



# Intelligent photogrammetry

Agisoft



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Agisoft Metashape is a cutting-edge software solution, with its engine core driving photogrammetry to its ultimate limits, while the whole system is designed to deliver industry specific results relying on machine learning techniques for post-processing and analysis tasks.

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 dense point clouds, textured polygonal models, georeferenced true orthomosaics and DSMs/DTMs. 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.

## 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).

## 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.

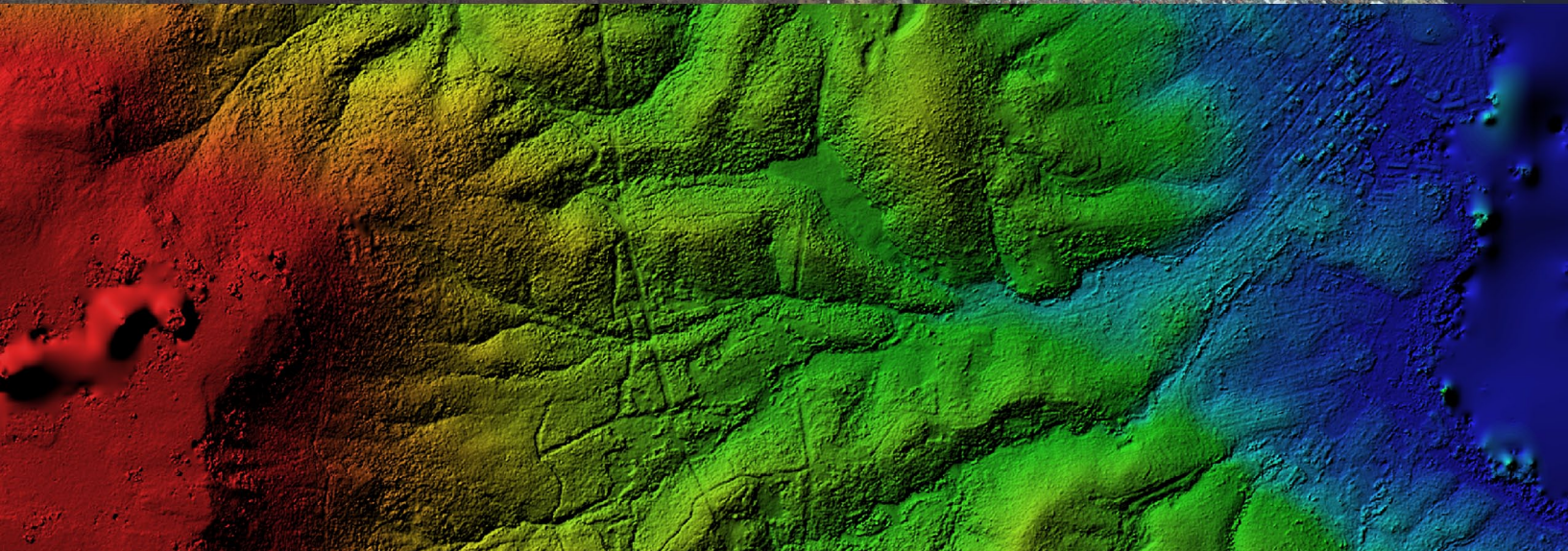


## Satellite imagery support

Metashape 1.6 features satellite imagery processing in addition to central perspective cameras such as frame, fisheye, spherical and cylindrical ones, supported in earlier versions. This option is integrated into the standard workflow, allowing to generate all typical products such as dense clouds, DEMs, orthomosaics and tiled polygonal models, both on a local workstation and over a network. Panchromatic and multispectral satellite images are supported, provided that sufficiently accurate RPC data is available for each image.

Laser scanning data can also be loaded into Metashape software and merged with photogrammetric point cloud; furthermore, LIDAR points can be colorized with the help of the imagery available for the same scene. In case project deals with archival data, Metashape is capable of scanned film images processing with support for automatic fiducial marks detection. If source data is video sequence, adaptive frame selection based on camera motion speed is particularly beneficial.





