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TU Delft 3Dgeoinfo

Ministry of the Interior and Kingdom Relations

3D Basedata Service at Kadaster NL

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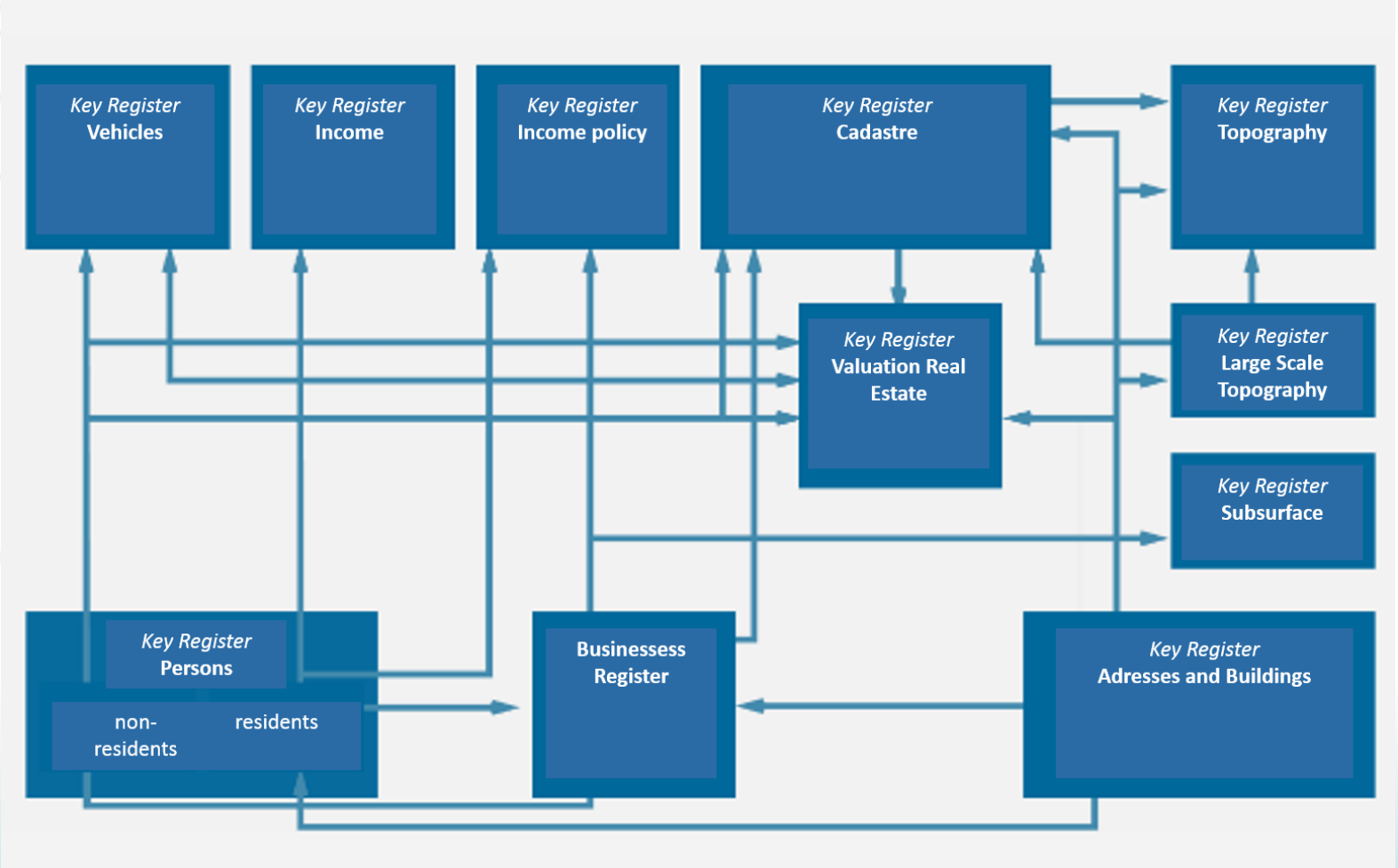
Dutch system of Key Registers (NSDI)



Dutch system of Key Registers (NSDI

Key register requirements:

- ✓ Obligatory use by the government
- ✓ Single data capture, multiple use
- ✓ Only asked once (relief of administrative burden)
- ✓ Is not fooled around with (fraud fighting)
- ✓ Is well informed about its targets (effective)
- ✓ Is properly organized and cost effective (efficient)
- ✓ Is demand driven and pro-active

Three key registers containing topography

- Key Register Topography (BRT) - scale 1:10.000 and smaller => our legal task to update
- Key Register Large-Scale Topography (BGT) - scale 1:1.000
- Key Register Addresses and Buildings (BAG) - scale 1:1.000

Although acquisition goals are different, geographical data is largely collected multiple times.

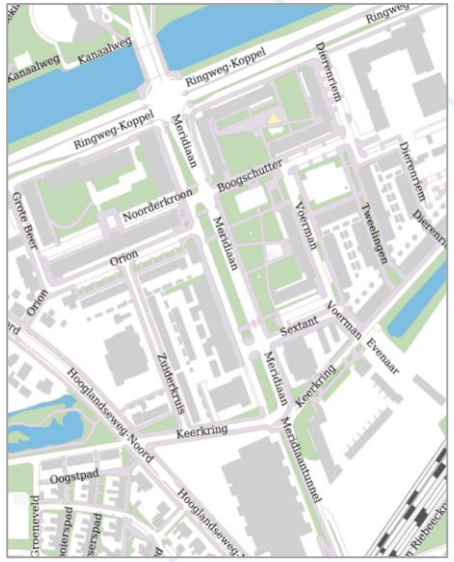
Aim of the framework of key registers: we want to collect data once.

We want to reuse already collected geographic data as much as possible!

