

November 2025, Version 16.0.1

## Release Notes for Inpho 16

### Trimble Inpho Version 16.0.1

Trimble announces version 16 for all Inpho software products including UASMaster (separated release notes). Users can find the following products in Inpho 16 as modules in ApplicationsMaster.

Note: Version 16.0.0 was an internal version and was not released.

**MATCH-AT** automatic georeferencing (including inBLOCK)

**MATCH-3DX** and **Meshing Add-On** for automatic generation of 3D point clouds, true ortho mosaics and 3D meshes

**MATCH-T DSM** automatic 2.5D point cloud (DSM/DTM) generation

**DTMaster Stereo** interactive and automated editing of point clouds, DTM/DSM and basic mapping

**OrthoMaster** ortho image generation

**OrthoVista** automatic ortho mosaicking, editing and color balancing

**SATMaster** complete satellite imagery workflow

### General notes and information:

Version 16 needs a license update. Customers with maintenance automatically received the license update. A valid license for version 16 works for all versions down to 11.0.5. Older versions are not supported with the new license.

Changes for SATMaster are aligning with changes in the Inpho components associated with satellite processing (ApplicationsMaster, MATCH-AT, MATCH-T DSM, DTMaster, OrthoMaster, and OrthoVista).

Inpho software offers multi-user support on Server Operating Systems.

We recommend installing the latest available CodeMeter Runtime version. It is included in the Bundle installation and available on our download page under 3rd Party Products as well as on the WIBU homepage ([www.wibu.com](http://www.wibu.com)).

We recommend installing the latest Coordinate System Manager version. It is included in the Bundle installation and is available on our download page under Trimble Photogrammetry (Trimble Coordinate Systems (TCS)\_<version>).

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## What's new in Inpho 16!

### Trimble Inpho v16.0: Faster, Sharper, Smarter – Driven by Innovation

We're thrilled to announce the launch of Trimble Inpho v16.0! This release marks a major step forward, powered by not one, but two integrated innovations focused on delivering the highest possible quality and efficiency: the New Engine for surface deliverables and the continually enhanced RealRay Technology.

#### MATCH-3DX – New engine for 2.5D and 3D Surface Deliverables

Trimble Inpho v16.0 introduces a **new engine** for creating superior 2.5D and 3D digital surface deliverables, including dense point clouds, true-orthophotos, and textured meshes. The engine is part of MATCH-3DX, UASMaster and TBC Photogrammetry.

The engine went through a foundational redesign built to deliver unparalleled **Quality, Precision, Automation, and Scalability** for your most demanding projects, from local sites to national-scale mapping.

With this new engine, we continue building on our core values, unlocking better performance and covering fully automated workflows and massive scalability. The core processing architecture has been redesigned with a focus on **future-proof, streamlined systems**, allowing key improvements in:

- **Speed & Quality:** You get **high geometric accuracy** and the **highest resolution products** (True Orthos, Meshes with sharp edges) **faster and more consistently** than ever before.
- **Improved Automation:** The new engine is designed to handle more of the complex calculations itself, leading to **fully automated workflows** that dramatically reduce manual effort and processing time.
- **Future-Proof Scalability:** The engine is natively prepared for **seamless scaling** across any environment—whether you're processing on a desktop or utilizing any future upcoming platforms.

#### MATCH-AT – Enhanced Precision with RealRay Technology

This release also highlights the continuous power of our **RealRay Technology**, which was introduced in v15.0 and is now better integrated, delivering precision by modelling the real world better.

RealRay is a groundbreaking technology because it models the **real light ray**. It precisely estimates and corrects for atmospheric and geometric distortions—correcting the **cause**, not just the symptoms.

