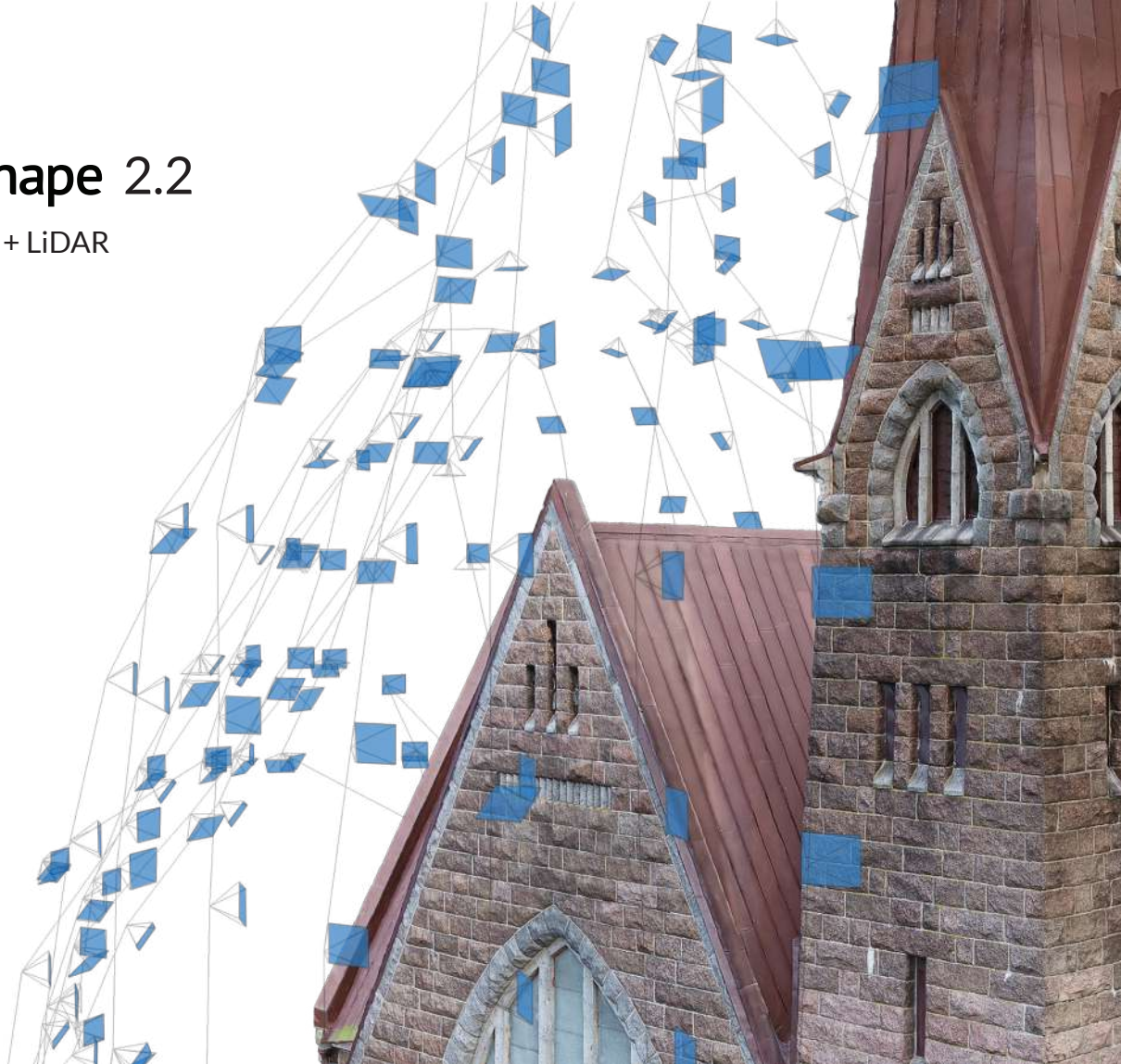


# Metashape 2.2

Photogrammetry + LiDAR

Agisoft



## Agisoft Metashape – Intelligent photogrammetry enhanced with LiDAR data processing

Agisoft Metashape is a cutting-edge software solution, with its engine being continuously developed to implement recent scientific advancements in the field of photogrammetry. The software allows to process images from RGB or multispectral cameras, including multi-camera systems, into the high-value spatial information in the form of photogrammetric point clouds, textured polygonal models, georeferenced true orthomosaics and DSMs/DTMs. Images can be co-processed with LiDAR points to exploit advantages of both data sources. Further post-processing enables to eliminate shadows and texture artifacts from the models, calculate vegetation indices and extract information for farming equipment action maps, automatically classify dense point clouds, etc.



Runs on Windows,  
macOS and Linux

- **Very fast & highly accurate**

Based on the state-of-the-art technology developed by Agisoft, Metashape allows for very fast processing, providing at the same time consistent and highly accurate results both for aerial and close-range photography (up to 3cm for aerial, and up to 1mm for close-range photography), as well as for LiDAR data based surface reconstruction.

