



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

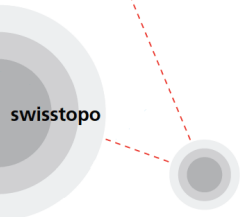
Bundesamt für Landestopografie swisstopo

wissen wohin
savoir où
sapere dove
knowing where

3D Buildings nationwide in Switzerland

EuroSDR Workshop on LoD2 Building Model Generation
13.11.2023

Raphaël Bovier, Head of geodata distribution





Agenda

- Context : short Introduction to swisstopo and the production of 3D Data countrywide
- Production of the 3D-Buildings
- How users can access the 3D-Data ?
- User Stories



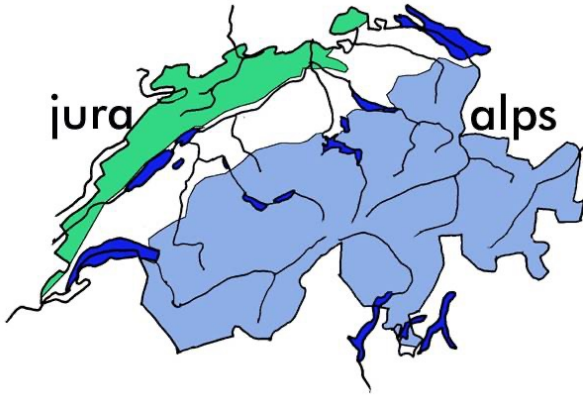
The Federal Office of Topography

- Land Survey and Mapping
- Geodetic Survey
- Supervision of the cadastral survey
- Geological Survey
- Coordination of the activities related to geoinformation
- Development and operation of the Federal spatial data infrastructure FSDI



Our playground

- Small and Mountainous



41'285 km²

Population : 8.6 Millions

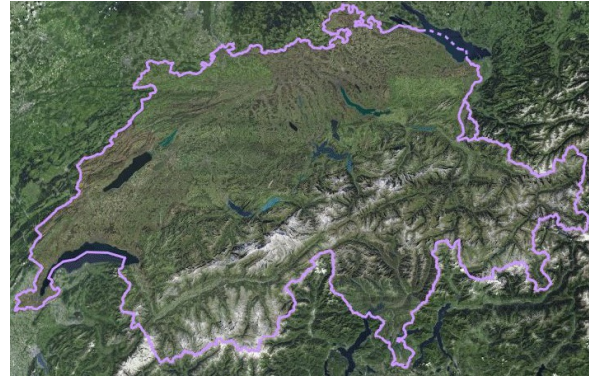
- 74 mountains over 4'000m
- Medium altitude 1'300m
- About 50% of the country are above 1'000m





Survey in Switzerland

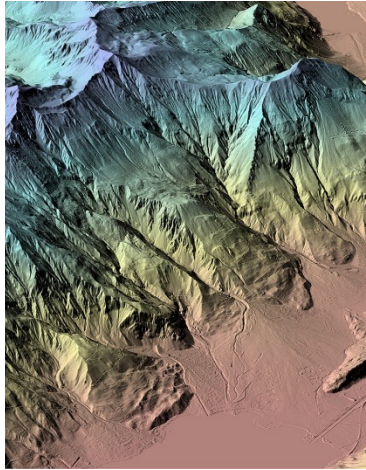
- Land Survey : at national Level
- Cadastral Survey : at cantonal / municipal Level





3D-Buildings parts of the Land Survey

- New Production started in 2007



Elevation Model



Topographic Landscape Model



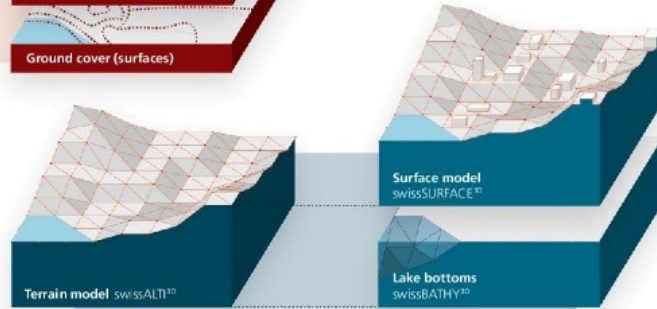
**ADMINISTRATIVE
ELEMENTS**



VOLUME DATA



**TOPOGRAPHIC
OBJECTS**



HEIGHT DATA

Focus 3D-Buildings



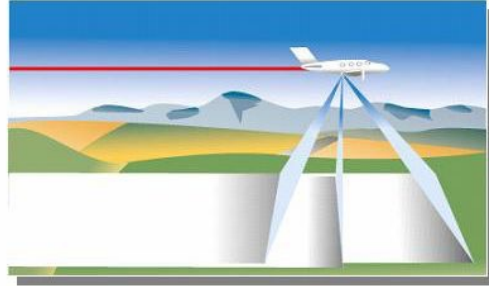
swissBUILDINGS^{3D}

- **Versions**
 - **2.0** : countrywide since 2018
 - **3.0 (beta)** : since 2022
- **Details** : LOD 2.0 with roof overhangs
- **Accuracy** : +/- 30 cm
- **Delivery** in tiles 13.125 km²
- **Last update** : 2015 – 2022 by area
- **Update**: every 3 years, starting 2024
- **Format** : DWG/DXF, ESRI FGBD, cityGML

