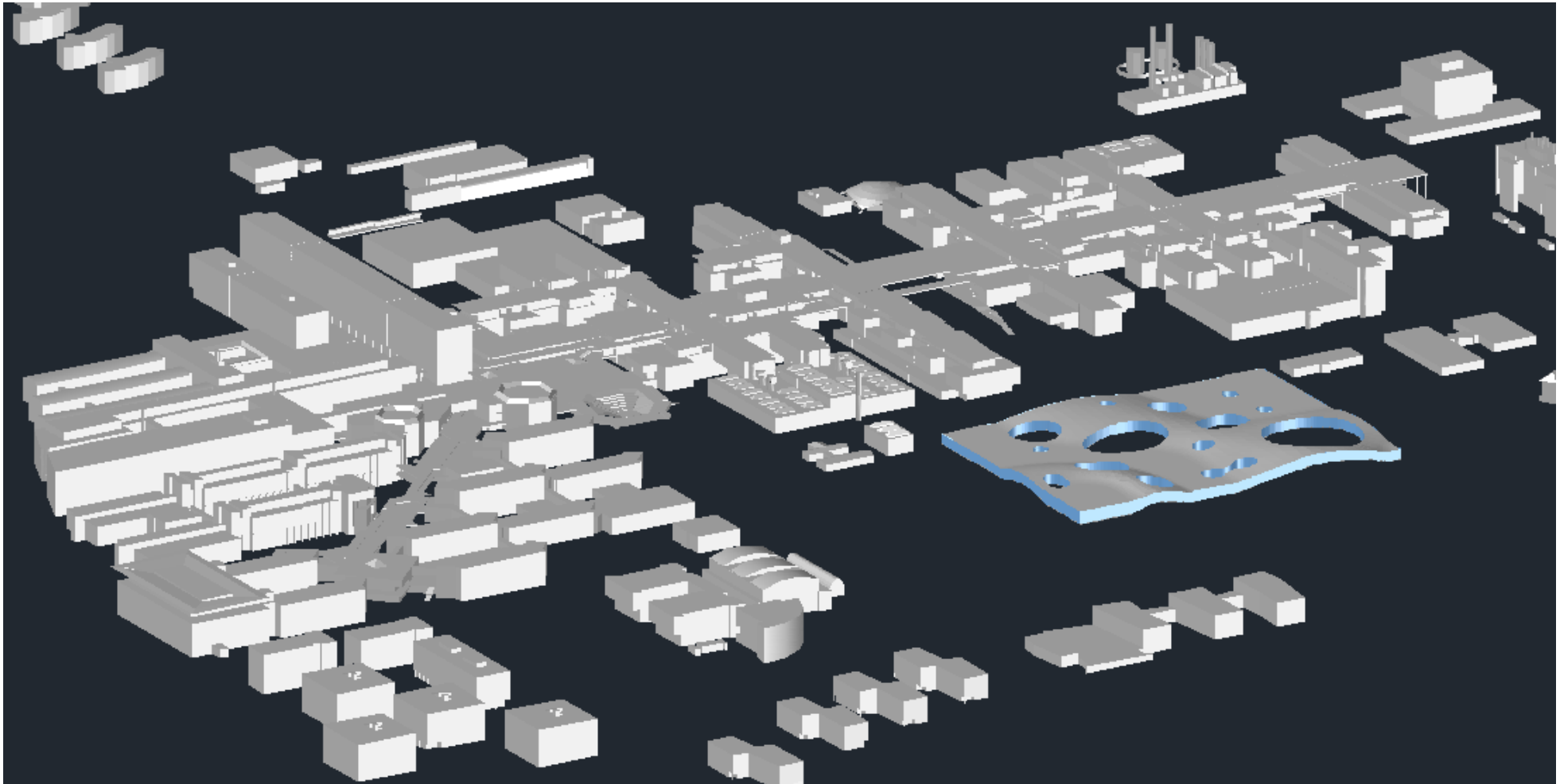
3D Models With Textures

- Floor plans to 3D



# Classical Approach

3D Models