SOLAR ENERGY POTENTIAL ASSESMENT

Efficient use of the sun's energy requires precise planning and implementation, and this process is greatly facilitated by 3D digital mapping technology

Here's why 3D digital maps are indispensable in the solar energy sector

VISICOM®

GERMANY, BERLIN

DIGITAL MAPS FOR SOLAR ENERGY

LOD 2 3D Buildings with sloping roof elements along with 3D vegetation are key initial sources for evaluating solar resource availability and running solar energy simulations

High-accuracy 3D datasets provide high solar project value and increase its performance.
Therefore, data details, accuracy, and relevance are critical parameters for solar resource assessment and modeling

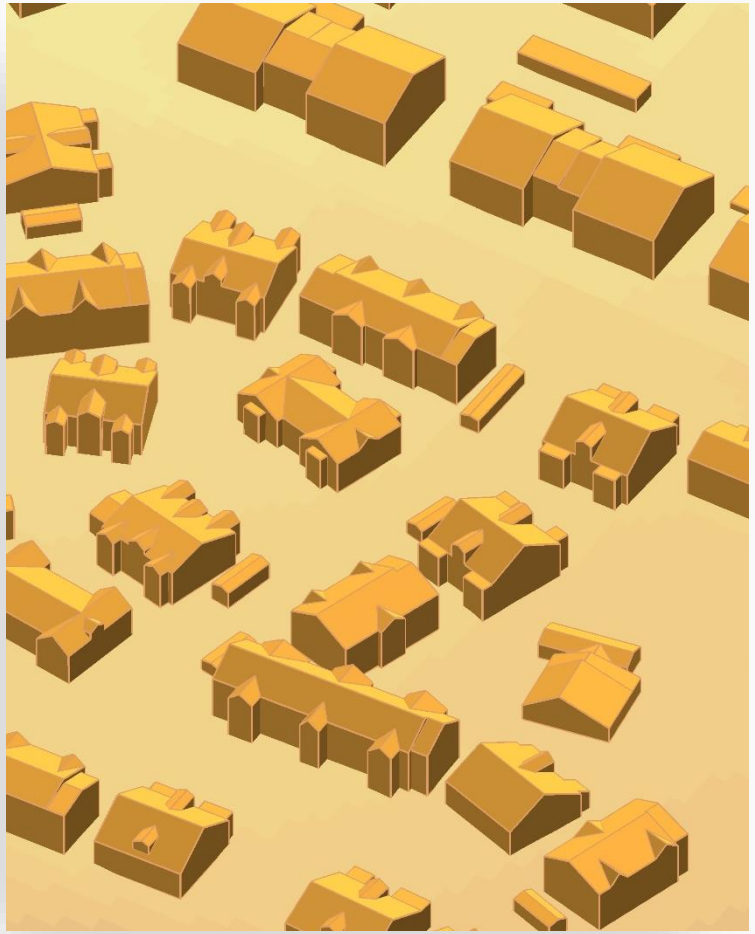
PRODUCTS OVERVIEW

DELIVERED DATA LAYERS

- Digital Terrain Model
- Digital Surface Model
- **3D Buildings LOD 2**
- 3D Vegetation crowns
- Orthorectified imagery

THE ASSIGNED ROOF PARAMETERS

- Azimuth
- Tilt angle
- Area of flat parts
- Roof height
- Roof ID
- AGL/AMSL



The roof parameters are calculated for each element separately, creating the background for producing solar rooftop maps (solar cadasters).

The high accuracy of the building elements' footprints is tailored explicitly to the estimation and calculation of the solar energy potential for each roof.

TYPES OF SATELLITE IMAGES

WorldView 1,2 - 0.5m resolution

WorldView 3 - 0.3m resolution

Pleiades - 0.5m resolution

PRODUCTION PROCESS

QUALITY CONTROL IS APPLIED AFTER EACH STAGE OF PRODUCTION

1
SATELLITE IMAGES PROCESSING

- Selection of appropriate images
- Radiometric and atmospheric correction
- Georeferencing and geometric correction
- Orthorectification
- Image fusion
- Mosaicking

2
DTM EXTRACTION

- Population Distribution Model
- Orthorectified imagery
- POIs

3
3D BUILDINGS MODELIING

- Stereo satellite images are used
- Extraction of buildings outlines and heights from stereo pairs of satellite images
- Roof parameters calculation

4
3D VEGETATION MODELIING

- Vegetation outlines recognition from satellite images
- Segmentation of vegetation polygons
- Vegetation heights defining by Convolutional Neural Network (CNN) model