First capture by an external contractor (about 3.7 millions buildings)

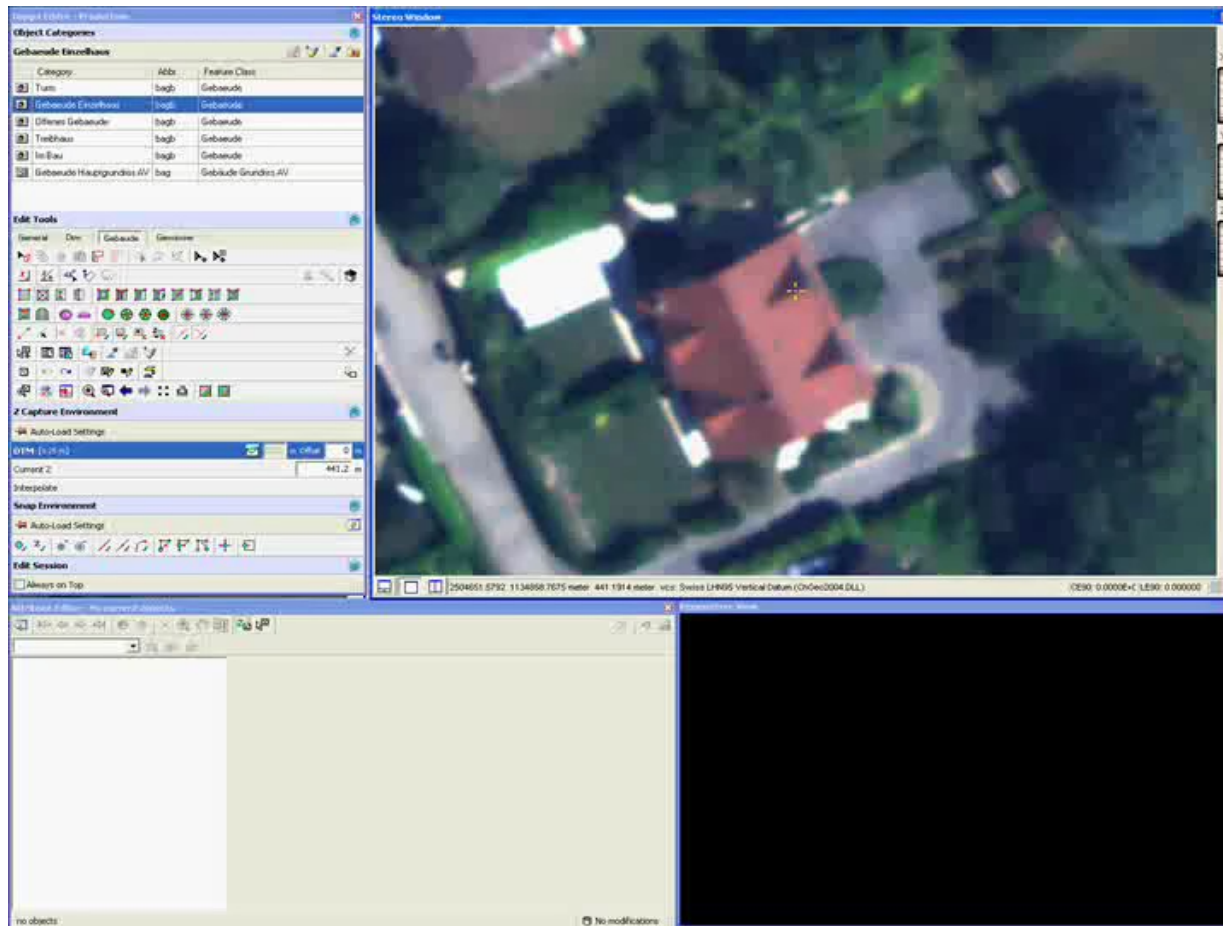


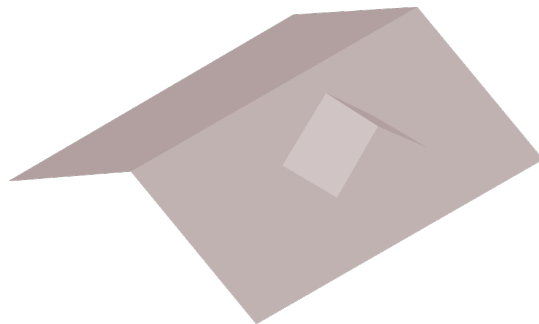
Data sources : Aerial Imagery

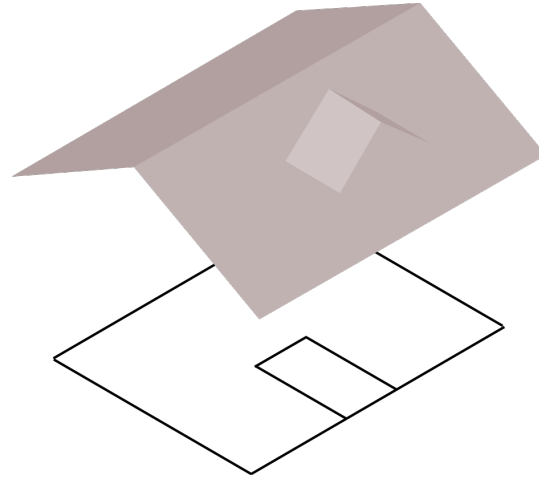


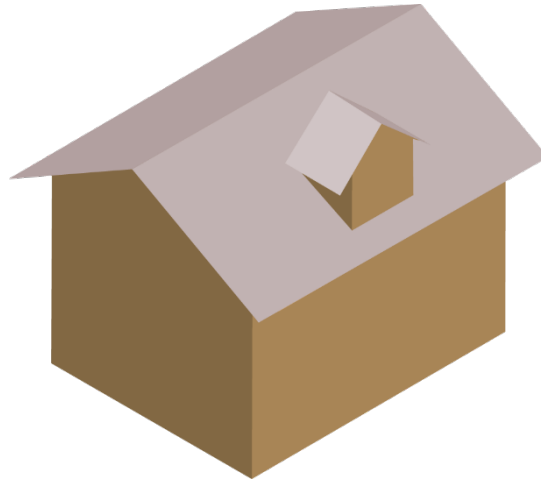
Leica Geosystems ADS100 camera
Based on the push-broom method
+
3D Stereo Client