By utilizing RealRay, you benefit from:

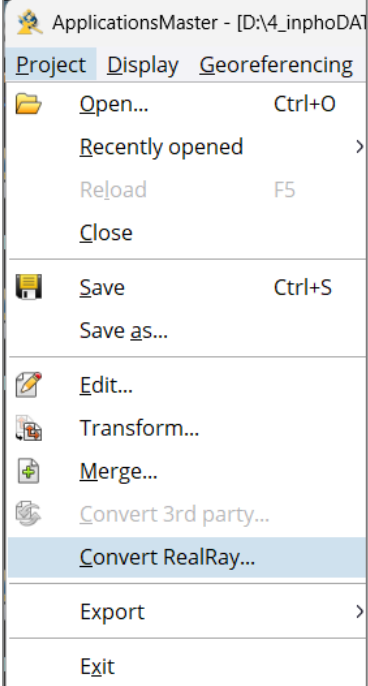
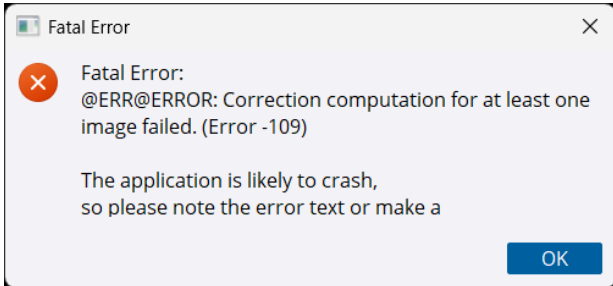

- **Superior Quality and Accuracy:** RealRay corrects for the effects of **atmospheric refraction, Earth curvature/map projection, and the geoid**. This has a positive influence on the **Exterior Orientation (EO) values**.
- **Simplified Workflows & Cost Savings:** RealRay's precise correction capabilities make **additional time-consuming steps unnecessary**, like e.g. **calibration flights at different flight altitudes, applying scale factors during GNSS post-processing**, additional work steps for complex projects like **Multi-Head Systems (MHS) & oblique imagery or nationwide mapping**.

With the simplified and automated surface production, and with **RealRay** guaranteeing mathematical precision and eliminating pre-processing tasks, **Trimble Inpho v16.0** is set to be a powerful and efficient photogrammetry suite.

## List of Changes

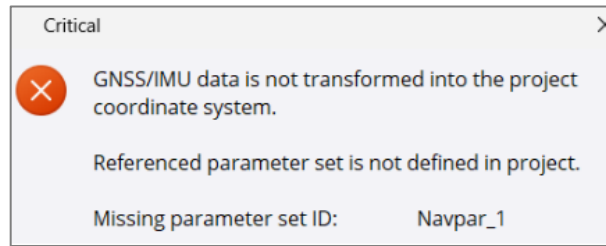
### ApplicationsMaster

Change	Description
<p><b>Information 16.0.1: Support of Windows 10</b></p>	<p>Windows 10 support ends on 2025-10-14. Thus version 16.0.1 will be the last release for which we can provide support for Windows 10. The Windows 10 support is dropped for versions later than 16.0.1. The same holds true for Windows 11 22H2 (Enterprise), Windows 11 23H2 (Home and Pro).</p> <p>Thus the "officially supported" versions for 16.0.1 will be:            Windows 10 22H2            Windows 11 22H2 Enterprise or newer            Windows 11 23H2 Home / Pro or newer and            Windows Server 2019 or newer.</p> <p>For all following version the supported operating systems then            Windows 11 23H2 Enterprise or newer            Windows 11 24H2 Home/Pro or newer and            Windows Server 2022 or newer.</p> <p>That does not mean that e.g. a 16.1.0 will no longer run on Windows 10, but we will not address issues on Windows 10 that can not be reproduced on Windows 11.</p>
<p><b>Information 16.0.1: Our software and virus scanners</b></p>	<p>We have recently received more and more reports that virus scanners, e.g. Sentinel One AV, are blocking our software. Please check this in case of unexpected behavior, e.g. strange error messages and unsuccessful tie point generation. Please then add exceptions for our software to your virus scanner.</p>

