MeshyAndI Desktop

User manual | 2.7 | Rev 1.0

01 Installation and startup

This manual covers public MeshyAndI Desktop package 2.7. The English document retains Albanian button labels so they can be located in this version.

Page	Topic
1	Installation and startup
2	Data and project
3	Automatic processing
4	Photos and registration
5	CAD and plans
6	Surfaces and volumes
7	AI and calibration
8	Export and troubleshooting

1. Download the complete ZIP from position.gnss.al/downloads.html and extract it to a writable folder. Do not run it inside the archive.
2. Open MeshyAndI-Desktop.exe. Keep engines and the accompanying files beside the EXE. No separate Python installation is required.
3. Connect to the internet for initial activation. Licenca / aktivizimi shows the device code and status. The trial is device-bound; reinstalling does not restart it.

> The program package and working project are separate. Before replacing the package, back up projects and check that sources/assets are retained.

02 Data and project

1. Use Hap PLY / ZIP… for a file or Hap dosje skanimi… for an extracted package. A phone ZIP retains more processing options than PLY alone.
2. Choose the correct up-axis: Y lart — MeshyAndI for phone scans; Z lart for sources that use it. Set PLY units before the next open operation.
3. Check a known distance and orientation. Pamje sipër and Rikthe pamjen assist navigation. RGB colours appear when the source contains them.
4. Save a .meshy project from the project tab. Keep the file and assets folder together. Reopen it to confirm the scan, photos and CAD load.

Original data and history

Shfaq bruto / origjinalin returns to the original scan. Zhbëj skanimin and Ribëj skanimin navigate processing states. Zhbëj CAD concerns CAD edits. Lightweight viewing only changes display; Redukto kopjen sipas qelizës… creates reduced data.

> Save before opening a new scan. When moving to another PC, also copy referenced photographs, GCPs and external sources; test reopening at the destination.

03 Automatic processing

ZIP and photos → Continuity → AI and ODM → Alignment and review

1. Open a ZIP with photos and trajectory. Under Automatik use Kontrollo vazhdimësinë e kamerës to inspect interruptions and weak connections.
2. Përpuno projektin automatikisht starts the local workflow using bundled engines. No WebODM login is required. Watch progress and reports and retain the output-folder path.
3. Review registration before merging. If camera alignment does not pass validation, the raw scan remains the base; the other model needs reference points.
4. Inspect the derivative, contours and cleanup proposals. Compare with raw data; save the project and export after checking geometry.

What automatic means

The workflow uses all package photos for ODM; RGB-D uses frames with suitable depth. A PER RIKUPERIM photo is not necessarily invalid: it indicates missing registration or an issue requiring review.

Local AI proposes masks and categories. Cleanup operates on a copy. Unobserved surface parts are not invented, and not every photograph is guaranteed to register. Full display may be demanding; try lightweight viewing before reducing data.

> Continuity checking is diagnostic, not a coverage or accuracy guarantee. Retain processing reports with the project.

04 Photos and registration

ODM and WebODM

In Foto add or review photographs. Select local ODM and the bundled engine for PC processing. Reprocessing creates a new job while preserving sources. For WebODM enter that server's credentials; it is separate from Position.

Bundled WebODM requires Docker Desktop with Linux containers and internet for initial downloads. An existing WebODM server can also be used. Processing in that mode uploads photographs/GCPs to the selected server.

Model alignment

1. Load the output PLY as a photogrammetry model and declare its source up-axis. For OpenSfM/ODM confirm Z-up interpretation.
2. Use RGB-D camera alignment where trajectory/calibration are present. Review the report and held-out camera checks. Do not apply a rejected alignment.
3. For manual alignment, select matching details in both views in the same order. At least 3 non-collinear pairs are required for 3D; 4 or more provide additional checks.
4. Llogarit / kontrollo: read scale, RMSE and each pair's residual. Apply only after review. ICP is a local refinement; symmetry and weak overlap can mislead it.

> Entering a CRS label does not georeference a local model. Use real-coordinate controls, the correct CRS and independent checks.