3D data derived from 2D data and pointclouds

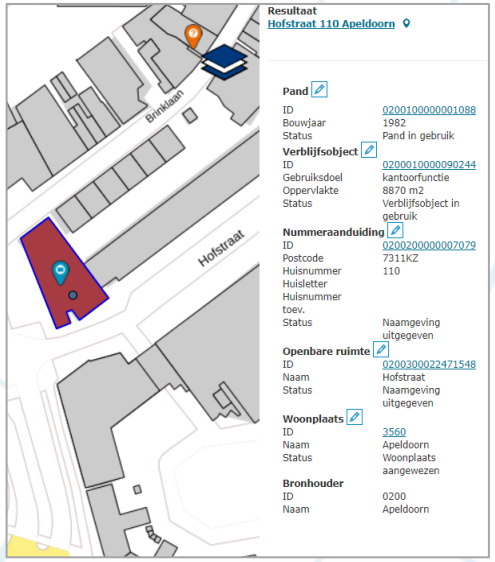
‘The 3D topographic objects are derived objects and coexist with the other Key Registers.’

Key Register Topography (BRT)



Key Register
Large ScaleTopography (BGT)

Key Register Adressess and Buildings (BAG)

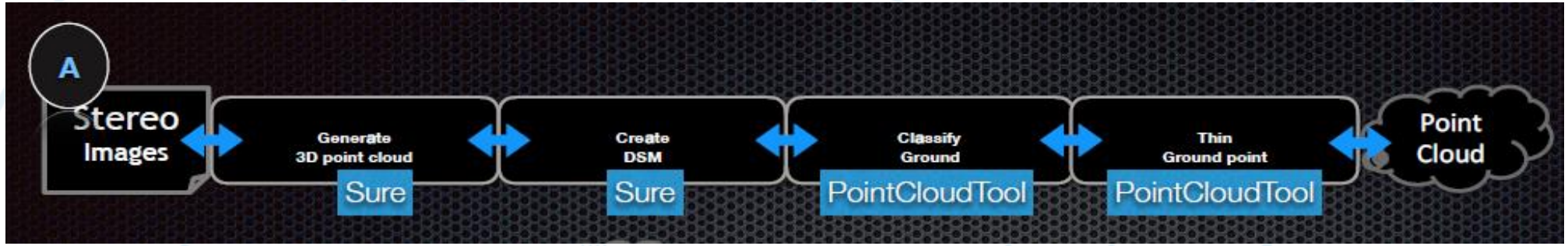


3D basedata

Characteristics of the 3D Basedata set

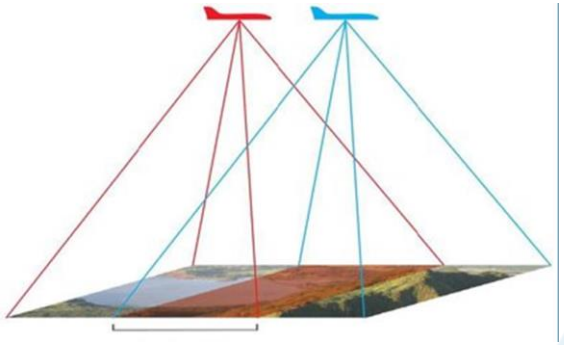
- Yearly updates, based on aerial images of year X and Lidar data (AHN)
- Topography from BGT (terrain, roads, water), BAG (buildings), BRT (forests), date 1 Jan year X+1
- Object oriented, links to the IDs and attributes of key registers BGT and BAG
- Nationwide, fully automatic production flow
- Open and free data
- Downloads in international 3D Standards (CityJSON / LAZ-files)

Production – From aerial imagery to point clouds

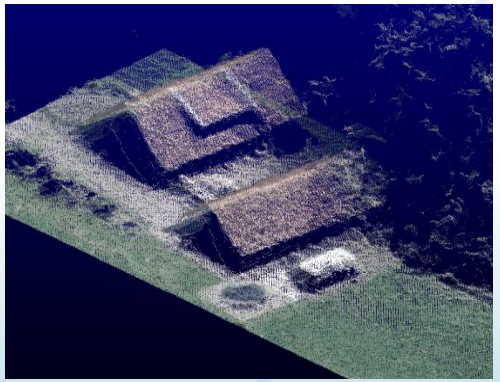


Dense matching

INPUT: *Yearly updated aerial imagery with 7.5 cm GSD and 60% or 80% overlap*



OUTPUT: *Classified 3D Point Cloud (ground, water, vegetation, building)*



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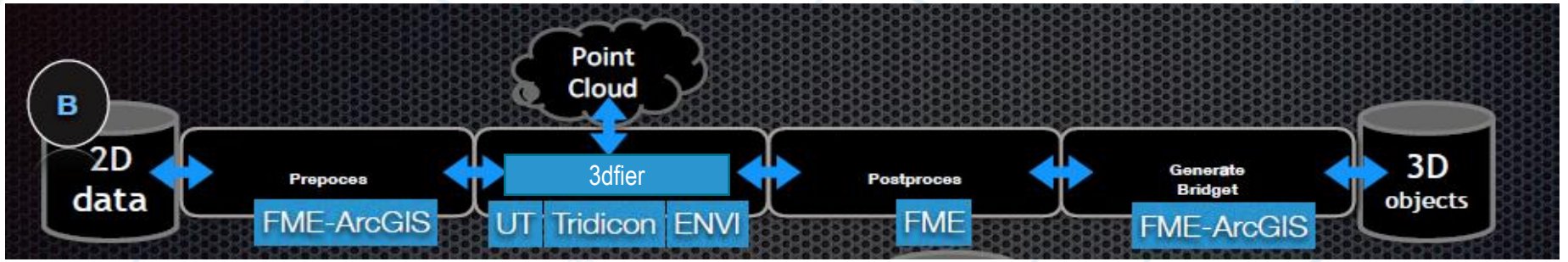
Production – From point clouds to 3D objects