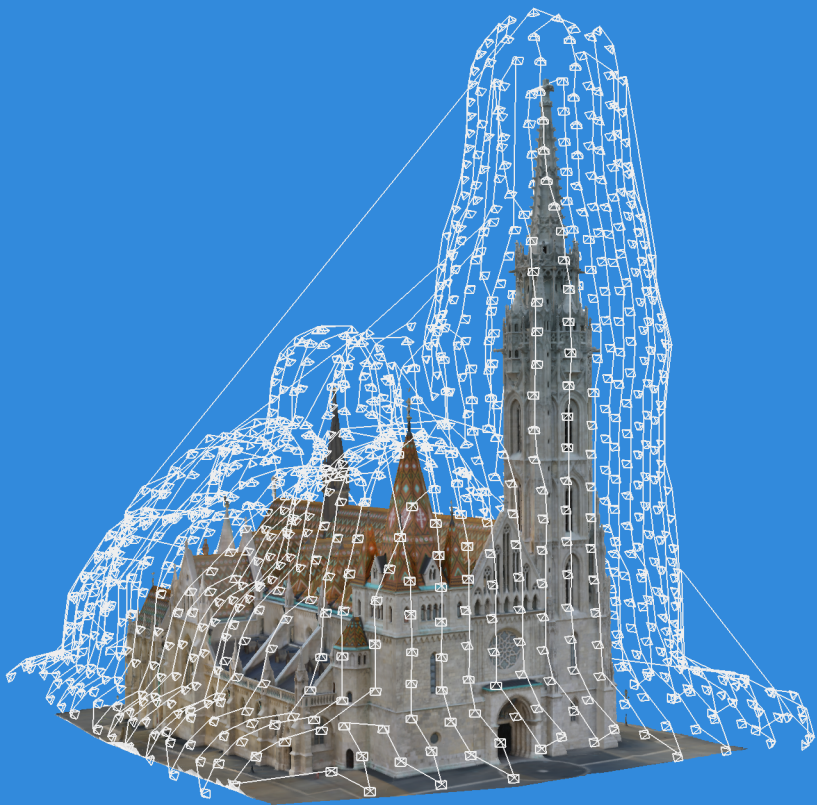


# Mission planning for complex sites

Metashape 1.6 enables to automatically calculate optimal mission plans for objects of complex geometry, like many of the cultural heritage buildings, based on simple overhead flight. Generated mission plan can be loaded in a drone controlling application to automatically perform survey session for detailed model reconstruction.

Reduce overlap feature is made for analyzing excessive image sets to understand which images are useful and which are redundant. This helps to maintain balance between processing time and model quality, as well as to get guidance for future survey missions for the objects of a similar type.







## Out-of-core detailed mesh generation

Improved filtering algorithm at dense stereo matching step in Metashape 1.6 helps to reduce noise on the final surface while preserving thin structures within the scene. New mesh generation method works directly with depth maps data — this allows to reconstruct exceptionally detailed geometry thanks to utilization of all the information available. The method is adaptive concerning resolution of the input imagery and, thus, guarantees efficient usage of the hardware resources while generating the most detailed model possible for the dataset.

Furthermore, out-of-core implementation greatly reduces memory consumption, while GPU acceleration support for both mesh and texture generation steps significantly speeds up the processing. Distributed mesh generation over network allows for further cut of processing time.