- **Local or cloud processing**

Agisoft Metashape is capable of processing of 50 000+ photos across a local cluster, thanks to distributed processing functionality. Alternatively, the project can be easily sent to the cloud to minimize hardware investment, with all the processing options being still available.

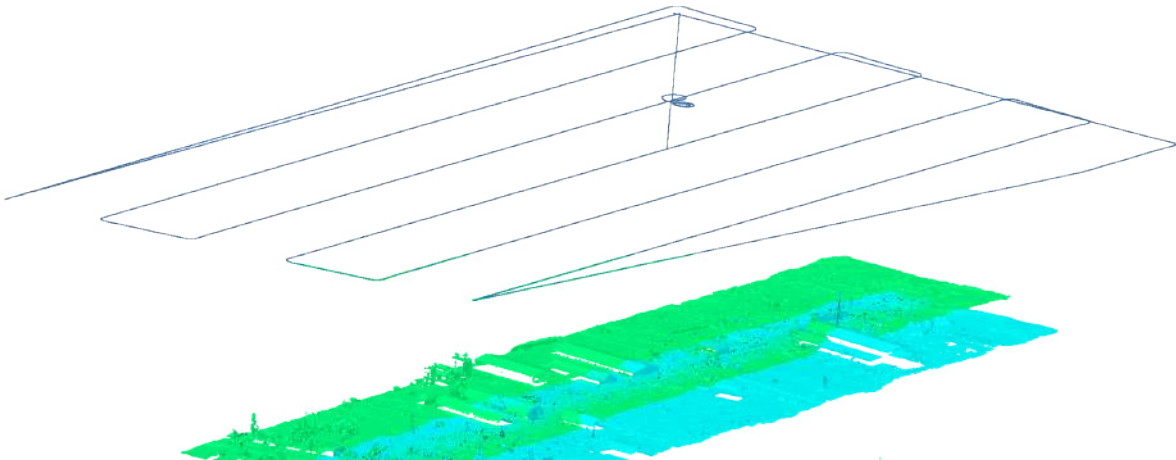
- **Intuitive UI & stereo mode**

The software package has a linear project-based workflow that is intuitive and can be easily mastered even by a non-specialist, while professional photogrammetrists can benefit from advanced features like stereo mode and have complete control over the results accuracy, with detailed report being generated at the end of processing.

## NEW FEATURES

# Aerial LiDAR boresight calibration support

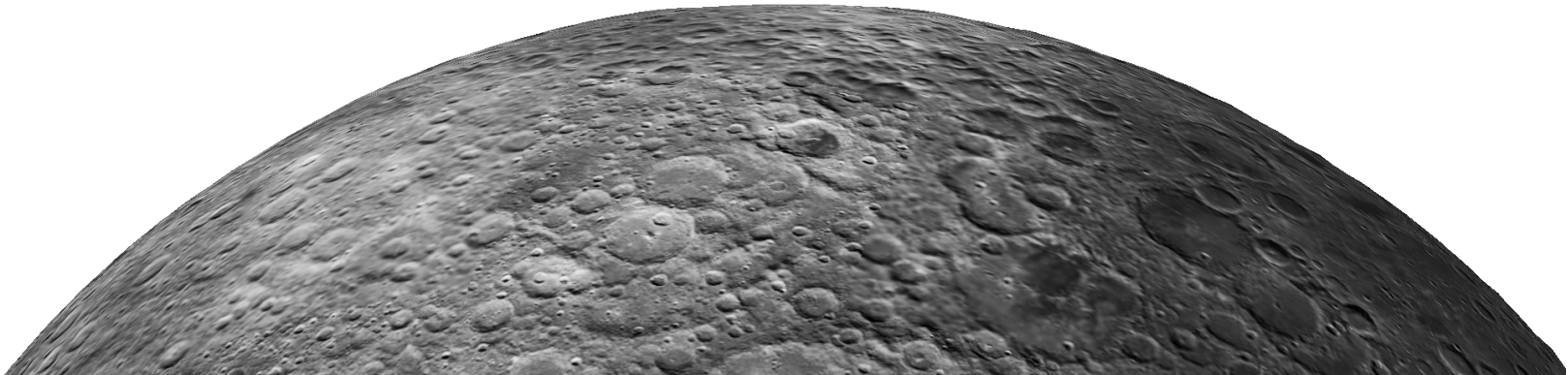
Improved alignment accuracy for aerial laser scans is now available through boresight calibration based on overlapping flight trajectories. Metashape analyzes common features between adjacent flight lines to refine the orientation of LiDAR data, reducing relative shifts and eliminating misalignments in overlapping point cloud areas. The **Difference View** tool allows for visual inspection of vertical inconsistencies between point clouds from different flight paths. To assess absolute elevation accuracy, users can employ the **Measure Elevation** tool with reference to ground control points (GCPs). Additionally, the **Classify Overlap Points** command helps optimize source data by identifying and removing redundant points in overlap zones, streamlining the surface reconstruction process.