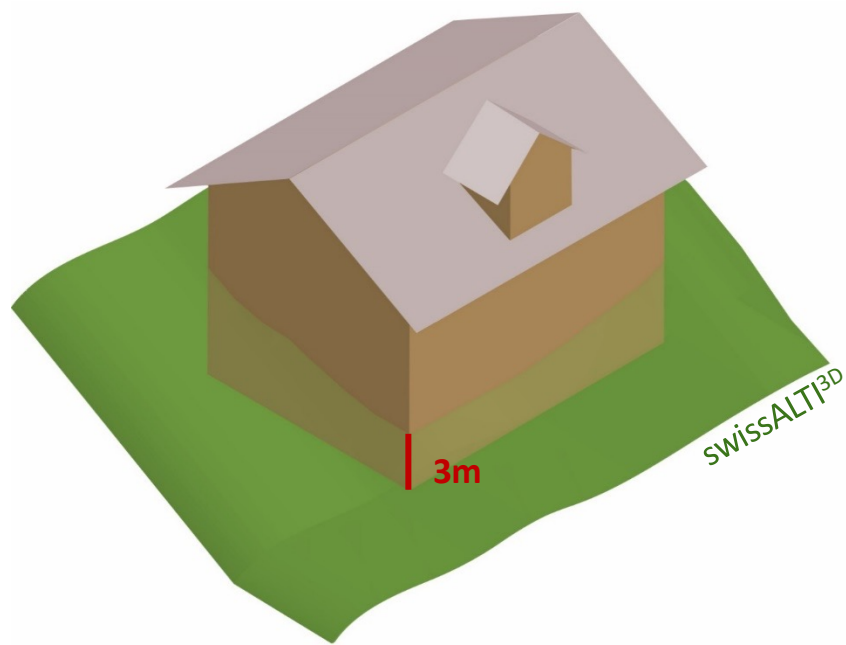


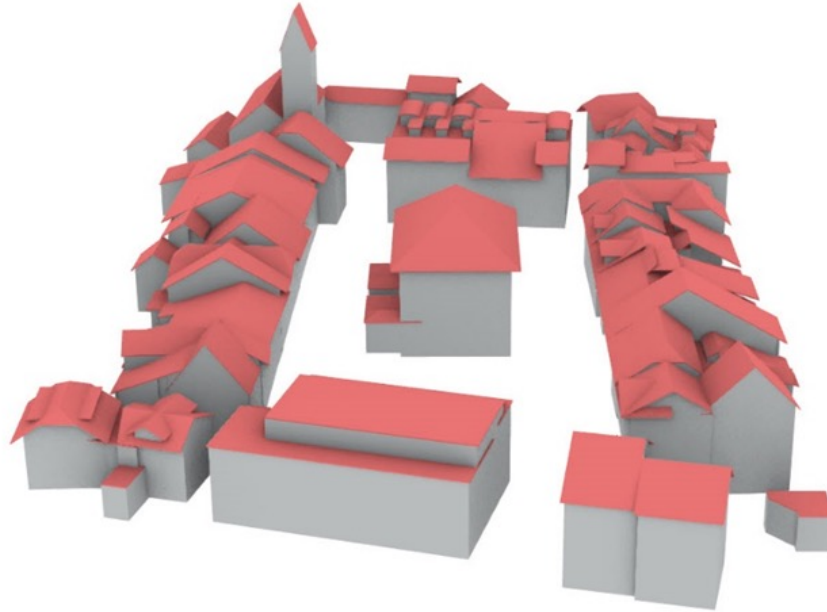














Challenges : what is a building ?

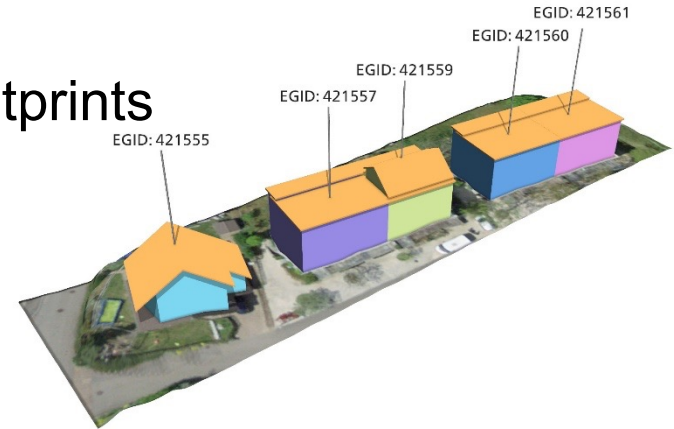
- Different definition between different administration :
 - Land Survey = roof
 - Cadastral Survey = footprint / property
 - Statistical Office = Building ID for some types of buildings
 - Post office = delivery place
 -





Short term solution (3.0)

- Building ID from statistical office as key (extension)
- Correction to get 1-1 relationship between cadastral footprints and Building ID (Cantons do the job, 2-3 years)
- New swissBUILDINGS3D dataset
 - Cut of or dissolve the roofs
 - Integrate of a “cadastral-like” footprints
 - Add the building id
 - Generate new 3D-Buildings





Long term solution

- Define a multi-purpose Buildings model with the different stakeholders.
- Ideas
 - Official building CH
 - Produced at the local and/or country level
 - Take account of BIM and others “new” tool
 - ...
- A project as been started. Result in 2-3 years.



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Download for geodata

- Open access since 2021

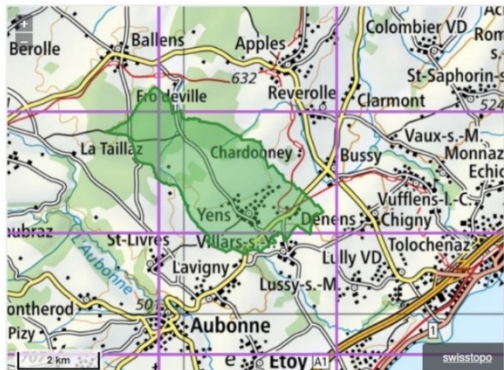
www.swisstopo.ch/geodata

- Free use and redistribution, including for commercial purposes
- The only constraint is that the source must be acknowledged at the time of publication.

Mode de sélection

Sélection par commune

Q Yens (VD)