5
DSM PRODUCTION

- Combining of DTM, 3D Buildings layer and 3D vegetation layer

6
CONVERTION DTM, DSM, ORTHOIMAGE IN GEOTIFF FORMAT

SOFTWARE

- Leica Photogrammetry Suite
- MicroStation
- ArcGIS
- FME Tool

ROOF PARAMETERS CALCULATION

INPUT:

The captured data
(3D buildings, SHP MultiPatch)
obtained after the plotting serve as initial data for the calculation

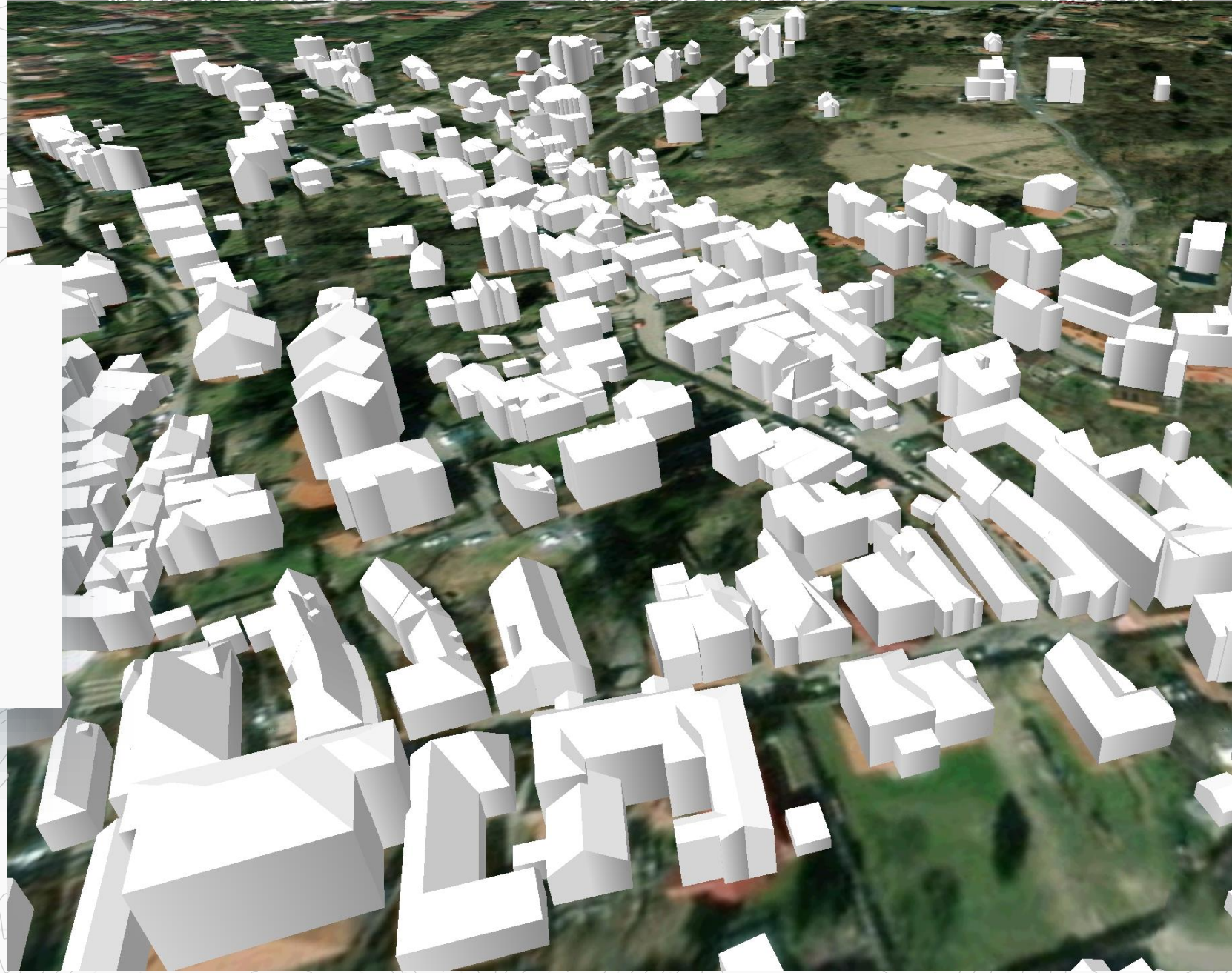
FME Tool

STAGES OF PROCESSING:

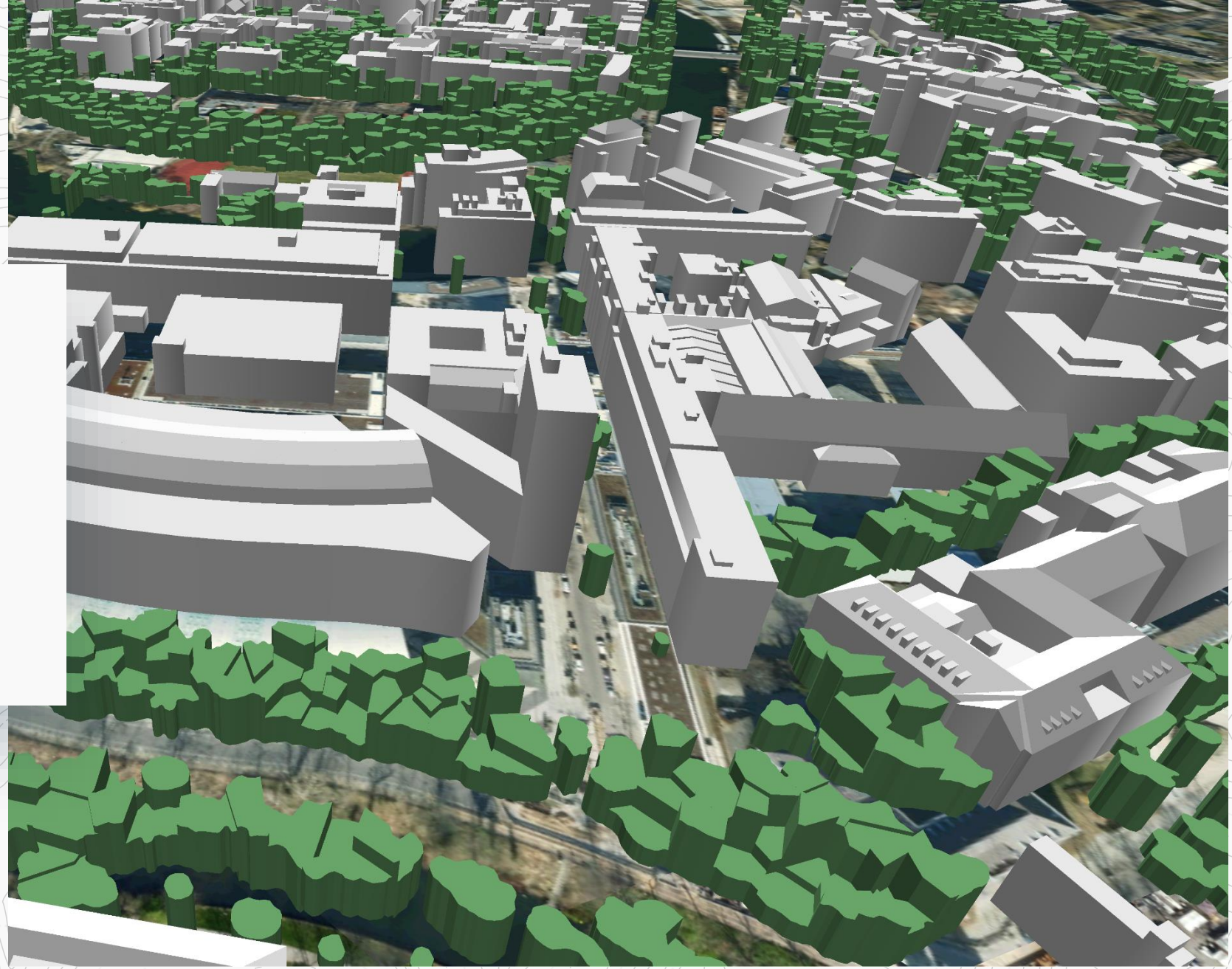
- The buildings are divided into the geometry components (roofs, walls, foundations)
- All the roofs are assigned with the attribute feature (ROOF=1)
- The following parameters are calculated:
- AMSL (Above Mean Sea Level)
- AGS (Above Ground Level)
- Area of a roof element
- Tilt/Elevation angle of a roof element relative to the ground
- Azimuth angle (horizontal angle between center line of a roof element and North)
- X,Y,Z coordinates of a central point of a roof element (centroid coordinates)

