GEOSPATIAL OFFICE SOFTWARE
JUNE 2022, V13.0.0
JULY 2022, V13.0.1
AUGUST 2022, V13.0.2
OCTOBER 2022, V13.1.0
DECEMBER 2022, V13.1.1
FEBRUARY 2023, V13.2.0
MAY 2023, V13.2.1
JUNE 2023, V13.2.2

Release Notes for UASMaster 13

Trimble UASMaster Version 13.2

Trimble announces the version 13.2 for UASMaster. This major release offers new features in addition to bug fixes.

A new license is not required if you are already under maintenance of version 13. For more information please visit: http://geospatial.trimble.com/products-and-solutions/trimble-inpho-uasmaster or contact us via imaging_support@trimble.com. .

Table of Contents

Trimble UASMaster Version 13.2 1

Highlights in UASMaster 13.2 1

Previous features of version 13 1

Main window and project handling 1

Information: Antivirus software interference 1

Information: User-defined strategies 1

Improvement 13.2.2: Image import – display number of skipped/overwritten images 1

Improvement 13.2.2: Better Copy/Paste support in “Single Transformation” 2

Improvement 13.2.2: Check about double strip definitions 2

Improvement 13.2.2: Compare Camera definition functionality 3

Fix 13.2.2: Incorrect results for ICS coordinates systems using grid shift files 3

© 2020, Trimble Inc. All rights reserved. Trimble and the Globe & Triangle logo are trademarks of Trimble Inc. registered in the United States and in other countries. All other trademarks are the property of their respective owners.

Fix 13.2.2: End of line recognition 3
Restriction 13.2.2: Older IIQ image formats 4
Improvement 13.2.1: Updated TCS manager 4
Improvement 13.2.1: Added consistency check for coordinate systems 4
Improvement 13.2.1: Additional check when importing images 4
Improvement 13.2.1: Remove Orphans 4
Fix 13.2.1: Crash of Project Editor 4
Fix 13.2.1: Image overview generation in a new output folder 4
Fix 13.2.1: ITEX warning message 4
Fix 13.2.1: Project Transformation - coordinate system naming 5
Fix 13.2.1: TBC subscription license error 5
Fix 13.2.1: DJI Mini 2 XMP import of IMU failed 5
Information 13.2: End of life “Classic Style” of GUI 5
Fix 13.2: Handling of strategy files 5
New Feature 13.1.1: Output definition in the Image Commander, Image Overview generation 5
Improvement 13.1.1: Updated sensor database 5
Fix 13.1.1: Wrong entry for camera principal point 5
Fix 13.1.1: Image Commander creates PAN images when using Vignetting 5
Information 13.1.1: Change of zone names in TCS 6
New Feature 13.1: PhaseOne integration 6
New Feature 13.1: PhaseOne raw format IIQ 6
New Feature 13.1: Support of new distortion model 6
New Feature 13.1: Strip extraction from image ID 6
Improvements 13.1: Overwriting of camera templates 7
Improvement 13.1: New version of the Trimble Coordinate Systems (TCS) 7
Fix 13.1: Import of “Object Points and Measurements” 7

Fix 13.1: Image Viewer with single overview 7
Information 13.1: Update of project file format 7
Fix 13.0.2: Conflicting information of GNSS standard deviations 7
Fix 13.0.2: Image Commander – RadioMetrix – Global Options 8
New Feature 13.0.1: Support of PhaseOne IIQ images 8
New Feature 13.0: Added Server multi-user support 8
Georeferencing **8**
Fix 13.2.2: Crash while georeferencing report generation 8
Improvement 13.2.1: Added Geoid information to report 9
Fix 13.2.1: Crash Photo Measurement Tool 9
Fix 13.2.1: Page number in Multi-Aerial View 9
Improvement 13.1: Updated PDF report file 9
Improvement 13.1: Selected images are highlighted more clearly 9
New Feature 13.0: Change point type in UASMaster Measure 9
Improvement 13.0: Graphical performance in UAS Measure 9
Improvement 13.0: Radiometric image adjustment in PMT 9
Fix 13.0: Non-successful workflow in UASMaster georeferencing 10
Information 13.0: Strategies 10
Surface and Orthophoto Generation **10**
Fix 13.2.2: Model determination for the coloring of the point cloud 10
New Feature 13.2.1: Mesh formats in a single file 10
Improvement 13.2.1: Mesh output folder 10
Improvement 13.2.1: Optimized automatic 3D borderline 10
Fix 13.2.1: SGM crash with GPU processing 10
Fix 13.2.1: UAS Orthophoto generation fails 11
Fix 13.2.1: Point cloud export with survey feet 11
Improvement 13.2: More understandable GUI 11