Options

Format DWG

Système de coordonnées MN95

État temporel Actuel

Variante En tuiles

Publié depuis

Chercher

Data.geo.admin.ch

Spatial Temporal

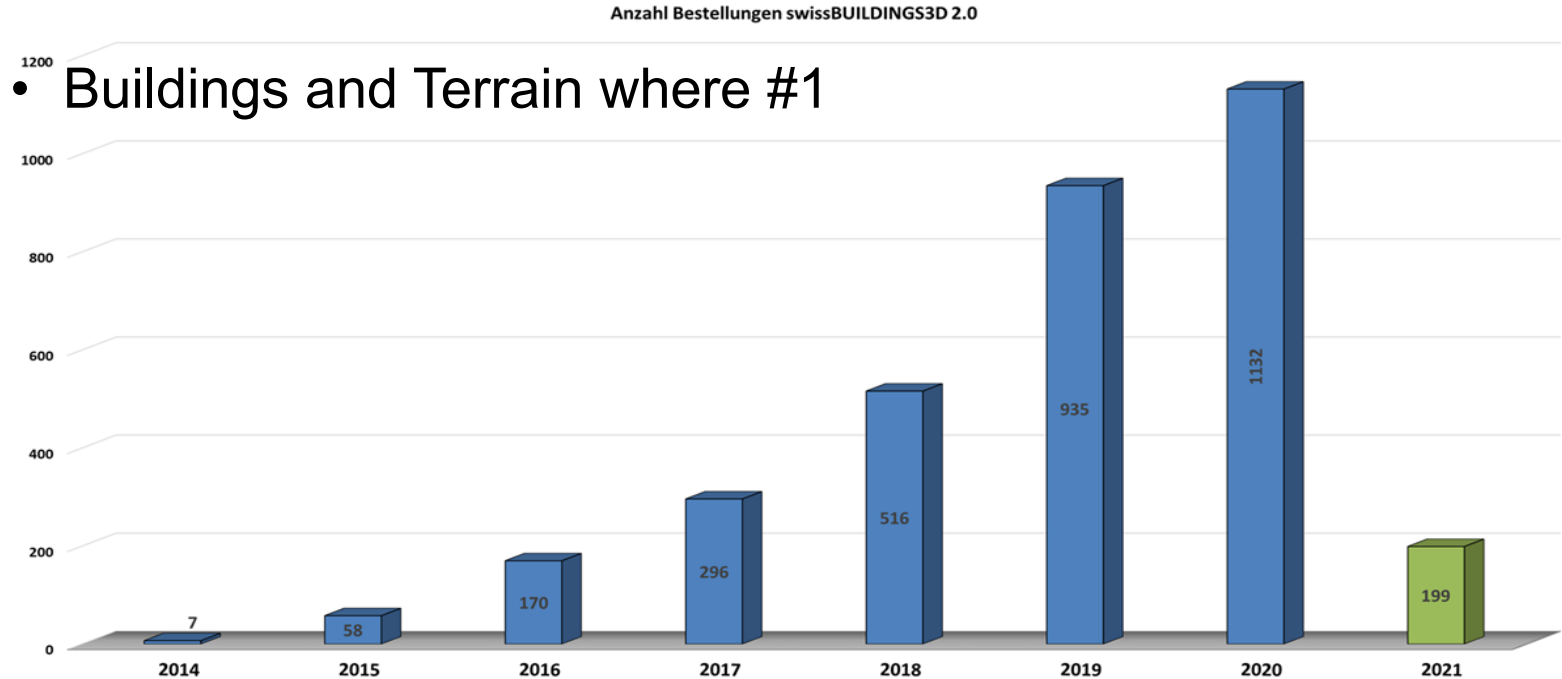
Asset Catalog – API

Résultats de recherche: [Exporter tous les liens](#)

Données	Actions
swissbuildings3d_3_0_2020_1242-11_2056_5728.dwg.zip	Télécharger 🗑️
swissbuildings3d_3_0_2020_1242-12_2056_5728.dwg.zip	Télécharger 🗑️
swissbuildings3d_3_0_2020_1242-13_2056_5728.dwg.zip	Télécharger 🗑️
swissbuildings3d_3_0_2020_1242-14_2056_5728.dwg.zip	Télécharger 🗑️
swissbuildings3d_3_0_2020_1242-32_2056_5728.dwg.zip	Télécharger 🗑️