<p><b>New Feature 16.0.1: Convert MATCH-AT projects</b></p>	 <p>Version 16 now offers conversion of projects that were calculated with the new RealRay correction (Precise). You can find the function in ApplicationsMaster &gt; Project &gt; Convert RealRay. For the project, MATCH-AT must have run successfully and a MATCH-AT license must be available.</p> <p>Depending on the project type, conversion to &gt; Standard Nadir &gt; Simplified Nadir or &gt; Off (without correction) is offered.</p> <p>The output path for the converted project needs to be defined.</p> <p><b>For Summit users</b> we recommend to convert the project to “Standard Nadir” and after use the existing Export to DAT/EM SummitEV.</p> <p><b>Note:</b> The existing “Convert” has been renamed “Convert 3<sup>rd</sup> party”. The functionality has not been changed.</p>
<p><b>Improvement 16.0.1: Loading and closing times</b></p>	<p>If the new Precise (RealRay) correction was applied to a project, the loading times increased when opening and closing the project, when opening the Project Editor and the MATCH-AT dialog. This has been improved with version 16 and the times now correspond again to projects that were defined with standard nadir.</p>
<p><b>Improvement 16.0.1: Documentation updates</b></p>	<p>Several manuals have been updated.</p>
<p><b>Fix 16.0.1: Processing error due to missing geoid data</b></p>	<p>If a project was assigned with a geoid whose definition area was smaller than the project area (e.g. GCG2016 for a project on the border with the Czech Republic), the MATCH-AT calculation ran into an endless loop. Now MATCH-AT checks if the geoid extents are insufficient the following message appears.</p>  <p>Please setup your project with a geoid with a larger extent. To avoid the new setup, the project transformation tool  in ApplicationsMaster can be used.</p>

### Fix 16.0.1: Convert ZI projects

In rare cases it could happen that the conversion of ZI projects failed with the following error message.



That's fixed. Now the conversion messages gives senseful information of what should be payed attention.

#### Example: V16 Conversion messages:

Read ZI camera file:

*Warning: Not all Z/I CCD Frame camera attributes can be directly converted due to missing official documentations.*

*Warning: Use project editor in order to compleete definition of digital CCDFrame camera S2-Eagle .*

Read ZI control point file:

Read ZI photo file:

*Summary: Converted 74 photos, Converted 5 strips, Converted 45 control points.*

*Warning: Models are not converted in this version.*

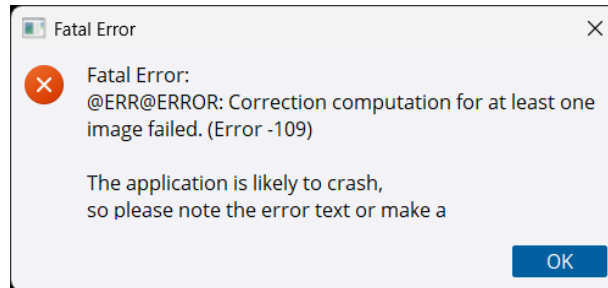
## MATCH-AT / Satellite Georeferencing

Change	Description
<b>Improvement 16.0.1: Multi-Head projects – Station generation</b>	If images from follow-up flights were imported into the already created project, it could be that the generated stations had more images than existing camera heads. Additional checks now prevent a station from having more images than camera heads. Unassigned images are documented.
<b>Improvement 16.0.1: Loading and closing times</b>	If the new Precise (RealRay) correction was applied to a project, the loading times increased when opening and closing the project, when opening the Project Editor and the MATCH-AT dialog. This has been improved with version 16 and the times now correspond again to projects that were defined with standard nadir.
<b>Fix 16.0.1: Compute ray intersections for control points in potential stereo models</b>	The calulation of the "l: RMS all models" value of model intersections used models with bad base-height ratios and not computed intersections. This resulted in an incorrect number of residuals for the RMS calculation (including models with poor base-to-height ratio). Therefore the RMS values were too small.