With Textures



# Classical Approach

3D Models With Textures

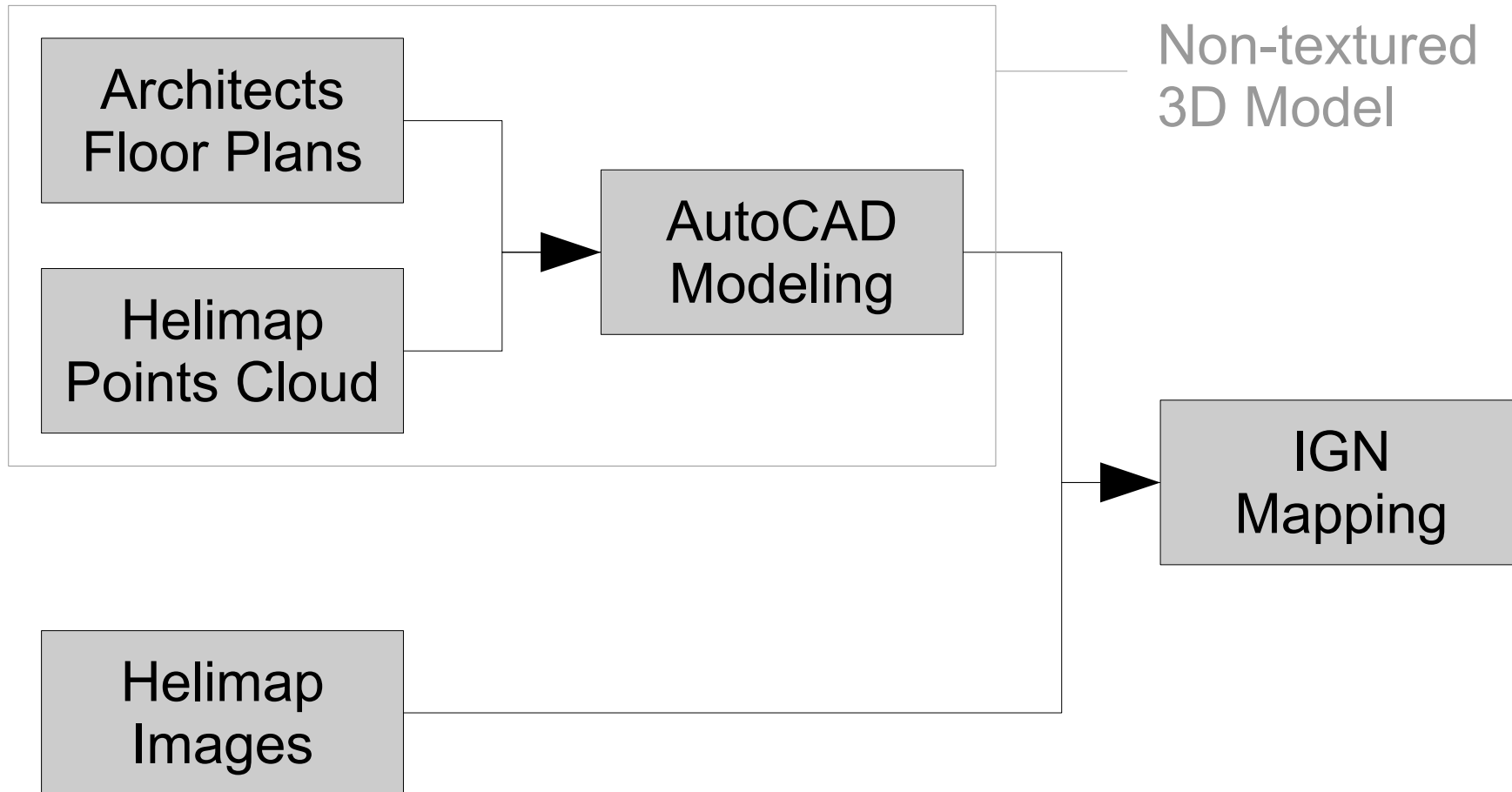