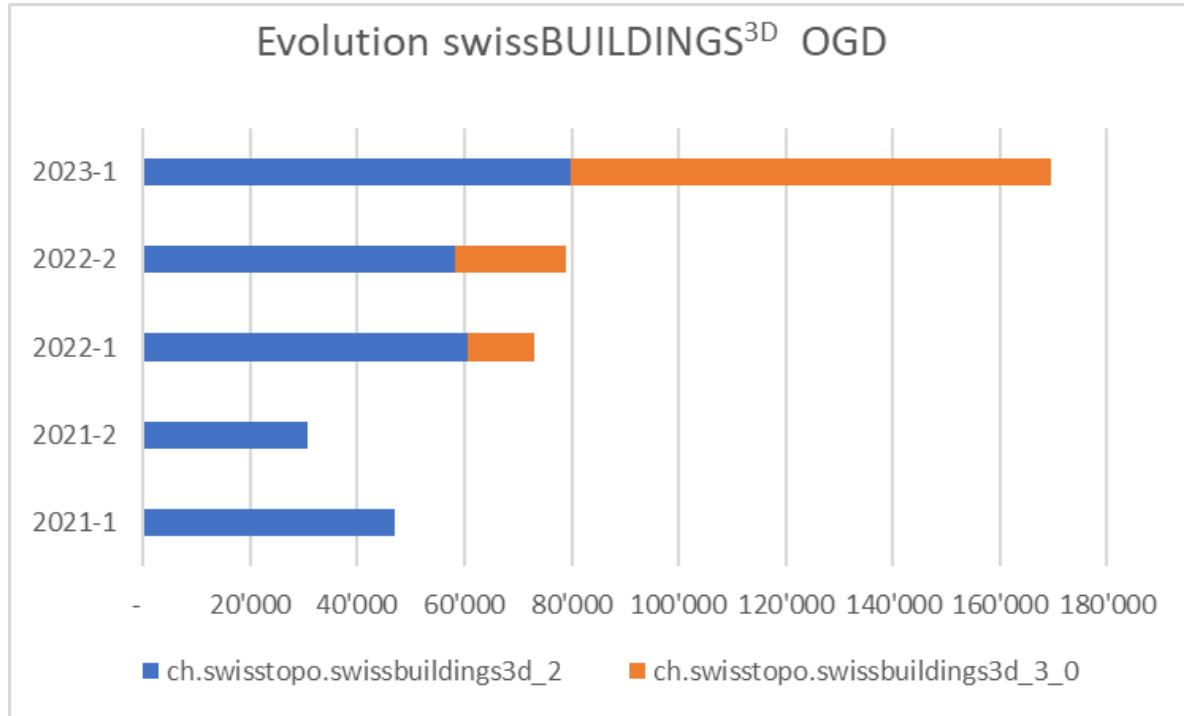


Past years statistics (before OGD)