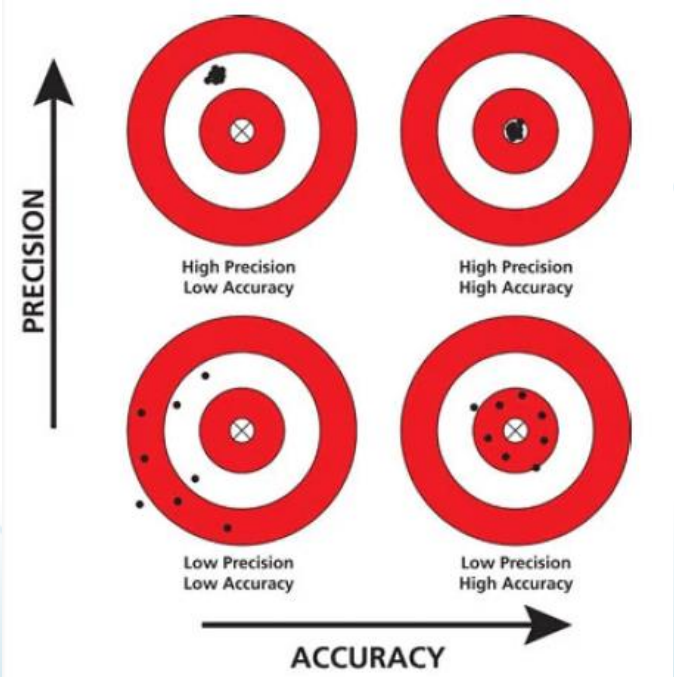
3D reconstruction

INPUT: *(2D) BAG and (2D) BGT*
3D point cloud from Lidar data (AHN)
and aerial imagery

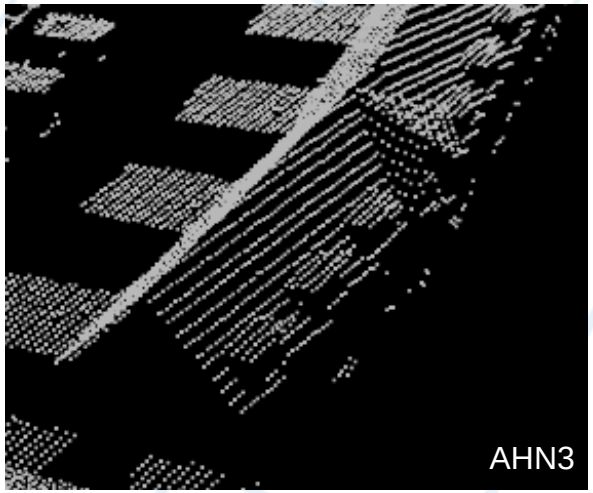
OUTPUT: *Nationwide 3D model with different levels of detail*

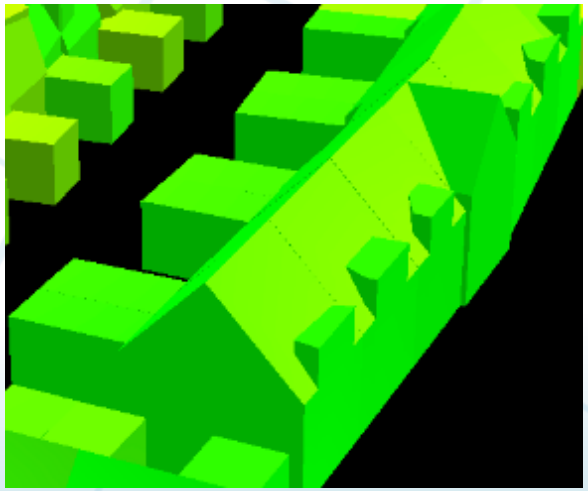
Lidar vs Dense Image Matching point clouds

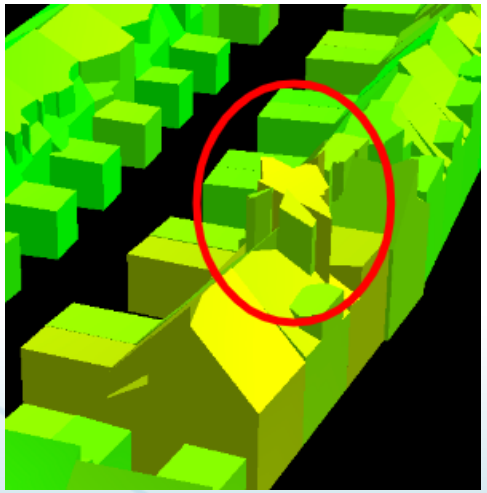
Different acquisition methodes require different post-processing techniques.