## ■ Preparing textures





# Using Helimap Images

3D Models With Textures



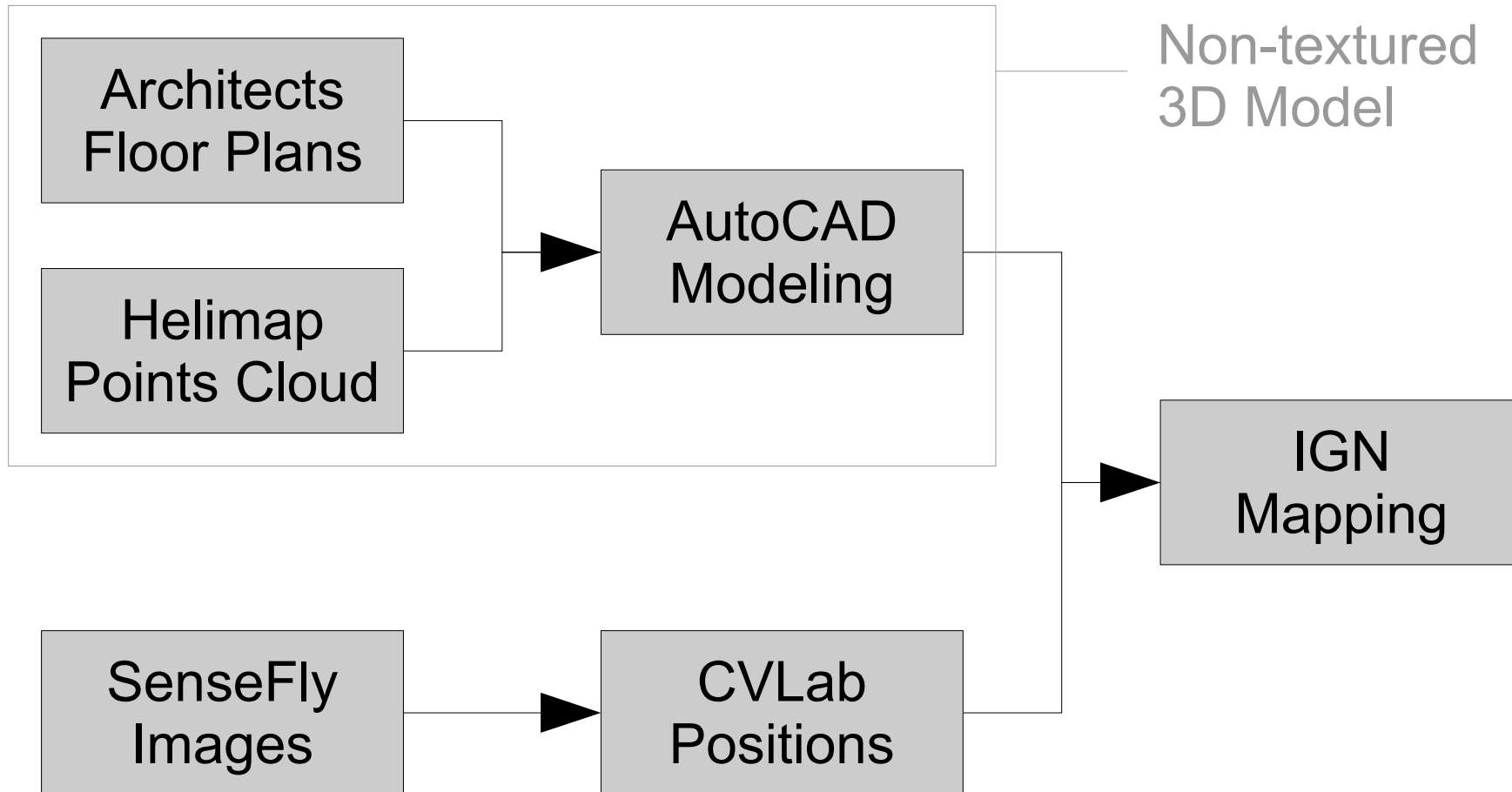