NEW FEATURES

## Horizontal shift grid support for coordinate transformations

Metashape 2.2 supports more accurate coordinate transformations based on horizontal geodetic shift grids, which are necessary for working with coordinate systems such as Amersfoort / RD New + NAP height. In addition to standard EPSG-based systems, the software now supports planetary coordinate systems for Mars and the Moon. Integrated planetary basemaps allow for native visualization of extraterrestrial datasets, while export to Cesium 3D Tiles in non-Earth coordinate systems ensures seamless integration into planetary GIS workflows.



An aerial grayscale orthomosaic of a rural landscape. The image shows a dense grid of agricultural fields, some with distinct patterns of crops or irrigation. A network of roads and paths crisscrosses the area. The overall scene is a detailed, high-resolution view of a rural environment.

NEW FEATURES

## Orthomosaic pansharpener tool

Metashape 2.2 introduces a pansharpener tool to enhance orthomosaic quality using higher-resolution panchromatic data. By fusing the spatial detail of the panchromatic channel with the spectral information from multispectral or RGB imagery, the software produces sharper, more detailed orthomosaics – ideal for applications requiring both high resolution and accurate color representation.

NEW FEATURES

## AI-based background masking

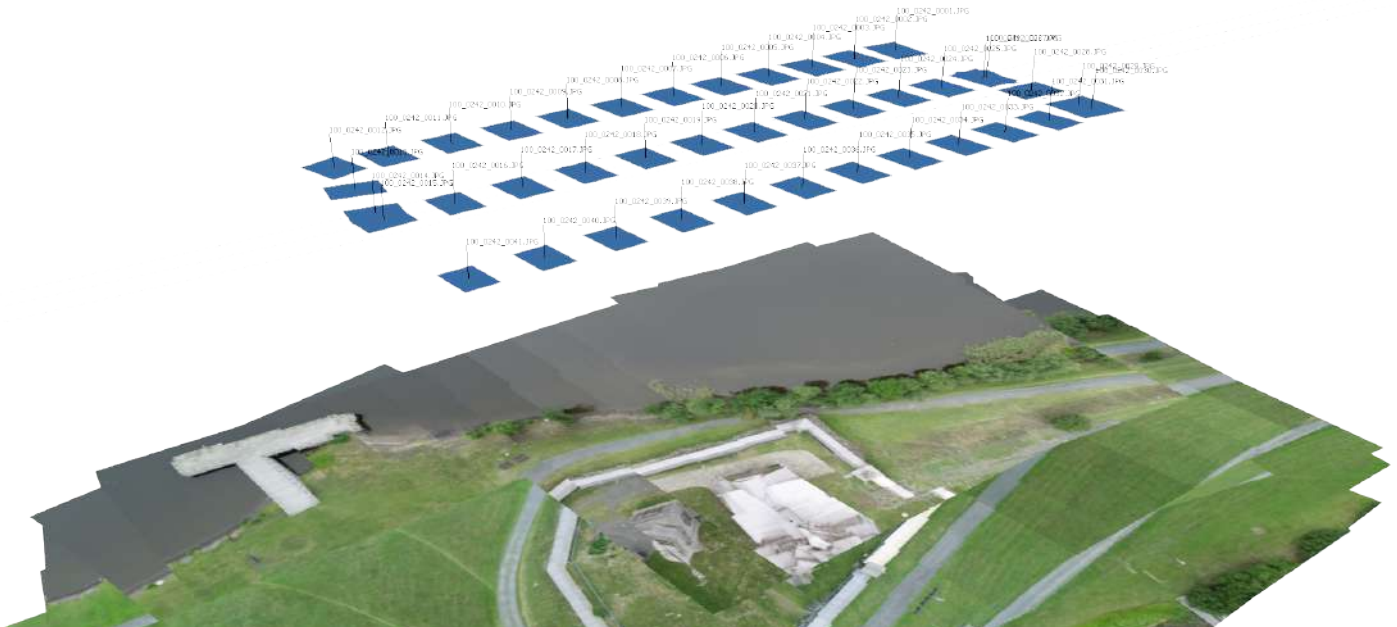
Metashape 2.2 introduces AI-powered background masking for close-range photogrammetry projects, enabling automatic removal of irrelevant background content without the need for reference models or background images. Unlike traditional masking approaches, this tool requires no manual setup, streamlining the preprocessing stage. Generated masks are organized into separate layers, allowing users to manage and toggle multiple mask instances directly from the Workspace pane with ease and flexibility.



NEW FEATURES

## Oblique imagery support in Agisoft Viewer

Agisoft Viewer now supports visualization of oblique imagery by projecting source photos onto the global basemap, enabling quick inspection using aerial data sets without requiring prior alignment. New snapping tools further improve the vectorization experience by allowing precise shape creation with vertex snapping, streamlining manual digitization tasks.