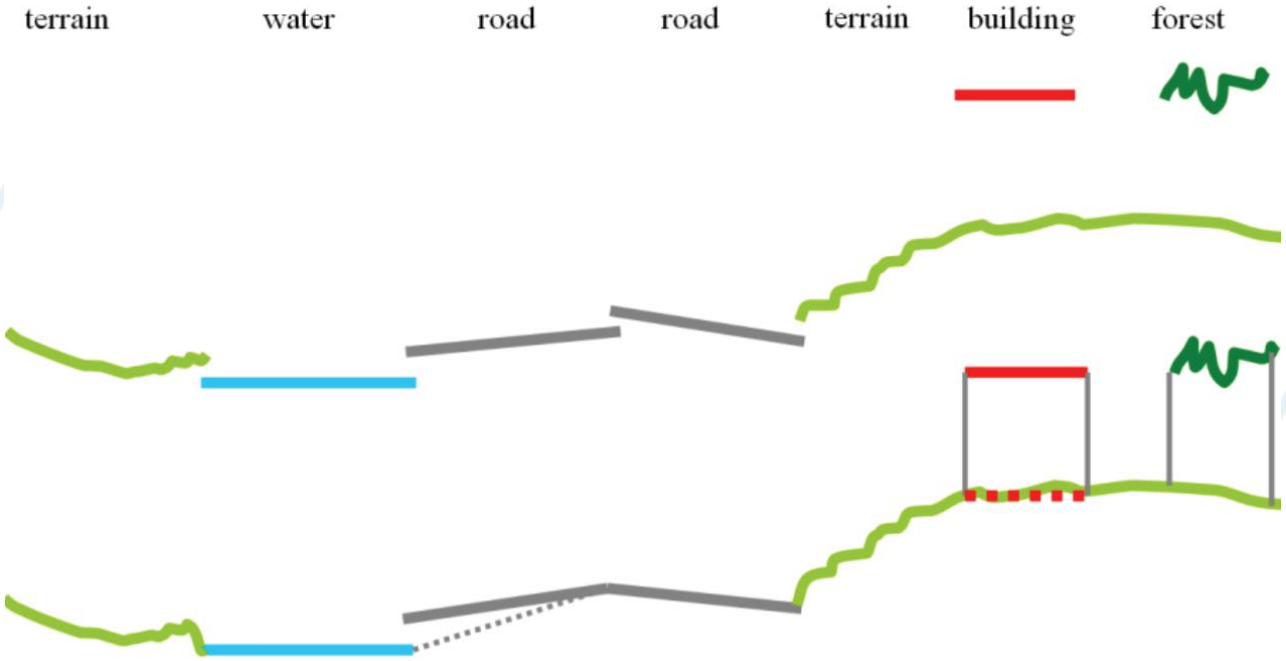
Source: Edvotek





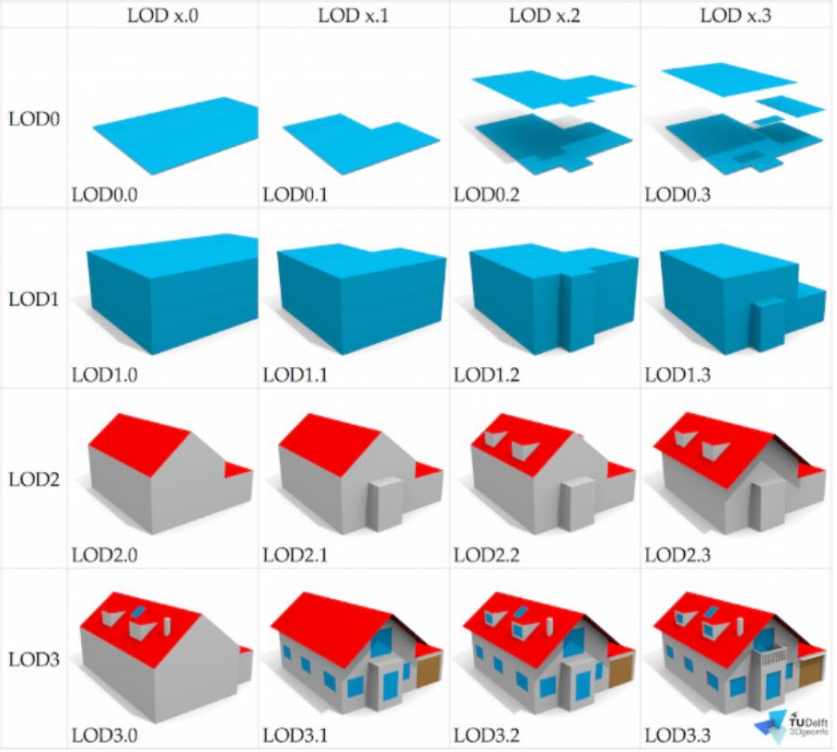


Semantic requirements for calculating 3D for a “water tight” dataset



Three 3D Basedata Service products:

1. 3D Basedata Complete (Buildings LOD 1.2)
2. 3D Basedata Buildings (Buildings LOD 1.3)
3. Building footprints with height statistics of buildings



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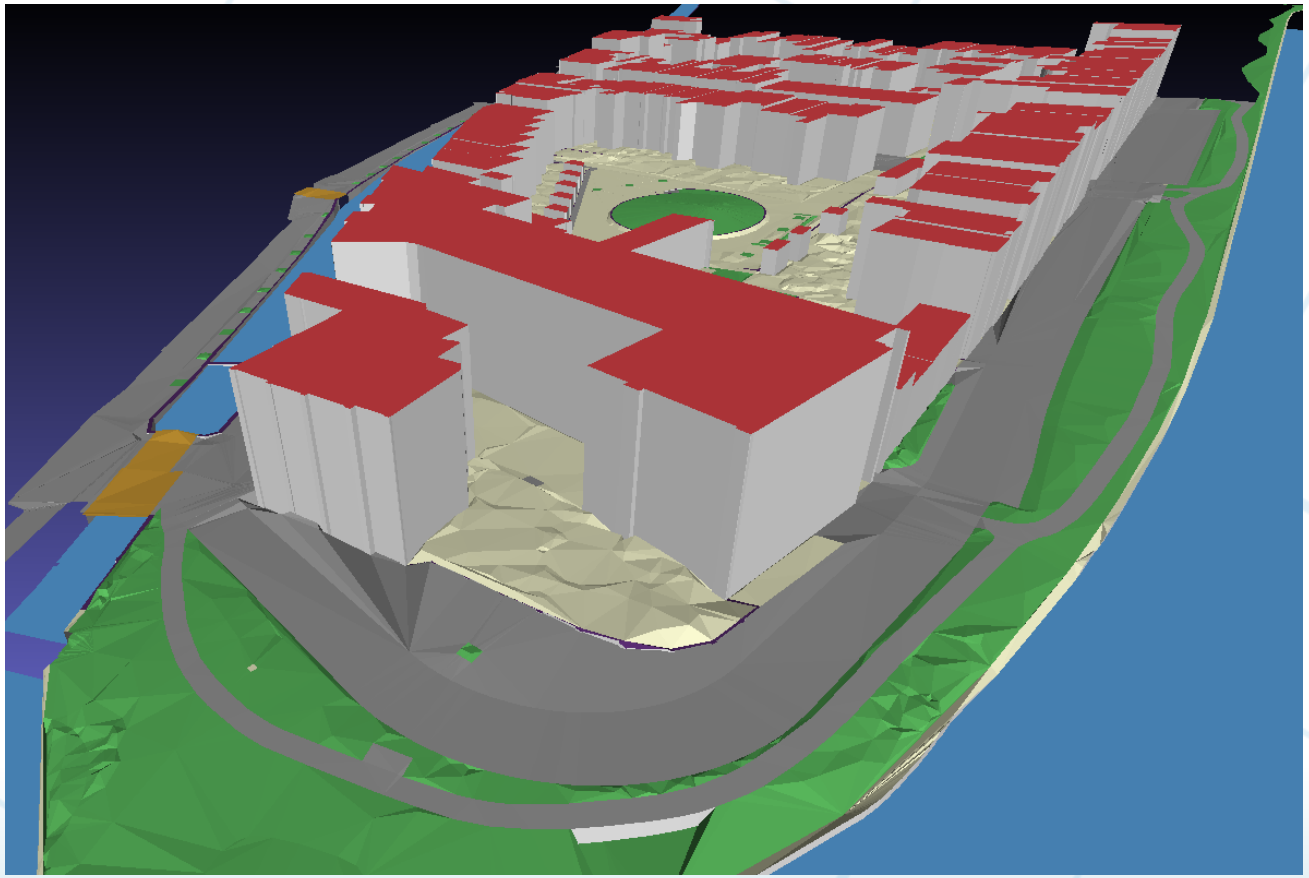
3D Basedata Complete