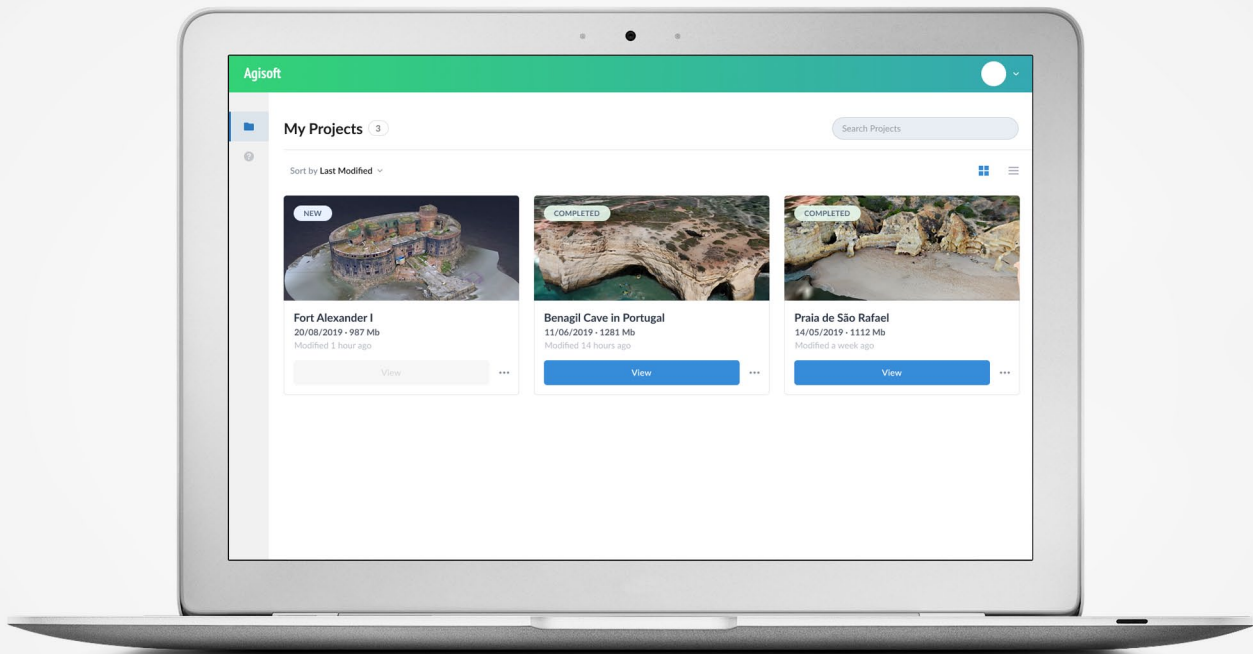




## Cloud processing & online visualization

Metashape is optimized for multi-core CPUs and multi-GPU systems for fast generation of the results on a single machine. Distributed processing on an HPC cluster helps to speed up all the calculations for massive datasets even further. Batch processing and integrated Python and Java API options enable all levels of automation of the photogrammetric processing workflow.

Metashape 1.6 presents improved cloud processing interface allowing to save on the hardware infrastructure for photogrammetric pipeline, with further option to visualize processing results online.



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# Seamless orthomosaic for Surveying & Mapping

Metashape is a perfect tool for aerial imagery processing. The functionality of the program is being constantly developed according to the tasks set by rapidly emerging UAS industry.

Metashape has proved to be a professional level post-processing tool capable of dense point clouds generation and classification for further exceptionally detailed DSMs/DTMs calculations and high-resolution seamless orthomosaics export, not to mention reconstruction of precise polygonal models of large scale objects. It is an indispensable part of GIS workflow starting with a UAV system.



# Highly accurate measurements for Mining & Quarrying

Highly accurate DEMs produced by Metashape lay the grounds for precise area and volume measurements, both for excavations and piles. Once multiple flights performed at different time moments, Metashape allows for volume change tracking, soil erosion and glacier studies.

Automatic non-coded targets detection capability saves up on manual work in inspection projects done on a regular basis