FIELDS OF APPLICATION

## Surveying

Metashape enables to create 3D models from aerial imagery. The functionality of the program is being constantly developed according to the tasks set by rapidly emerging UAS industry. Starting from version 2.0 Metashape works with aerial LiDAR data and allows to generate 3D surface model based both on images and LiDAR point clouds. Thanks to LiDAR trajectory and metadata support, combined data approach proves to add quality to the reconstruction results when the project works with narrow passages or forestry areas, for example. These functionality plus possibility to run distributed processing as well as support for tiled model generation and export makes Metashape a practical tool for city scale projects.

*Dortmund city, 3D model, 280.7 sq.km  
(ISPRS public dataset)*





FIELDS OF APPLICATION

## Mapping

Metashape is a perfect tool for maps creation workflows. It creates seamless orthomosaics both from images and from LiDAR points clouds meeting the resources of the project. Breaklines instrument helps to improve quality of true orthomosaics for urban areas. DEM editing with Fill tool allows to eliminate artifacts on the roads and close holes in water areas, for example, to result as well in more accurate orthomosaics. Point cloud classification instrument in Metashape provides for opportunity to generate digital terrain model based on ground point class data.

For projects relying on satellite data analysis Metashape offers functionality to reconstruct mesh, point cloud, DEM or orthomosaic from satellite imagery with RPC coefficients.

For advanced GIS workflows Metashape offers possibility to vectorize objects based on 3D model or orthomosaic data.

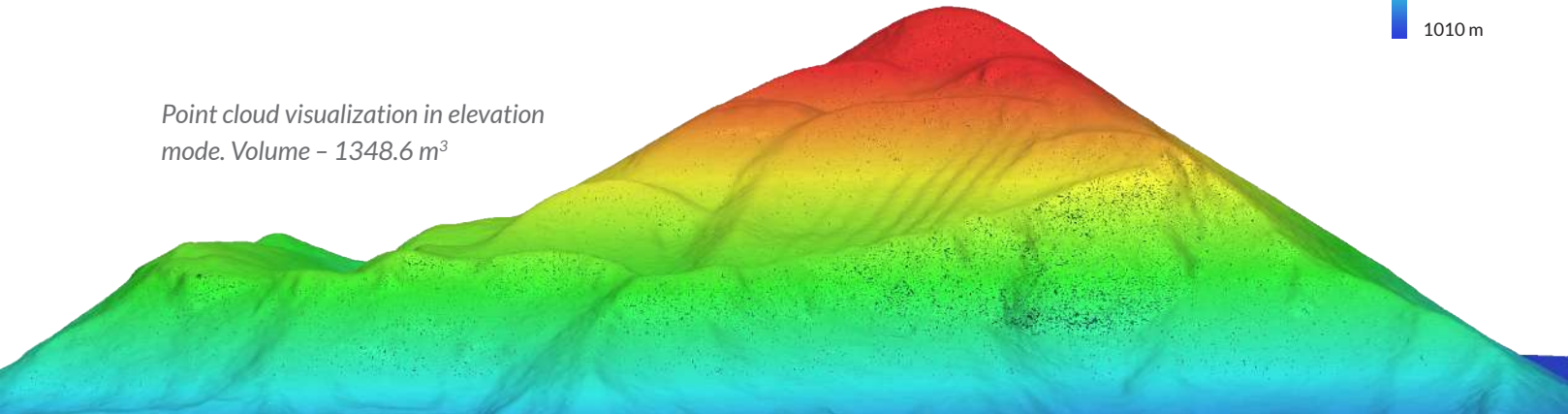
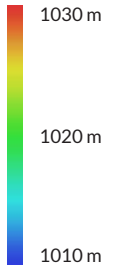
*Satellite images with RPC data  
from IKONOS*

## FIELDS OF APPLICATION

# Mining

Highly accurate DEMs produced by Metashape lay the grounds for precise area and volume measurements, both for natural hills and man-made piles. DEM editing tool, namely Fill tool, helps to perform measurements for DTM when some data about the terrain is missing due to forestry exclusion from the model, for example. Profiles – both for DEM, mesh, point cloud – and Contour lines generation are further instruments to employ Metashape in mining industry analysis workflows. Metashape pro-cessing statistics and measurements results can be exported as a PDF report.