# Using Helimap Images

3D Models With Textures



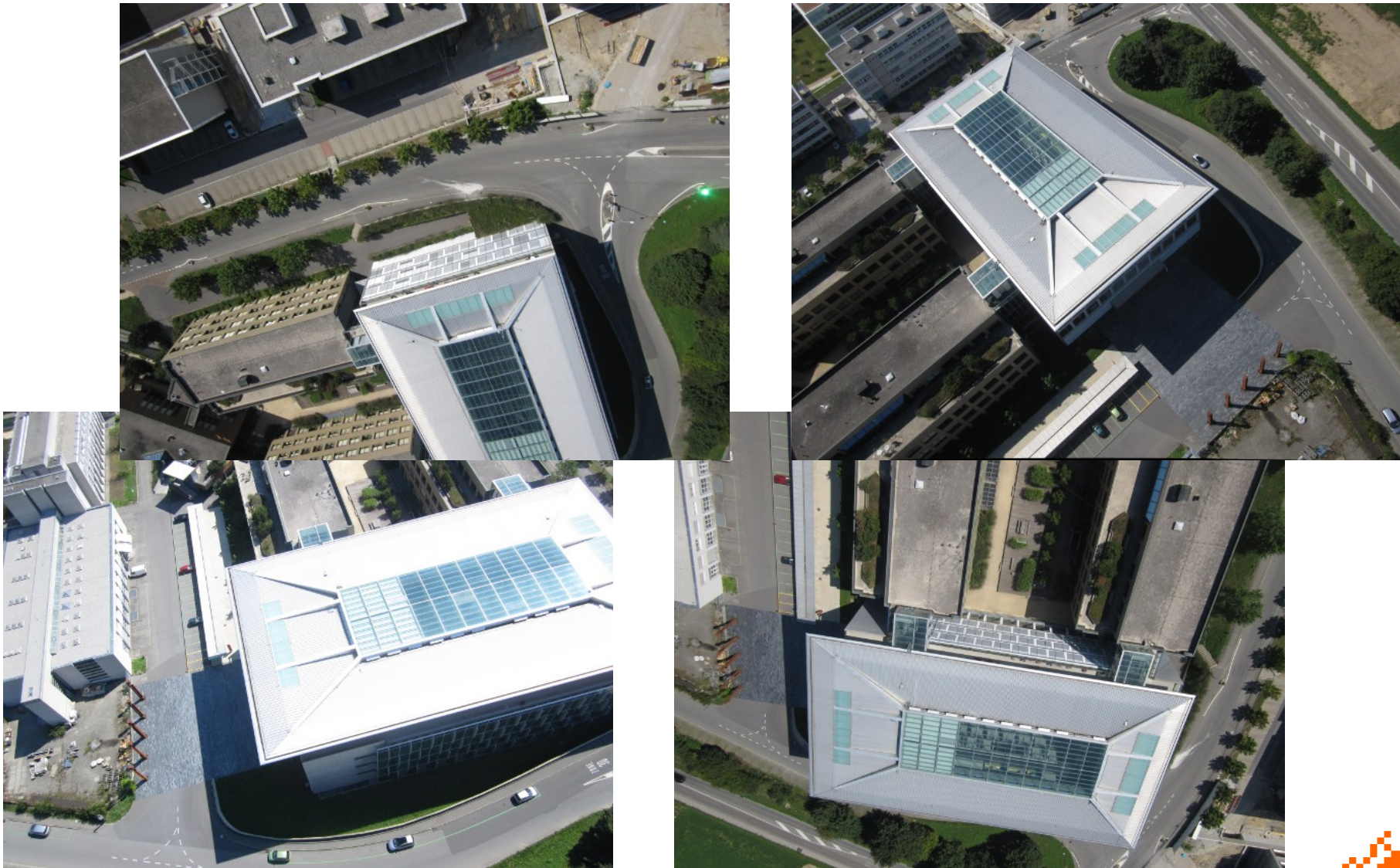
# Using SenseFly Images (beta)