### Fix 16.0.1: Missing geoid information

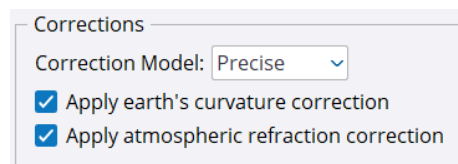
For projects that are located on projection zones or national borders and the geoid used does not cover the entire area, the tie point extraction ran in an endless loop.

Now this is checked already in the ApplicationsMaster when setting up the project. If the geoid extents are insufficient the following message appears.



Please then select a geoid with a larger extent. To avoid the new setup, the project transformation tool in ApplicationsMaster can be used.

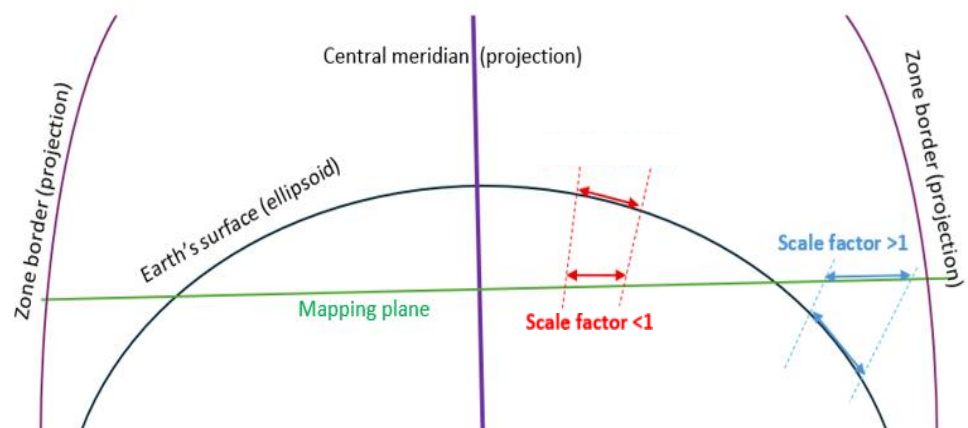
### About RealRay correction



#### 1. What is the RealRay (Precise) correction?

This new, proprietary correction model mitigates effects from earth curvature, atmospheric refraction, mapping projections and geoid impacts by modelling the individual ray based on coordinate system, location and orientation.

Based on the position of the project in the coordinate system, individual corrections are applied to reduce e.g. scale inaccuracies.



**2. Where is my benefit?**

The RealRay technology represents a leap forward in aerial triangulation software, delivering unprecedented precision by significantly reducing errors caused by environmental factors. In case it is selected, all Inpho modules use the correction on the fly for display purposes or computation steps, improving the accuracy, precision, quality and efficiency of many projects.

**3. Where can I use it?**

The major applications are:

- ▶ Countrywide mapping
- ▶ Accurate handling of multi-head sensors and oblique views
- ▶ Transformation of projects even after aerial triangulation
- ▶ Camera calibration flights

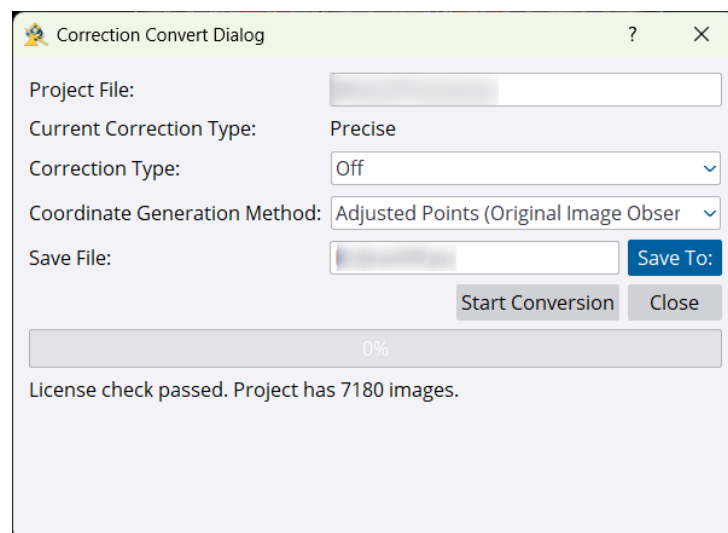
However, based on its computation of the real ray it has a positive impact on almost all projects.