*Point cloud visualization in elevation mode. Volume – 1348.6 m<sup>3</sup>*

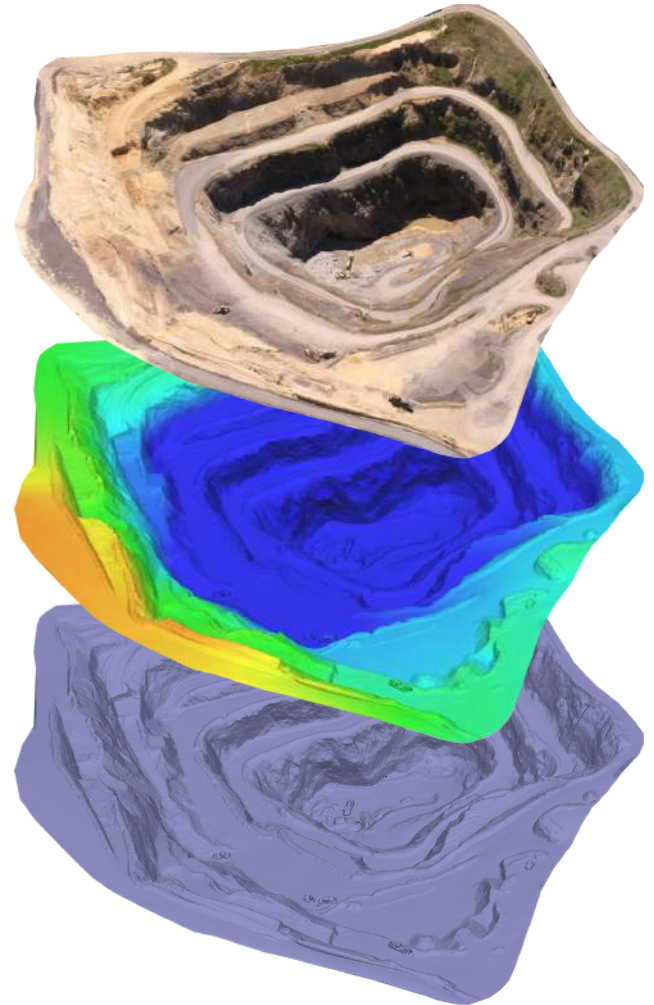


FIELDS OF APPLICATION

## Quarrying

Once multiple UAS flights performed at different time moments, Metashape allows for volume change tracking for quarrying jobs, as well as for soil erosion and glacier studies. Automatic non-coded targets detection capability saves up on manual work in inspection projects done on a regular basis. DEM visualization in Elevation, Slope and Aspect modes adds to convenience of the preliminary results analysis right in the Metashape program window.

*70 m deep quarry,  
Synergy Positioning Systems Ltd*

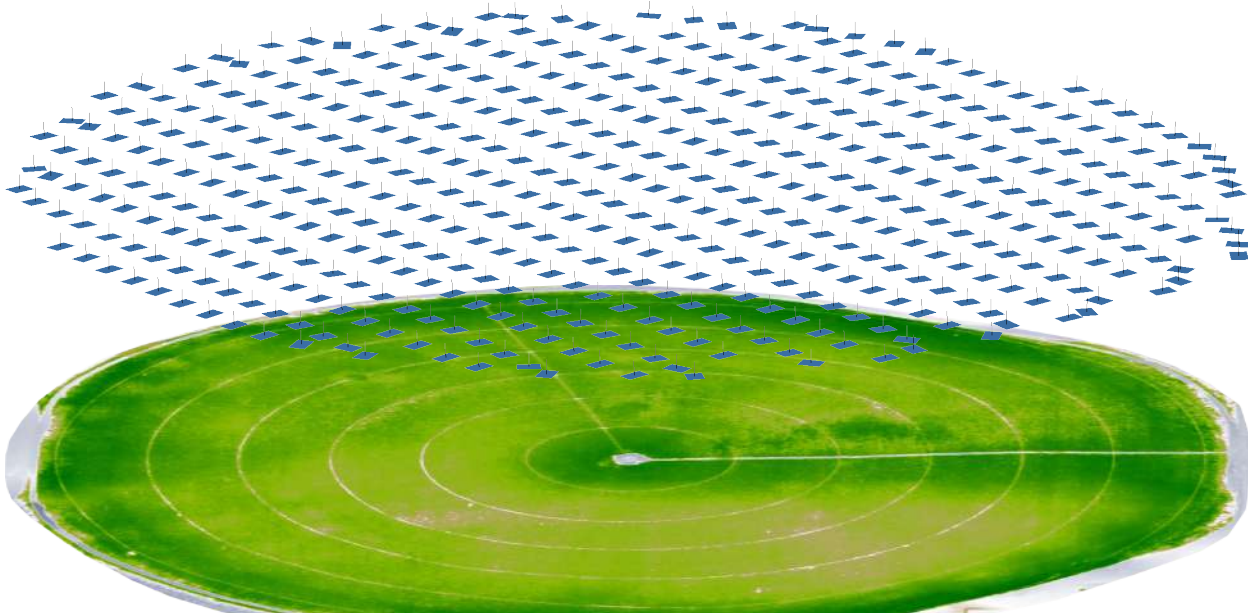


FIELDS OF APPLICATION

## Agriculture

With support for panchromatic, multispectral and thermal imagery, Metashape seamlessly integrates into workflows involving processing of data from diverse sources, like vegetation and soil analysis, fires and night studies, etc. Vegetation indices calculation according to a user-defined formula allows to analyze crop problems and generate prescriptions for variable rate farming equipment. With multiple UAS flights performed at different time moments, Metashape enables to track the changes in crop growth.