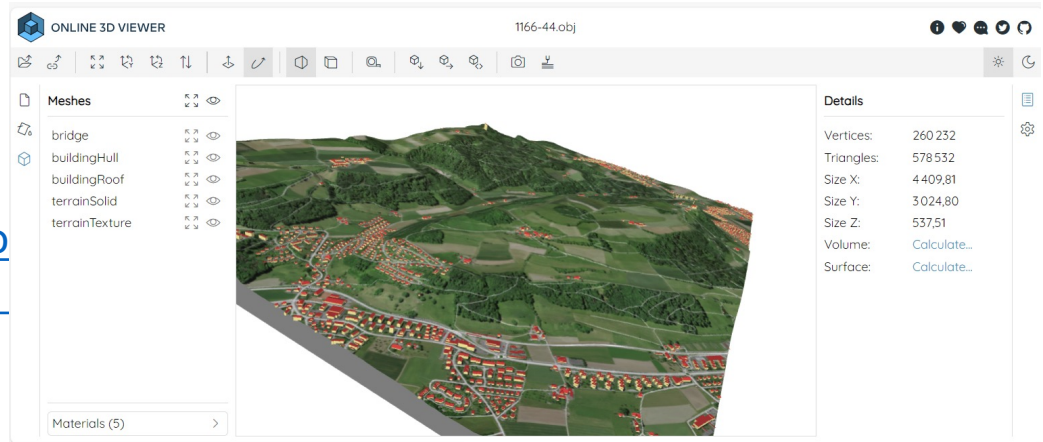
download since OGD





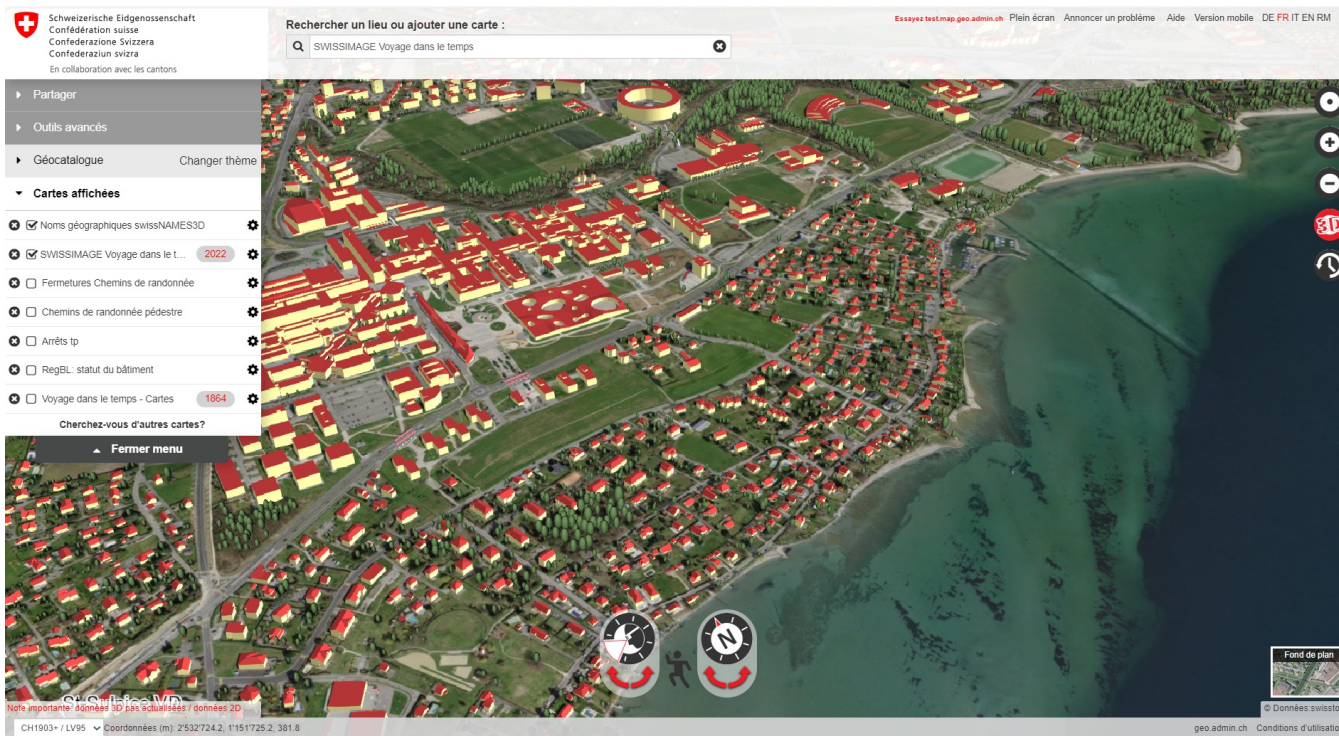
User Challenge : combining data

- Several geodata to download
 - Formats not necessarily compatible with the software used
 - Data to be modeled in 3D (e.g. trees as points with height)
-
- Offer for 3D packages
 - OBJ
 - IFC
 - [geoBIM Formats - swissto](#)
 - [Paquets de données 3D -](#)



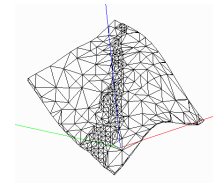


3D-Viewer (map.geo.admin.ch)

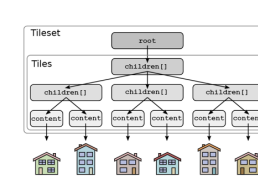


Webservices

- Terrain



- 3D Objects
(Buildings, Trees, Cable, Bridges)





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Architecture / Real Estate



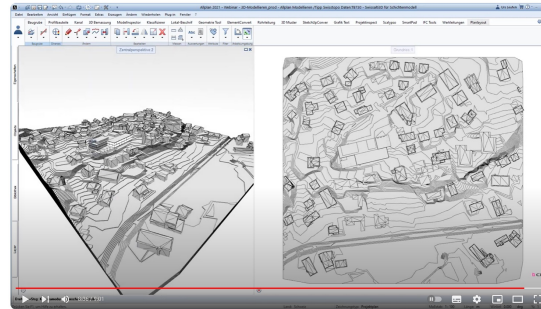


Integration in dedicated software

- Archicad, Vectoworks, Autocad, Revit, Allplan, Blender, etc.
- Not Straight forward
- Online tutorials from users