**4. Do I still have to apply a scale to my GNSS preprocessing step?**

Some customers have been applying a scale correction during their GNSS pre-processing step (e.g. with POSpac) to compensate for projection-based effects. When using the “precise” correction method this is not needed any more. According to our experience, using the RealRay correction method is more accurate specifically if it comes to large project extends.

**5. Can I export my result from a “Precise” computation?**

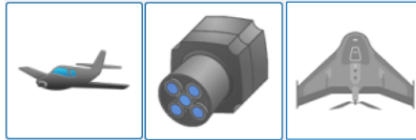
To fully benefit from this groundbreaking correction technology, we recommend following the photogrammetric workflow within the Inpho world. In case the result from the aerial triangulation needs to be exported, a converter can be used to generate an inpho project considering other correction types (Standard Nadir, Simplified Nadir, OFF – depending on project type). This process requires a valid MATCH-AT license.



**6. Does that impact calibration flights?**

As the correction effects are not compensated within the camera /platform but are modelled mathematically, calibration flights in varying altitudes are not needed.

**7. Where is RealRay supported?**



**Trimble Photogrammetry**

- Aerial Sensor
- Multi-Head System

**Trimble UASMaster**

- Area Mapping

*Benefits from the RealRay "Precise" functionality . It is necessary to define a project coordinate system.*



**Trimble Photogrammetry**

- Satellite projects

**Trimble UASMaster**

- Close Range 3D

**Trimble Business Center**

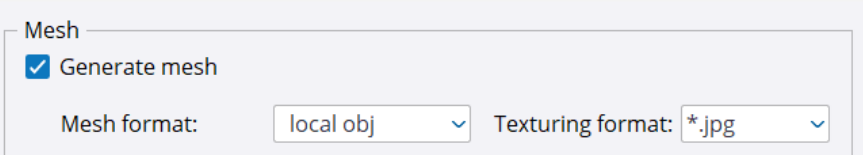
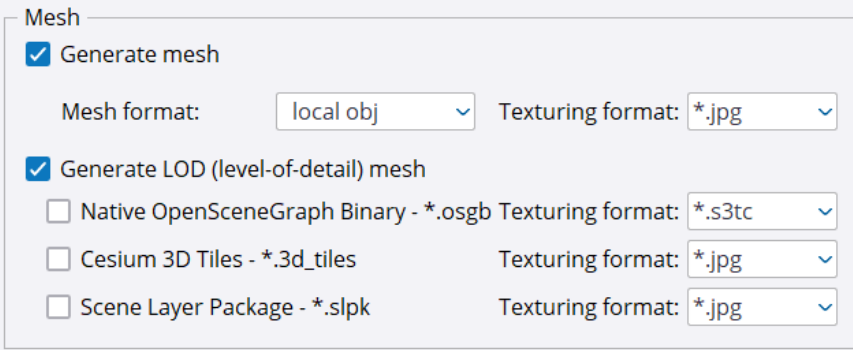
*RealRay "Precise" functionality is **not** implemented.*