05 CAD and plans

1. CAD > Ngarko planimetri DXF…: specify actual units or a reliable header. Inspect DXF layers and rejected entities.
2. Lidh DXF me pika reference…: select corresponding left/right points. Use at least 2 pairs, preferably 3 or more for checks. Review scale/RMSE and apply.
3. Choose Vizato vijë / polivijë or Vizato poligon. Pick points, set the layer and save as a line/polygon. Informacion / emërtim assigns a label.
4. Redakto kulmet XYZ… edits metric coordinates; Fshi elementin and Zhbëj CAD manage changes. Check that picked points belong to the intended layer.
5. For a scan-derived plan, set a horizontal or vertical slice and thickness. Display the slice and propose lines. Edit and clean proposals before export.

Layers and breaklines

Hide Point cloud when only CAD vertices should be picked. Visible layers determine CAD export. Bashko skajet e linjave… uses a tolerance and layer; check branches. Under Automatik, Vizato breakline and Ruaj breakline retain XYZ as a 3D polyline.

> Desktop 2.7 breaklines are not enforced in 2.5D surface triangulation. Slice/AI lines are geometric proposals, not certified wall or window recognition.

06 Surfaces and volumes

1. Check units and up-axis. For a local area use Poligon and Prej sipas poligonit…; save the cropped copy.
2. Pick two points for distance, at least three for a polygon. Mat / ruaj records the result. Profil uses two points and the appropriate slab.
3. Set Qeliza surface and use Krijo surface 2.5D. Inspect triangles and gaps. A smaller cell does not automatically mean higher accuracy.
4. Choose a fixed-height reference or a three-point plane. Enter the level or pick three suitable base points. Calculate the volume and review the report.
5. Save surface OBJ and measurements CSV / JSON as required. Also retain raw cloud, base and parameters so the calculation can be reproduced.

Calculation limits

The surface represents mean cell heights and connects only areas meeting construction conditions. Volume covers existing triangles relative to the reference; gaps are not filled. This is not a watertight 3D mesh for every object type.

Check that photographs or reconstructed models have not added areas outside the working boundary. For overhangs or multiple levels at one XY, a 2.5D model may be unsuitable.

> Report numerical results with units, reference, area and parameters. Check a known-volume case before operational use.

07 AI and calibration

Cleanup and categories

1. Analyse isolated points and inspect red proposals. Apply to a copy only after checking valid features are preserved.
2. Select photos in Foto, then run AI analysis on one or all images. The local engine is under engines/AI.
3. Inspect masks, categories and lines. Projection into 3D needs suitable trajectory, calibration and depth. Do not treat an image label as a measured 3D point.

Manual photo to point calibration

1. Open a package photo. In the paired view choose the image pixel and matching 3D point, then Shto çiftin. Use 6 or more well-distributed points.
2. Intrinsics come from RGB-D metadata where available. Other photos require real fx/fy/cx/cy values; do not invent them.
3. Check calibration, inliers and per-pair errors. Save accepted pairs/calibration. Use calibration Undo/Redo for corrections.
4. RGB-D reprocessing uses verified calibration. For georeferenced ODM export GCP with a real CRS and select it as input before the new job.

AI does not reliably identify every individual object, and model confidence is not metric accuracy. Scan Undo and raw data remain the recovery path after unsuitable cleanup.

08 Export and troubleshooting

Use Ruaj point cloud PLY… for the active cloud, Ruaj surface OBJ… for the surface and CSV / JSON for measurements. In CAD export DXF/PDF from visible layers. PDF is an A3 vector plan/section; print at 100%, without Fit to page, to retain scale.

For CAD/PTS export from MeshyAndI: (Xcad,Ycad,Zcad) = (X,−Z,Y), in metres. For ReCap, import PTS as metres, index it and save RCP/RCS with its support folder. This app does not export RCP/RCS directly.

Problem	Check
Engine or AI missing	Extract the full ZIP and check engines beside the EXE. The EXE alone is not the complete package.
PLY cannot be refined	RGB-D refinement requires photos, depth and calibration; PLY alone is insufficient.
Rotated or wrongly scaled model	Check Y/Z up, units, DXF scale and matching points. Changing the CRS label alone is not a correction.
Slow processing	Check job size and storage. Try lightweight display; processing retains its own parameters and reports.
PER RIKUPERIM photos	Read the reason and report. Add controls or calibration; do not force an invalid merge.

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