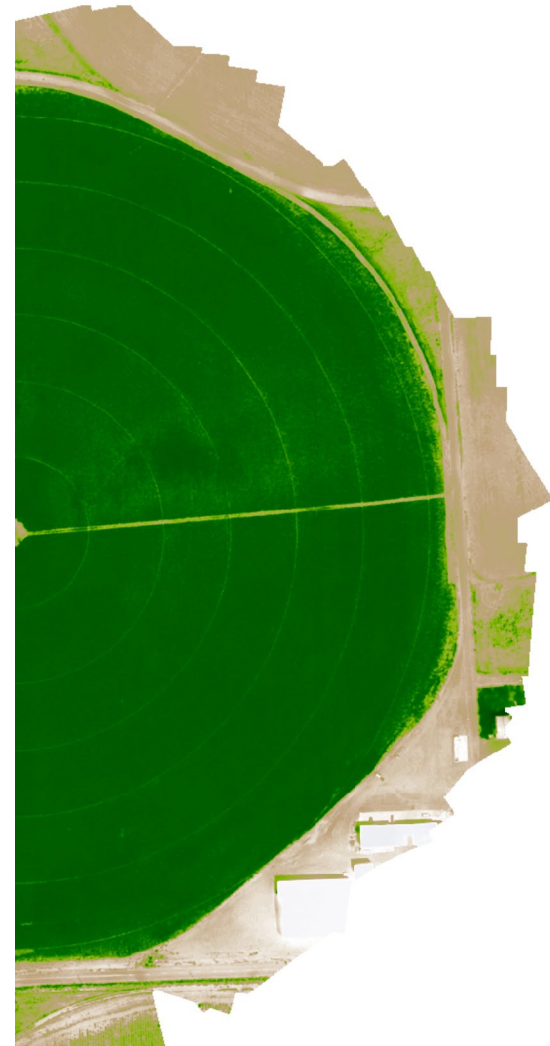




# Customized vegetation index calculation for Precision Agriculture & Environmental Management

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.



# Consumer camera support for Archaeology & Documentation

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.



# Oblique imagery support for Architecture & Cultural Heritage Preservation

Numerous projects prove that Metashape is a quality tool to solve the tasks of facade and building modeling.

With support for oblique imagery processing, Metashape allows to reconstruct the whole building, which can be employed for virtual tours creation, with reconstruction results being exhibited as illustrative models of large-scale cultural heritage objects. 3D models of partially ruined monuments and artifacts generated with Metashape present reliable basis for restoration works thanks to exceptional accuracy of reconstruction results.

*Castle Spangenberg by Aibotix GmbH*  
[www.aibotix.com](http://www.aibotix.com)



# Photorealistic textures for Visual Effects & 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 results, being among the most demanded ones, prove that Metashape potential goes beyond one's imagination.

*Human scan by Infinite Realities*  
[www.ir-ltd.net](http://www.ir-ltd.net)





## Advantages

- 01. Highly accurate and detailed results
- 02. Fully automated and intuitive workflow
- 03. GPU acceleration for faster processing
- 04. Network processing for large projects
- 05. Cloud processing and visualization to save up on infrastructure
- 06. Reasonably powerful Standard edition for art projects
- 07. Easy sharing with PDF or fly through video export and direct upload to online resources
- 08. Stereoscopic measurements for precise feature extraction



## Compatibility

- 01. Processes images from digital/film/video cameras and multi-camera systems
- 02. Supports frame/fisheye/spherical/cylindrical/RPC camera models
- 03. Works well with most UAVs
- 04. Integrates with LIDAR workflows with point cloud import
- 05. Exports results in widely supported formats
- 06. Supports most EPSG coordinate systems and configurable vertical datums
- 07. Runs on Windows, Mac OS X and Linux





# Capabilities

- 01. Satellite, aerial and close-range triangulation
- 02. Incremental image alignment
- 03. Mission planning
- 04. Image set redundancy analysis
- 05. Dense point cloud generation and automatic multi-class classification
- 06. DSM/DTM generation
- 07. True orthomosaic generation in user defined projections
- 08. Automatic seamline refinement for traditional DTM-based orthomosaics
- 09. Manual seamline editing
- 10. Elevation contour lines generation
- 11. Georeferencing using flight log and/or GCPs
- 12. Coded and non-coded targets auto detection
- 13. Coordinate/distance/area/volume measurements
- 14. Multispectral imagery processing and vegetation index calculation
- 15. Texture generation with delighting and deghosting filters
- 16. Ambient occlusion and normal maps generation
- 17. 4D reconstruction for dynamic scenes
- 18. Hierarchical tiled model generation and visualization
- 19. Polygonal model reconstruction
- 20. Spherical panorama stitching
- 21. Built-in Python scripting and Java API for job automation
- 22. Headless operation support