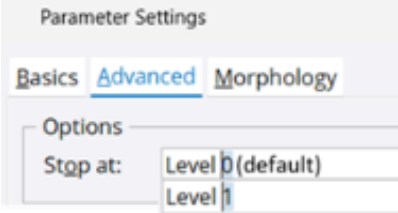
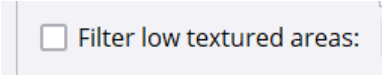
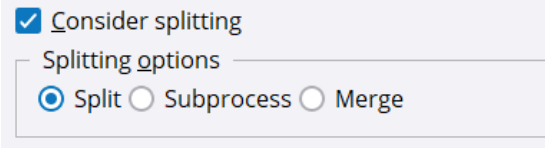
## MATCH-3DX / Meshing add-on

Requirements/recommendations:

We recommend an up-to-date computer with at least 64 GB RAM (better more). Furthermore, we recommend an additional hard disk for processing purposes only. The required disk space should be about 4-6 times of the space that the input data requires.

Change	Description
<b>New Feature 16.0.1: DSM Mesh update</b>	If a True Ortho update is carried out in version 16, the mesh is also automatically updated.
<b>New Feature 16.0.1: Additional location for option file (MATCH.status)</b>	The MATCH.status options file must be stored in the project directory. Version 16 adds the ability to copy the options file to the user directory (C:/USERS/username/...). Therefore, it is now possible to use the command line options even if the installation directory is not accessible.
<b>Fix 16.0.1: Correct scale determination</b>	When determining the automatic 3D area boundary, the image scale is calculated based on the footprint heights. The footprint heights (height from the photo definition) are adjusted to a local or global DEM. Previously, the original footprint height was used to determine scale. Now the corrected footprint height is used. Especially in mountainous areas where the global terrain elevation value in the photo definition differs from the actual terrain elevation, the scale value is now more accurate. This value is used internally for further parameterization.

<b>Fix 16.0.1: 3D Area border line</b>	<p>For projects with an unsystematic flight geometry, the automatic 3D area boundary sometimes could not cover the entire project area for numerical reasons. The problem was solved by increasing the accuracy of the azimuth determination.</p>
<b>Fix 16.0.1: Corrupt coordinates in XPF file</b>	<p>The program could crash handling adjusted points with corrupt coordinates from XPF file. Now these points will be eliminated through the read functionality of the XPF file in the project IO.</p>
<b>Fix 16.0.1 Activation of "Open folder..." option</b>	<p>The "Open folder..." option button was deactivated in previous versions. Now the "Open folder..." option from the progress window is activated and invokes the file explorer in the working directory of the current processing area.</p>
<b>Fix 16.0.1: Earth curvature and refraction correction</b>	<p>The earth curvature and refraction correction was taken into account in the wrong direction in some cases. That's fixed.</p>
<b>Fix 16.0.1: Correct height definition for earth curvature and refraction correction</b>	<p>The correction method for earth curvature and refraction correction expects the height information in object units. For projects with object units that were not specified in meters, the correction was incorrect. That's fixed.</p>
<b>Fix 16.0.1: Long file paths</b>	<p>With version 16 it is now possible to use long path names. Otherwise, the path name is limited to 105 characters on Win11 operating systems.</p>
<b>Change 16.0.1: Elimination of Mesh texture format from GUI</b>	<p>The mesh is now written in JPG format, the option to select a texturing format for the meshes is no longer available.</p> 
<b>Change 16.0.1: Removed mesh formats</b>	<p>The support for exporting dae, lod_dae and lod_obj mesh formats has been removed. Version 16 offers obj, osgb, 3d_tiles and .slpk mesh formats.</p> 