https://youtu.be/VnOKz_RsRDI?si=4R1d0InMeToVomDC



https://youtu.be/_avDNLLBlam?si=oMQX8i0F95DOoNWu



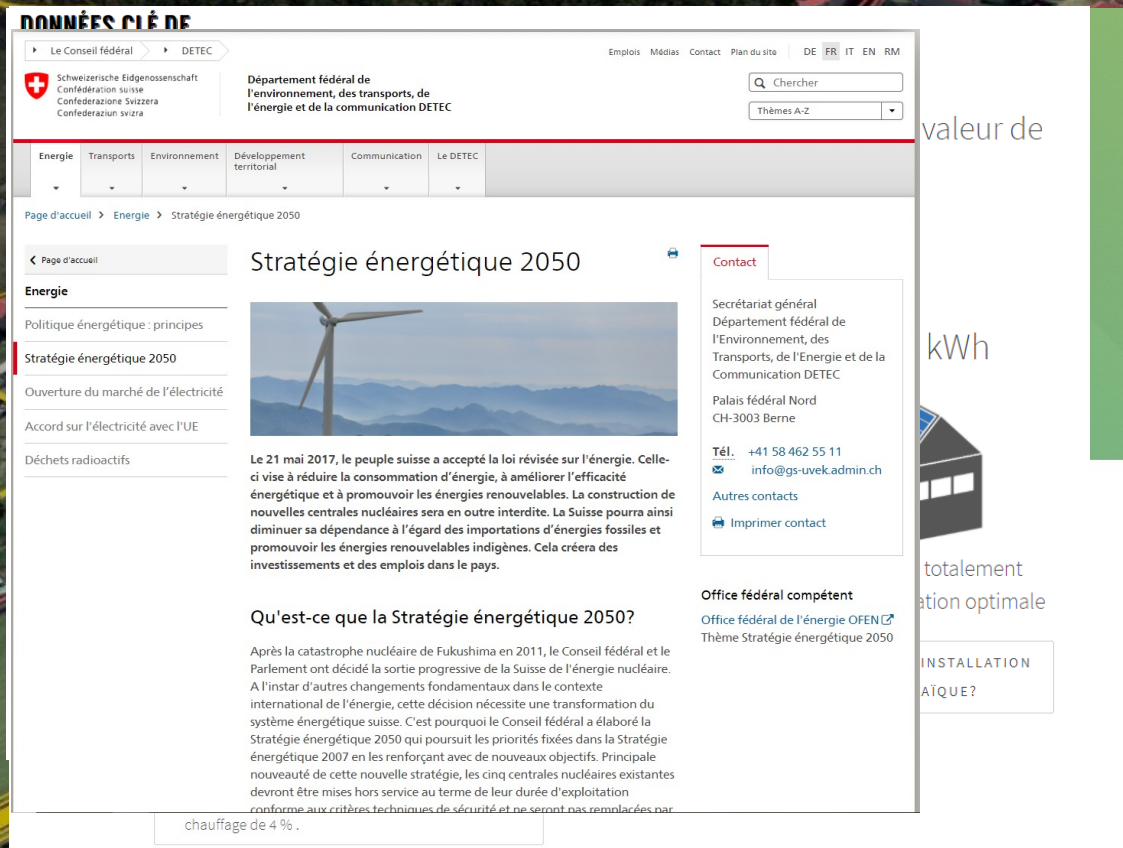
<https://youtu.be/XHBkeU4jQ98?si=VYZhe5kAc4CezHmX>



Online tools for urban planning



Energy Strategy 2050



Données Clé de

Le Conseil fédéral > DE TEC

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Département fédéral de l'environnement, des transports, de l'énergie et de la communication DE TEC

Emplois Médias Contact Plan du site DE FR IT EN RM

Chercher

Thèmes A-Z

Energie Transports Environnement Développement territorial Communication Le DE TEC

Page d'accueil > Energie > Stratégie énergétique 2050

Stratégie énergétique 2050

Energie

Politique énergétique : principes

Stratégie énergétique 2050

Ouverture du marché de l'électricité

Accord sur l'électricité avec l'UE

Déchets radioactifs

Contact

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Autres contacts

Imprimer contact

Office fédéral compétent

Office fédéral de l'énergie OFEN
Thème Stratégie énergétique 2050

Qu'est-ce que la Stratégie énergétique 2050?

Après la catastrophe nucléaire de Fukushima en 2011, le Conseil fédéral et le Parlement ont décidé la sortie progressive de la Suisse de l'énergie nucléaire. A l'instar d'autres changements fondamentaux dans le contexte international de l'énergie, cette décision nécessite une transformation du système énergétique suisse. C'est pourquoi le Conseil fédéral a élaboré la Stratégie énergétique 2050 qui poursuit les priorités fixées dans la Stratégie énergétique 2007 en les renforçant avec de nouveaux objectifs. Principale nouveauté de cette nouvelle stratégie, les cinq centrales nucléaires existantes devront être mises hors service au terme de leur durée d'exploitation conforme aux critères techniques de sécurité et ne seront pas remplacées par

chauffage de 4 %.

valeur de

kWh

totalement

ation optimale

INSTALLATION

À QUE?

sonnendach.ch
swissTLM^{3D}

Conclusion / Outlook

- There is a need for a country wide coverage of 3D Buildings.
- OGD increases the usage
- It's a challenge to find the right LOD, format, .. that fits a maximum of uses.
- Ideas for the future : integration of data from local authorities, standard for 3D-Services, ...

An aerial photograph of a Swiss town, likely Lucerne, showing a dense cluster of buildings with red-tiled roofs. The town is situated on a peninsula or near a large lake, with green hills and forests surrounding it. The sky is clear and blue.

Thanks for your attention

map.geo.admin.ch

swisstopo.ch

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