https://www.pdok.nl/introductie/-/article/3d-basisvoorziening-1



- LOD 1.2 buildings
- Terrain
- Bridges
- Roads
- Water
- Links to BAG and BGT

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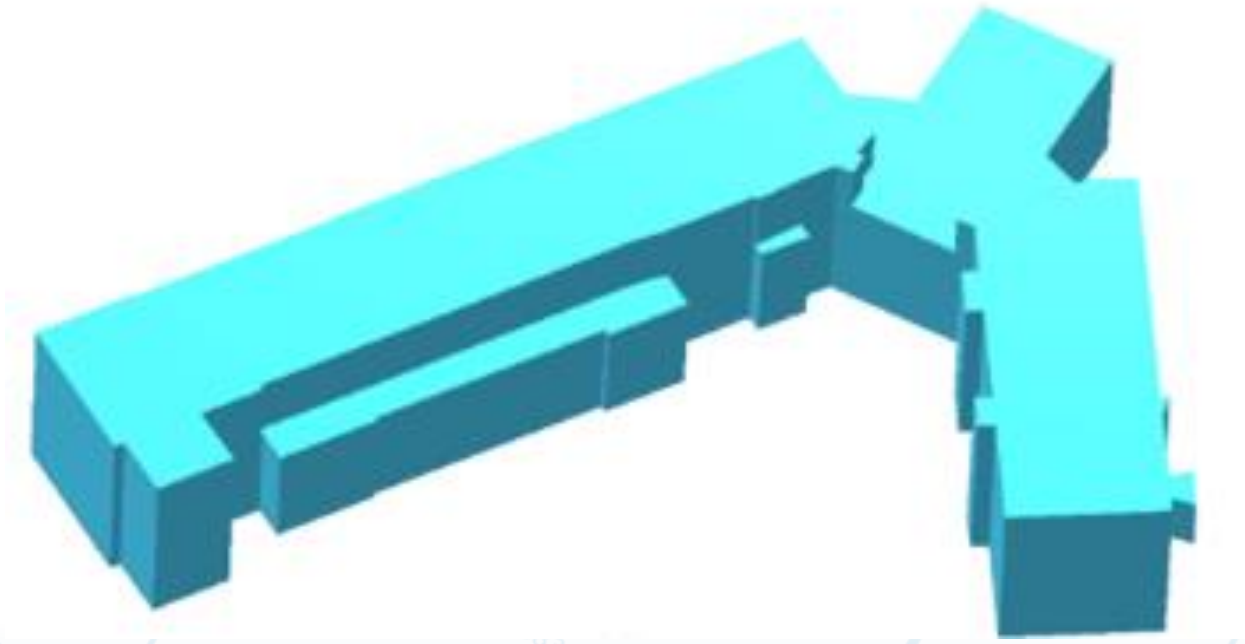
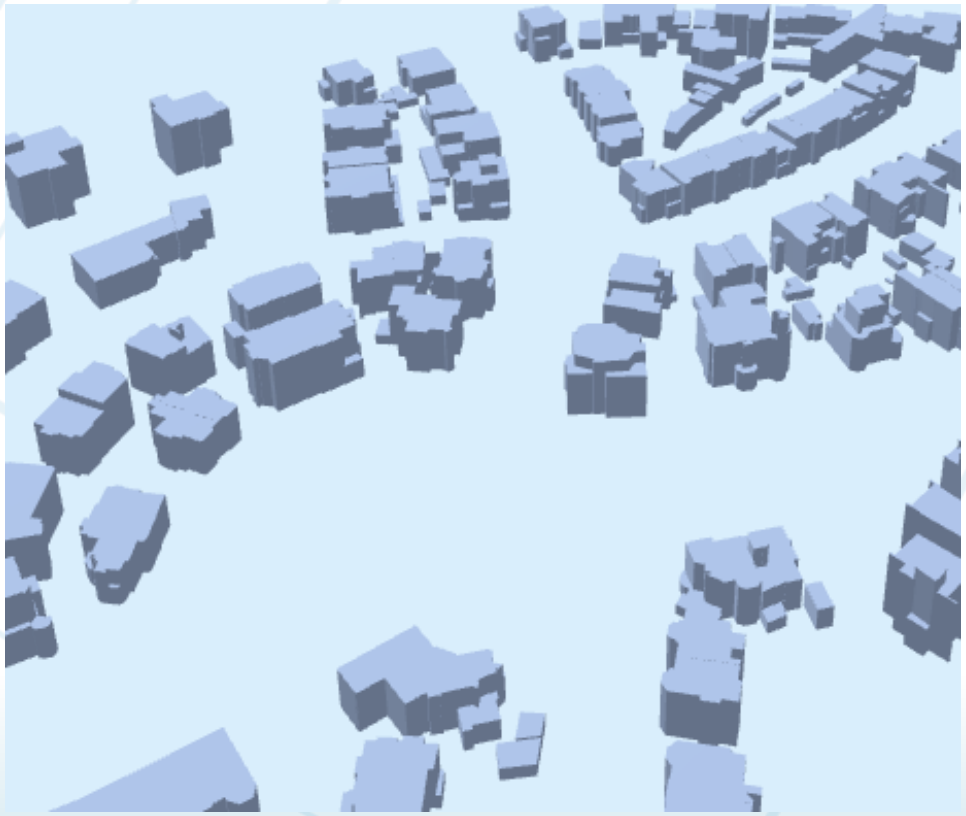
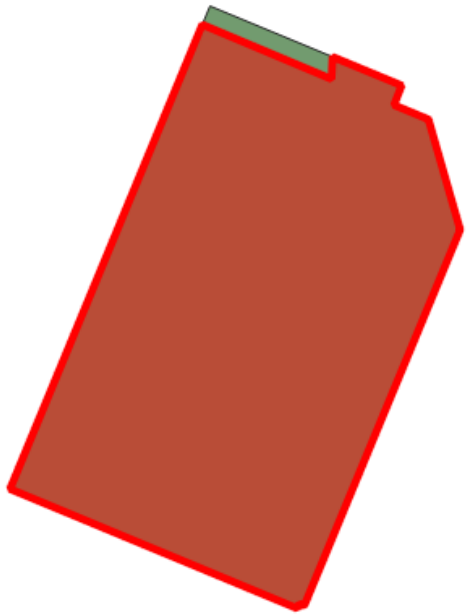
3DBasedata Buildings
LOD 1.3 buildings with height level > 3m