*NDVI map from multi-spectral sensor, MicaSense*



FIELDS OF APPLICATION

## Underwater

Metashape is capable of generating textured polygonal models for underwater imagery, be it a shipwreck, a coral reef, or a seabed itself. Thanks to Scale Bar tool, precise measurements can be performed for such models despite the frequently faced problem of absence of GPS data in such projects.



*60 m long, 2000 photos,  
SS Gwladmena by Simon Brown*

FIELDS OF APPLICATION

## Archaeology

Archaeology more and more often relies on photogrammetric approaches today, be it a need to model an artifact or a demand for an excavation mapping. Thanks to the capability to process imagery from any digital camera, Metashape is widely used in various archaeological projects both up in the mountains and deep under the water, including special researches like greenery pattern studies to find ancient ruins under the ground or rock art documentation and analysis projects.

*1 mm/pix resolution,  
Ancient farmhouse (IV B.C.)*

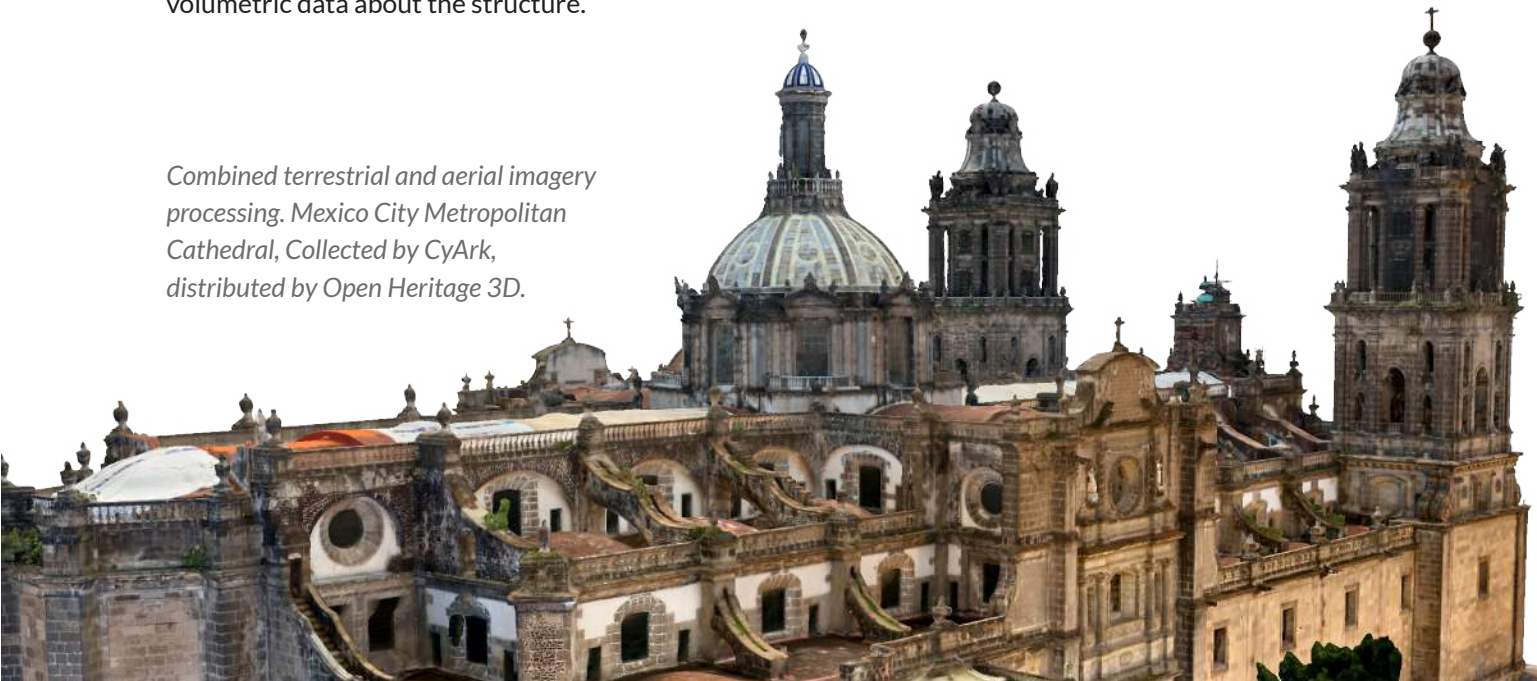


FIELDS OF APPLICATION

## Architecture

With support for combined processing of terrestrial and aerial (nadir and oblique) imagery, Metashape allows to reconstruct the whole building, which can be employed, for example, for virtual tours creation. 3D models of partially ruined facades and artifacts present reliable basis for restoration works thanks to exceptional accuracy of reconstruction results. The possibility to vectorize orthomosaic or model helps to notate all the features of the structure and serves as a basis for precise drawings creations along with calculation of dimensional and volumetric data about the structure.