Output formats: 3D SHP / OGC GeoPackage

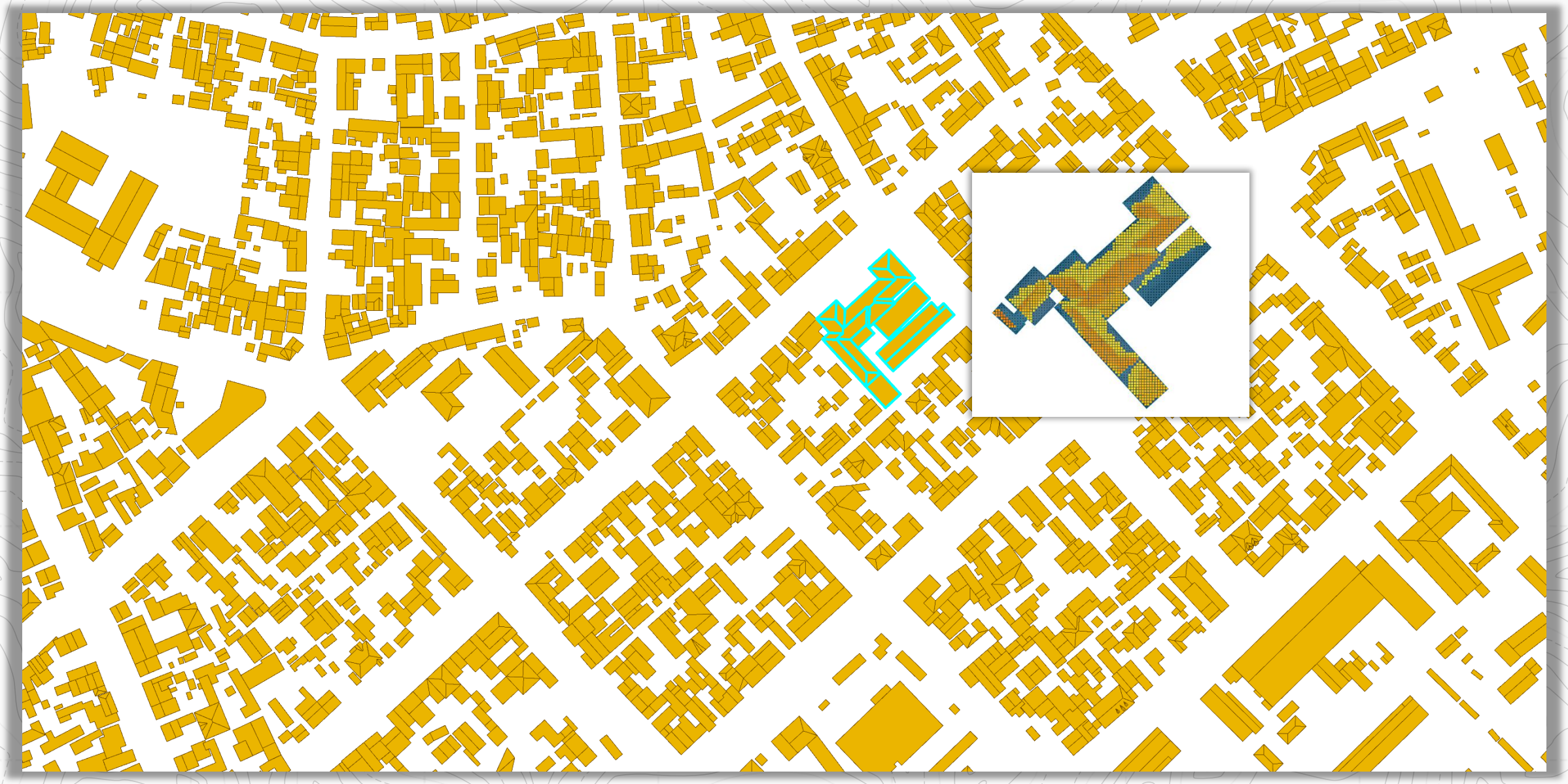
OUTPUT PREVIEW



OUTPUT PREVIEW



OUTPUT DATASET: 3D Buildings and 3D Trees



The solar cadaster created using 3D VISICOM data is an ideal solution for obtaining economic indicators for photovoltaic installation projects

VISICOM®

DIGITAL MAPPING PRODUCTS

MARKETS WE SUPPORT

- SMART CITIES AND IOT
- TRANSPORTATION
- ENVIRONMENTAL MANAGEMENT
- SOLAR ENERGY
- TELECOM
- ARCHITECTURE

DETAILED MAPS ARE AN ESSENTIAL AND MANDATORY BACKGROUND FOR SPATIAL ANALYSIS

PRECISE AND UP-TO-DATE GEODATA ENSURE THE RELEVANT INFORMATION TO ESTIMATE ALL THE POSSIBLE OUTCOMES AND MAKE A BETTER DECISION

OUR PROFESSIONAL AND CUSTOM-ORIENTED TEAM WORKS FOR YOU TO FIT YOUR PROJECT GOALS AND BUDGET

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