Building footprints with heigth statistics

Ground level, maximum, average, median



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(Actions)	
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dd_id	1
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pw_bron	ahn3
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versie_methode	0ed1dc74b3146b10d4acb5196fde31348e...
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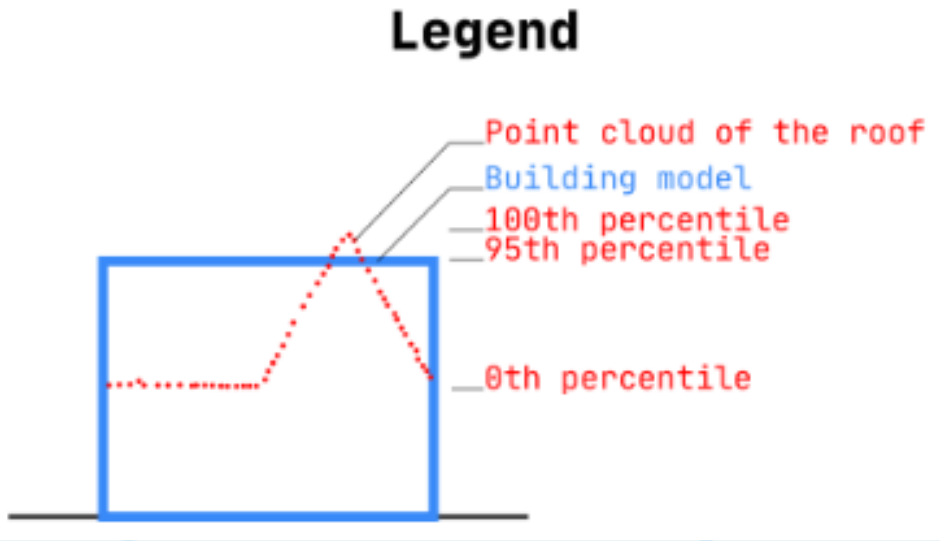

Research and development

Realised:

- Product information published
- 3D Viewer, DTM, OGC 3D Tiles, 3D GeoVolumes OGC API's
- CityJSON – IFC Converter
- True Orthophoto's for internal use
- Yearly updates
- 3D user group feedback loop

Future:

- Level of Detail 2.2 for buildings
- 3D Data from local/regional data providers (municipalities)
- Integration with AHN, Lidar point clouds
- Open Data Cloud for downloads

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All products accessible through National Geoportal (PDOK) and Github