*Combined terrestrial and aerial imagery processing. Mexico City Metropolitan Cathedral, Collected by CyArk, distributed by Open Heritage 3D.*



FIELDS OF APPLICATION

## UAV Inspection

Metashape includes functionality to automatically Detect Powerlines on the images and, thus, allows to perform large-scale powerlines inspection projects without need to invest in LiDAR equipment. The results in a form of a 3D polyline model for every wire can be exported for documentation and analysis in industry-specific tools or used for obstacle avoidance by mission planning algorithm within Metashape. Robustness of the results is ensured with catenary curve fitting algorithm.

UAV inspection projects can also benefit from DEMs difference calculation tool which allows to track surface changes and have them measured.

*18 km transmission powerlines,  
GeoScan Ltd.*



FIELDS OF APPLICATION

## Forensics

Metashape is widely used as a tool for documentation of traffic accidents thanks to combination of photorealistic visualization of the scene in a form of 3D model and possibility to perform precise distance measurements right on the model. Thus, photogrammetric software helps to minimize time required for the cars to be kept on the road and provides instruments for detailed analysis of the causes of the accident.

*55 stereo-images,  
Leica BLK3D Imager*



FIELDS OF APPLICATION

## Biology

Metashape processes imagery from various sensors, including cameras with macro lens. This option is used to reconstruct various insects when documenting zoological museums' collections. Photogrammetric 3D model generation is also in demand in projects dealing with monitoring fading flora, prehistoric fossils documentation and creating of digital twins of various species.

*Cockroach, 160 macro photos,  
Prof. Radosław Zajdel, Medical  
University of Lodz, Poland*



FIELDS OF APPLICATION

## Interior

Combined processing of images and terrestrial laser scans allows Metashape to generate accurate models of the interiors. The software also features a tool to create video presentations of the model right in the program window.

*Peasant house (XIX A.D.), Kizhi,  
combined processing of terrestrial  
laser scans and handheld camera  
photos*



FIELDS OF APPLICATION

## Medicine

Metashape software is applied to solve different problems in the field of medicine, like generating scaled 3D models of teeth or feet as the basis for statement analysis and planning of proper treatment. Photogrammetry provides tools for advanced approach to examination of spine curves and tracing of spine degenerative changes dynamics.

*Human skeletal system,  
Prof. Radosław Zajdel, Medical  
University of Lodz, Poland*