<p><b>Change 16.0.1: Processing levels for Surface Generation</b></p>	<p>Previously, it was possible to select at which pyramid level (0, 1, 2, 3) the point cloud and the subsequent products (orthophotos, mesh) should be calculated. Now only High and Highest are selectable.</p>  <p>If you calculate on “Level 1”, the process is faster. When using “Level 0”, more attention is paid to the fine structures, but the process takes longer.</p>
<p><b>Change 16.0.1: Define number of models for point matching</b></p>	<p>The option to define the number of models required to match a point has been removed.</p>
<p><b>Change 16.0.1: Low textures areas</b></p>	<p>The option “Filter low textured areas” has been removed.</p> 
<p><b>Change 16.0.1: Removed criteria</b></p>	<p>Some resulting criteria which could be checked in DTMaster has been removed, as</p> <ul style="list-style-type: none"> <li>• DSM roughness</li> <li>• Interpolated point color</li> <li>• Height color meta layers.</li> </ul> <p>Still available are</p> <ul style="list-style-type: none"> <li>• Binary mask</li> <li>• Distance map</li> <li>• Point model count</li> </ul>
<p><b>Change 16.0.1: Subdivided DEM generation</b></p>	<p>The advanced parameter setting for using splitting option has been removed.</p> 


## MATCH-T DSM

Change	Description
<b>Improvement 16.0.1: Location of option file MATCH.status</b>	<p>In addition to the previous possibility of introducing calculation options for the current project by copying the edited match.status file into the project directory, it is now possible to create general adjustments for MATCH-T DSM projects by copying the edited match.status file into your own user directory (C:\USERS\user\). The software first checks the project directory and then the user directory. If there is a match.status file in the project directory, these settings are used, if not, the user directory is checked and these settings are made.</p>
<b>Improvement 16.0.1: Extended time statistics in LOG file</b>	<p>The MATCH-T LOG file “[areaID].log” now shows a better output of the times each process takes.</p>
<b>Fix 16.0.1: Correct scale determination</b>	<p>When determining the automatic 3D area boundary, the image scale is calculated based on the footprint heights. The footprint heights (height from the photo definition) are adjusted to a local or global DEM. Previously, the original footprint height was used to determine scale. Now the corrected footprint height is used. Especially in mountainous areas where the global terrain elevation value in the photo definition differs from the actual terrain elevation, the scale value is now more accurate. This value is used internally for further parameterization</p>
<b>Fix 16.0.1: 3D Area border line</b>	<p>For projects with an unsystematic flight geometry, the automatic 3D area boundary sometimes could not cover the entire project area for numerical reasons. The problem was solved by increasing the accuracy of the azimuth determination.</p>
<b>Fix 16.0.1: Corrupt coordinates in XPF file</b>	<p>The program could crash handling adjusted points with corrupt coordinates from XPF file. Now these points will be eliminated through the read functionality of the XPF file in the project IO.</p>
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<b>Fix 16.0.1: Long file paths</b>	<p>With version 16 it is now possible to use long path names. Otherwise, the path name is limited to 105 characters on Win11 operating systems.</p>

## DTMaster Stereo

Change	Description
<b>Fix 16.0.1: Adding user defined toolbar</b>	If a user defined toolbar was added in DTMaster, then DTMaster was closed and reopened, additional empty toolbars were generated. That's fixed.
<b>Fix 16.0.1: 1 bit palette images</b>	Since a few versions, a transparent display of 1bit palette images was no longer possible in the DTMaster. This is possible again in version 16.
<b>Fix 16.0.1: Long file paths</b>	With version 16 it is now possible to use long path names. Otherwise, the path name is limited to 105 characters on Win11 operating systems.

## OrthoVista

Change	Description
<b>Fix 16.0.1: Misleading LOG file messages</b>	During the generation of pyramid files in OrthoVista, misleading messages were written in the OrthoVista LOG file: "... is not a JPG file". That's fixed.
<b>Fix 16.0.1: Strange Color Artifacts in SeamEditor</b>	<p>In specific cases (pixels are not overlapping exactly) it could happen that the SeamEditor displayed images with strange radiometry. The appearance could be as follow:</p>  <p>This has been fixed.</p>

## Information

There are no changes for DTMTToolkit and OrthoMaster in version 16.0.1.

For more information, please contact your Trimble Inpho Support Team at [imaging\\_support@trimble.com](mailto:imaging_support@trimble.com).

The software is available for download on

<https://geospatial.trimble.com/en/products/software/trimble-inpho/download>