https://3d.kadaster.nl/basisvoorziening-3d/

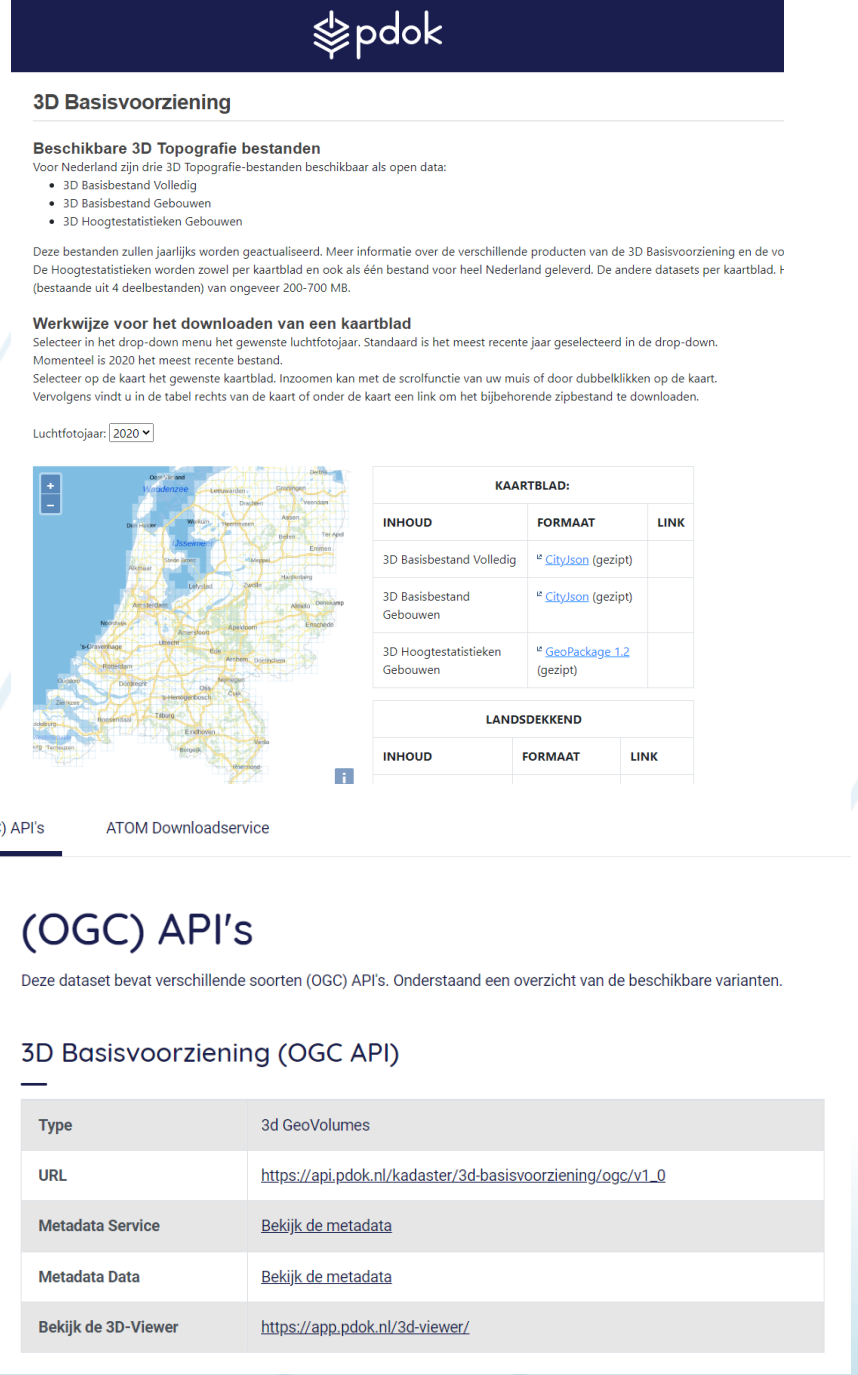
https://app.pdok.nl/3d-viewer/

CityJSON => IFC converter repository:
https://github.com/3DGI/cityjson2ifc

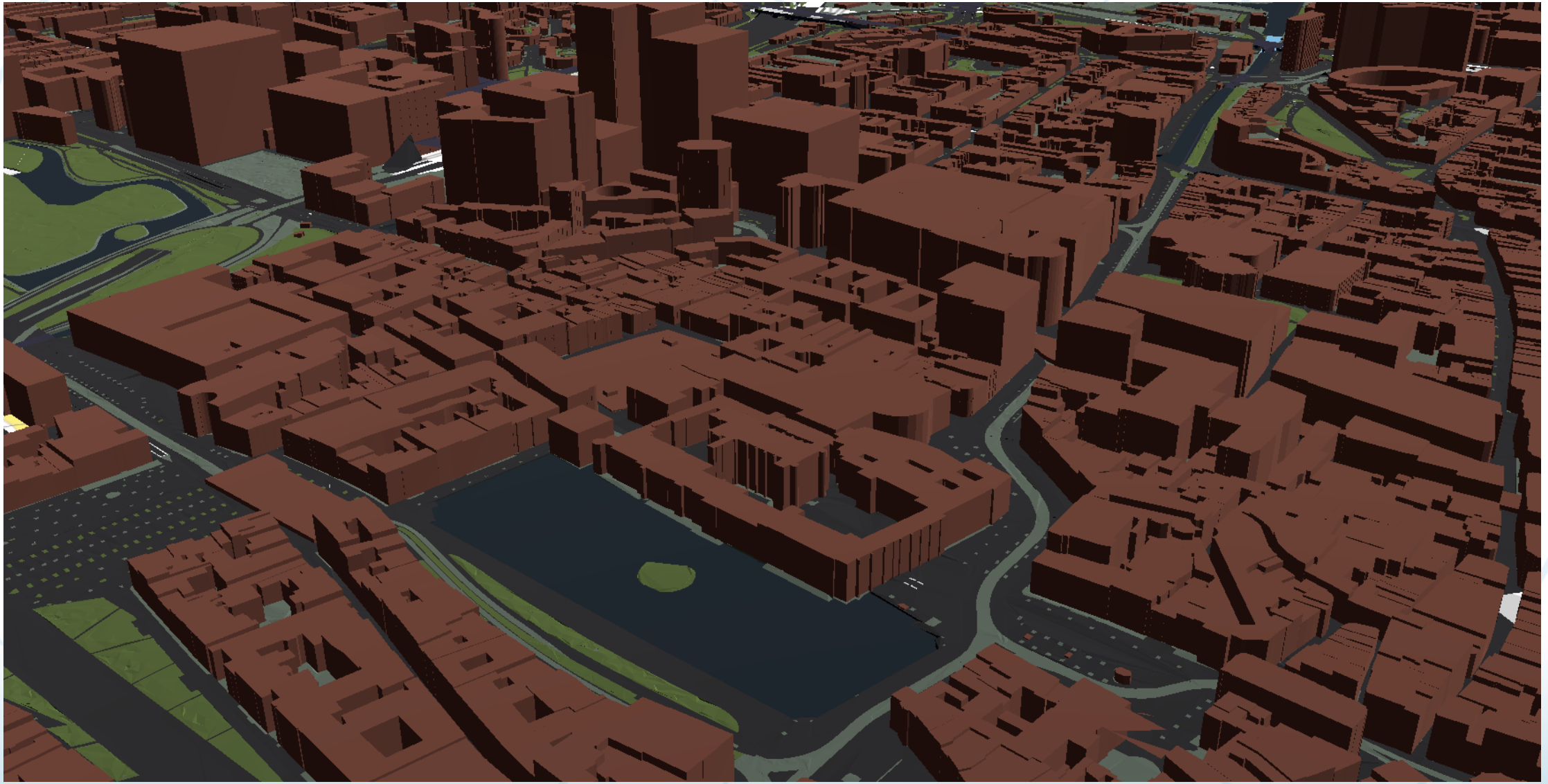
Alpha release with executables:
https://github.com/3DGI/cityjson2ifc/releases/tag/1.0-alpha