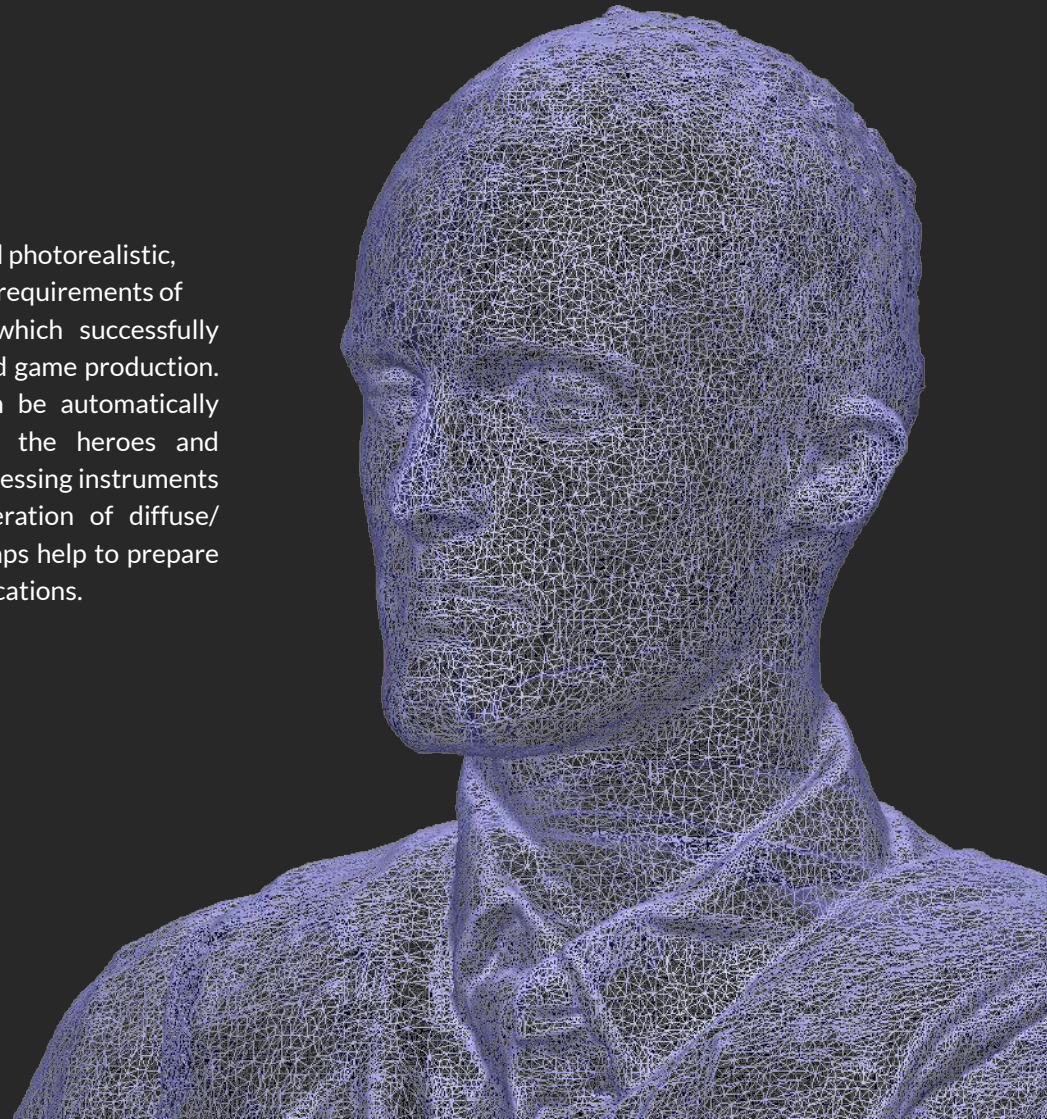


FIELDS OF APPLICATION

## Game Design

Thanks to being highly detailed and photorealistic, Metashape models meet the strict requirements of professional animation studios, which successfully employ the software for movie and game production. Face and body capture data can be automatically processed into digital twins of the heroes and realistically animated with 4D processing instruments and Remove Lighting tool. Generation of diffuse/displacement/occlusion/normal maps help to prepare texture files for visual effects applications.

*3D model in wireframe mode,  
91 images, 4 million faces, Ultra  
high quality, Hargrovecompany*



# Advantages

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Combined processing of imagery, terrestrial laser scans and aerial LiDAR data

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Highly accurate and detailed results

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Fully automated and intuitive workflow

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Block models for editing of city-scale models

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GPU acceleration for faster processing

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Network processing for large projects

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Processing state recovery after power loss

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Agisoft Cloud for processing, visualization and sharing of the results

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Free stand-alone Agisoft Viewer for visualization, inspection and presentation of the processing results

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Easy sharing with fly through video export and direct upload to online resources

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Stereoscopic measurements for precise feature extraction

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Reasonably powerful Standard edition for art projects

# Capabilities

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Satellite, aerial and close-range triangulation

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Incremental image alignment

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Combined alignment of imagery and terrestrial laser scanner data

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Geometric registration of TLS point clouds

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Aerial LiDAR boresight calibration support

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Marker-based point clouds registration in one coordinate system (photogrammetric, TLS, aerial LiDAR)

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Image set redundancy analysis

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AI-based image masking

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Georeferencing using flight log and/or GCPs

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GNSS/INS offset and bias support

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Coded and non-coded targets auto detection

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Photogrammetric point cloud generation

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Automatic classification of photogrammetric and LiDAR point clouds

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DSM/DTM generation

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DEM editing tools

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True orthomosaic generation in geographic and user defined projections

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Automatic seamline refinement for traditional DTM-based orthomosaics

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Manual orthomosaic seamline editing

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Orthomosaic pansharpener tool

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Elevation contour lines generation

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Coordinate/distance/area/volume/profile measurements

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Automatic powerlines detection

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Vegetation index calculation for multispectral imagery projects

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Prescription maps generation and export

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Polygonal model reconstruction, including block models

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Texture generation with delighting filter

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Deghosting filters for texture and orthomosaic

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Ambient occlusion, normal and displacement maps generation

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Hierarchical tiled model generation and visualization

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Mission planning for complex sites

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4D reconstruction for dynamic scenes

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Spherical panorama stitching

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Python scripting and Java API for job automation

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Headless operation support

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Batch processing for multi-task pipelines automation

# Compatibility

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Processes images from digital/film/video cameras and multi-camera systems, as well as terrestrial laser scans and aerial LiDAR data

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Supports registered/non-registered terrestrial laser scans

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Supports frame/fisheye/spherical/cylindrical/RPC camera models

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Works well with most UAVs (copters, fixed-wings, VTOLs)

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Exports results in widely supported formats

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Supports most EPSG coordinate systems and configurable vertical datums

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Earth, Mars and Moon coordinate systems support

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Runs on Windows, macOS, Linux



# Want to try?

Start your testing with free 30-day trial license  
– compare editions and download at [www.agisoft.com](http://www.agisoft.com)

Register at [cloud.agisoft.com](http://cloud.agisoft.com) and get personal account to try move your data processing workflows to the cloud

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