3D Models With Textures

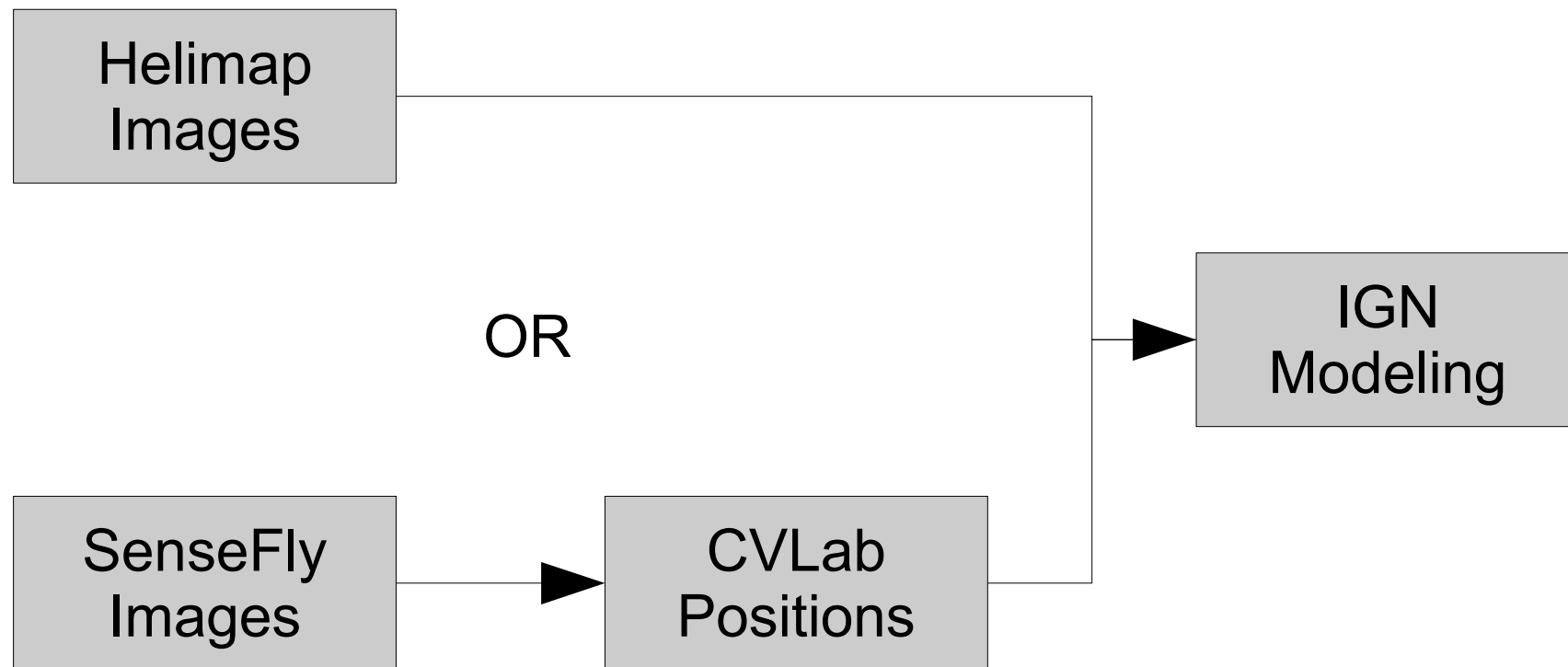


# Using SenseFly Images (beta)

3D Models With Textures



# Other Buildings



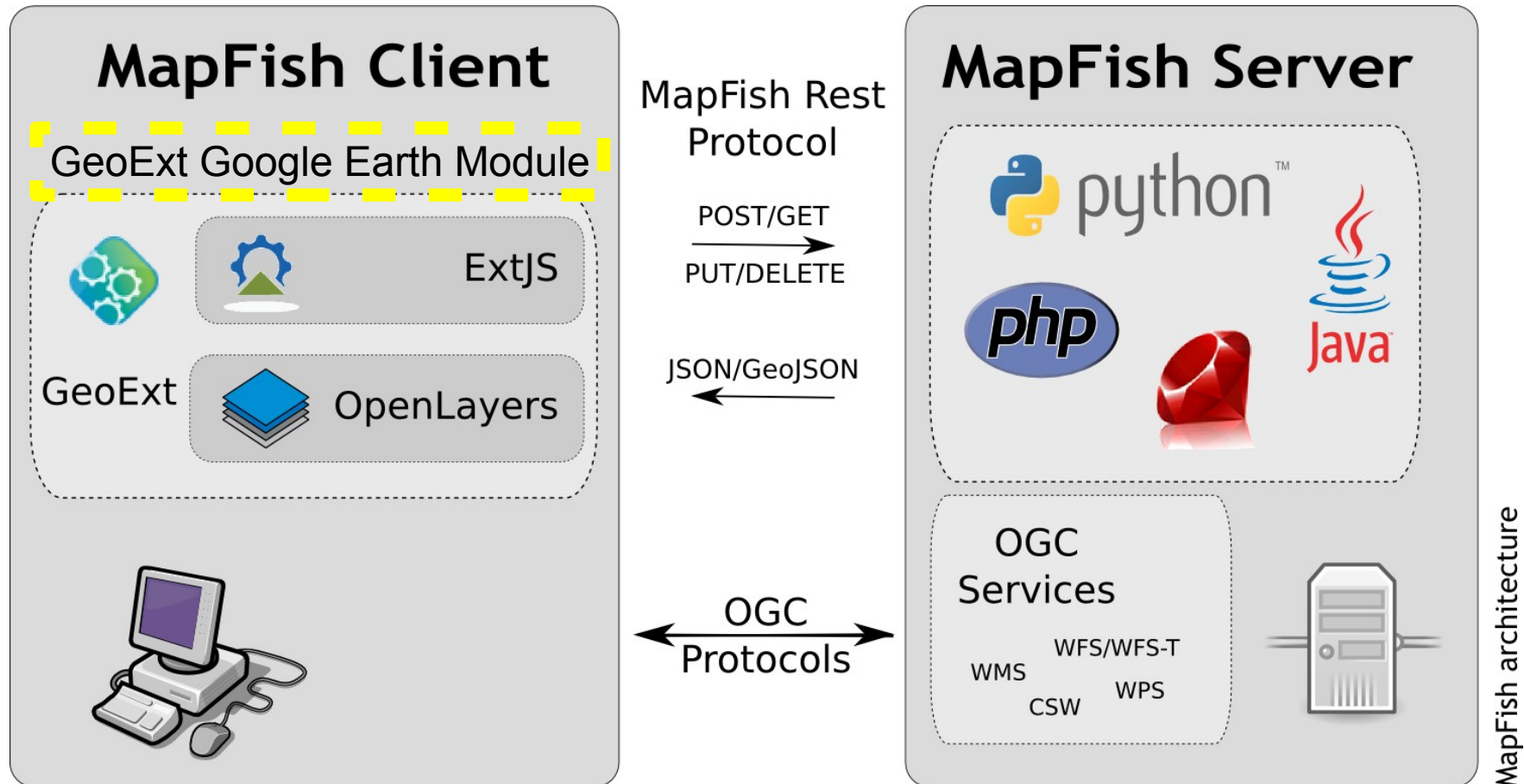
# Other Buildings

3D Models With Textures



# 3D Web Viewer

## ■ MapFish architecture



# EDF Project

3D Web Viewer





# SITN Project

3D Web Viewer

## Géoportail du Système d'Information du Territoire Neuchâtelois

Accueil - Thèmes - Géodonnées - Géoservices - Contact



**Outils**

Arbre des couches

Plan de ville (nomenclature)	<input checked="" type="checkbox"/> 2D <input type="checkbox"/> 3D	<input type="checkbox"/>
Point d'intérêt	<input type="checkbox"/> 2D <input type="checkbox"/> 3D	<input type="checkbox"/>
Bâtiments Auvernier	<input type="checkbox"/> 2D <input checked="" type="checkbox"/> 3D	<input type="checkbox"/>
Parcelles Auvernier	<input type="checkbox"/> 2D <input type="checkbox"/> 3D	<input type="checkbox"/>
Fonds de plan		
Swisstopo	<input type="radio"/> 2D <input type="radio"/> 3D	<input type="checkbox"/>
Mixte	<input type="radio"/> 2D <input type="radio"/> 3D	<input type="checkbox"/>
Orthophoto	<input type="radio"/> 2D <input type="checkbox"/> 3D	<input type="checkbox"/>
Ombrage modèle de surface	<input type="radio"/> 2D <input type="checkbox"/> 3D	<input type="checkbox"/>
Ombrage modèle de terrain	<input type="radio"/> 2D <input type="checkbox"/> 3D	<input type="checkbox"/>
Plan cadastral	<input type="radio"/> 2D <input type="checkbox"/> 3D	<input type="checkbox"/>
Plan d'ensemble gris	<input type="radio"/> 2D <input type="checkbox"/> 3D	<input type="checkbox"/>
Plan d'ensemble couleur	<input type="radio"/> 2D <input type="checkbox"/> 3D	<input type="checkbox"/>
Plan de ville	<input checked="" type="radio"/> 2D <input type="radio"/> 3D	<input type="checkbox"/>

Ajouter un fichier KML   Ajouter une couche WMS

Recherche et Recentrage +

Impression +

Itinéraires +

Aide +



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# Thank you for your attention

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