https://www.pdok.nl/ogc-apis/-/article/3d-basisvoorziening-1

https://api.pdok.nl/kadaster/3d-basisvoorziening/ogc/v1_0



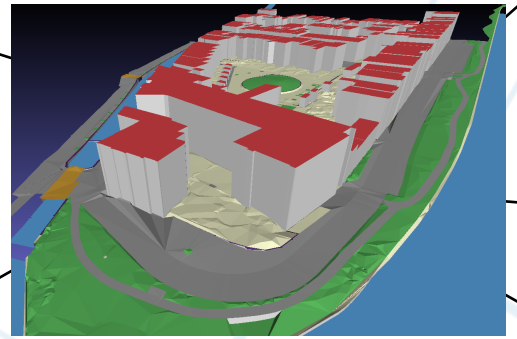
3D Viewer: https://app.pdok.nl/3d-viewer/



Application domains

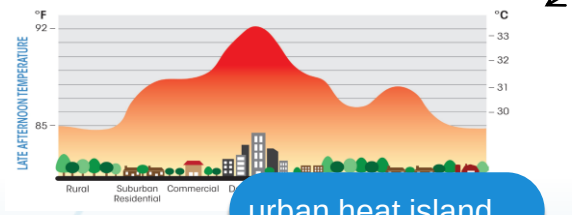
Energy

3D Basedata Service

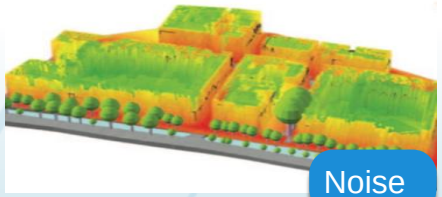


Flooding

Shadow



urban heat island



Noise

Solar potential

THANK YOU

Questions ?

Details

Gebouwen

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bouwjaar

1994

objectid

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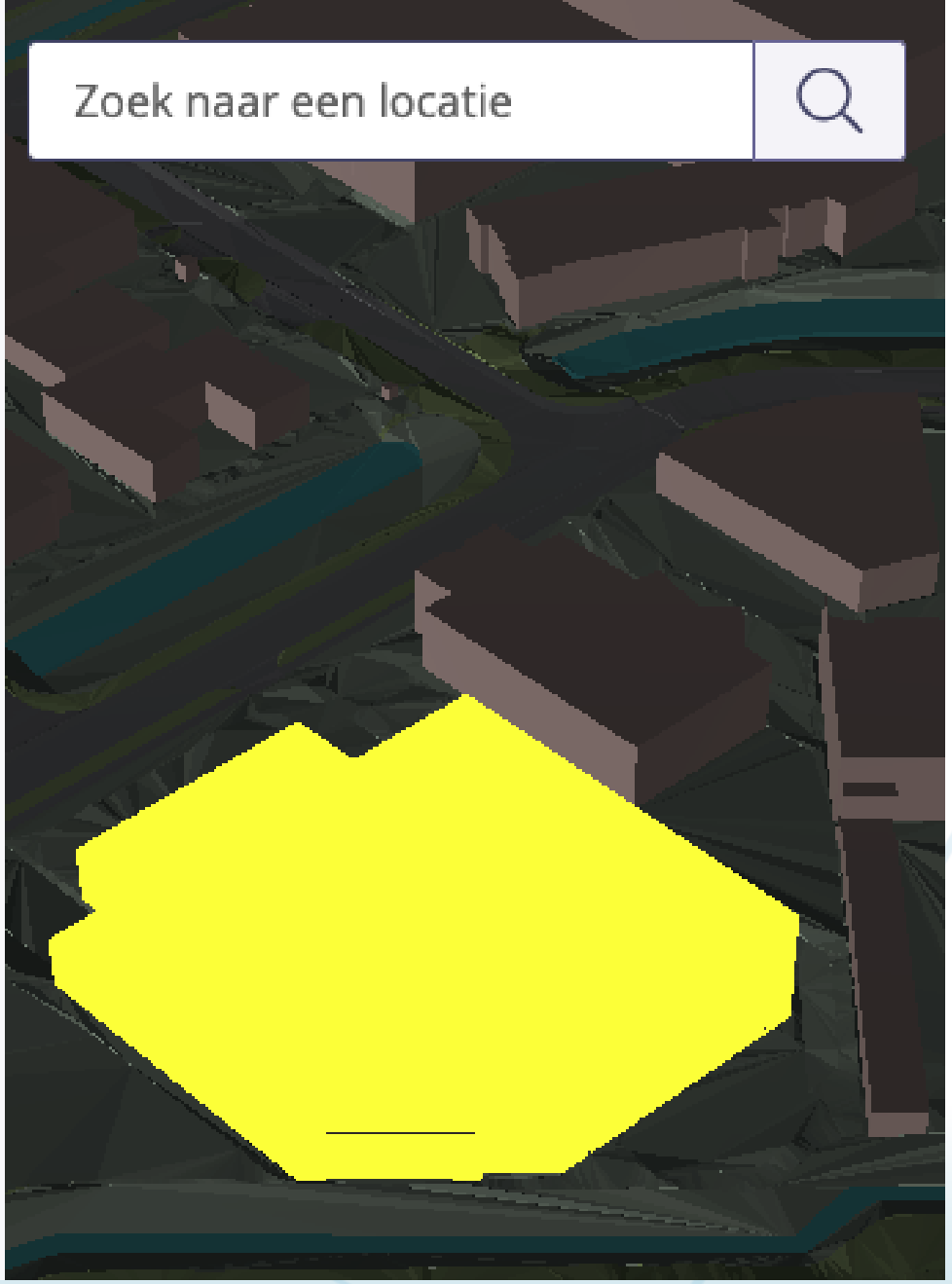

Details

Terrein

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gesloten verharding

bronhouder
G0307

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