New Feature 13.2: Generation of non-LOD meshes as single file 11
New Feature 13.2: Selectable network image directory 11
Improvement 13.2: New True Ortho approach 11
Improvement 13.2: Quality of building edges 11
Improvement 13.2: Reduction of runtime and memory requirements 11
Improvement 13.2: Optimized precision writing .las/.laz files 11
Improvement 13.2: Unique material names in OBJ mesh 12
Improvement 13.2: Reduced peak memory usage 12
Improvement 13.2: Performance 12
Fix 13.2: Error for projects with disabled distortion 12
Fix 13.2: Holes in the mesh 12
Fix 13.2: Area of interest 12
Fix 13.2: Suboptimal stereo models 12
Fix 13.2: “&” character in working directory path 12
Fix 13.1.1: Ortho from Point Cloud produces corrupted mosaic 12
New Feature 13.1: External definition of DEM area 12
Improvement 13.1: Selected images are highlighted more clearly 13
Improvement 13.1: SGM workflow 13
Fix 13.0.1: “Ortho from point cloud” 14
Improvement: 13.0: Performance improvement during mosaicking 14
Fix 13.0: Fixed memory issue during mosaicking step 14
Change 13.0: Line measurement, Follow Up Option: Reinterpolate along line 14
Information 13.0: Strategies 14
Information **14**

Highlights in UASMaster 13.2

Better geometry in all deliverables

In version 13.2, edges are even sharper than before. This significant improvement can be more seen in the true orthophotos, along the shadows of buildings, where jagged effects are more expected.

In this version even the shadows are more consistent. In high overlap oblique imagery of city areas, the shadows of high buildings on the ground might be slightly moved due to the time difference between the overlapping strips. This causes duplication of shadows on the ground. In this version the shadows are represented without any duplication anymore, while keeping the appropriate brightness for object recognition in such areas.

Improved radiometry in True Orthophotos

Over-illumination, e.g. caused by sun reflection on cars, glass-made construction and water, result in inhomogeneous radiometry in orthomosaics. Version 13.2 delivers true orthophotos with better color and illumination adjustment in such challenging objects.

Filtering moving objects

Depending on the speed of the moving objects, they are either represented completely, partially or in the form of a ghosting effect. Since version 13.2, moving objects such as cars, pedestrians or operating cranes and vehicles in construction sites are automatically filtered out.

There are more features in this version that will ease your production, and can be found in the Release Notes. As usual, we are happy to improve the stability and usability of our software by some fixes in this version.

Previous features of version 13

Integration of PhaseOne cameras in Inpho workflow

After successful integration of the PhaseOne SDK in the previous version into Inpho workflow, in the new version, the IIQ raw images can be automatically loaded in Image Commander. Furthermore, to speed up the project setup by importing images in IIQ Phase One format, the import of camera information and GNSS/IMU data from the EXIF header of IIQ images is implemented for single head camera projects

New Distortion Model in UASMaster

A new distortion model is now supported within Inpho allowing corrections for symmetric radial (K1, K2, K3 ...), decentering (P1, P2 ...) and affinity/non-orthogonal (B1, B2) distortion. This format is for example used for calibrations made for PhaseOne sensors.

Faster ortho mosaicking in UASMaster
After the significant improvement in SGM in version 12.2, in this version, project managers can enjoy better performance and speed up ortho mosaicking up to 35% and accelerate their productivity with the classical workflow.

Extended Inpho capabilities for Windows Server and CITRIX
Due to the rapidly growing imagery projects, we received more and more requests from project managers and organizations, who would like to increase and ensure their productivity by running parallel projects in their high performance and highly secured Server environments, with a multi-user access. In this version, we changed the structure of files from machine-scope to user-scope.

New 3D mesh approach in UASMaster for higher quality
In this version, UASMaster comes with a new mesh generation algorithm to increase the realistic impression of 3D models, based on smarter image selection in the matching. Furthermore, users can produce higher quality meshes, due to a new mesh texturing technology. The significant change in visual consistency can be seen by reducing artifacts caused by moving objects, e.g. cars, or water reflection and changing lighting conditions.

Better performance for a cleaned-up true-orthophoto in UASMaster
Thanks to the optimized borderline for true-orthophoto generation in this version, the best fitting processing area can be defined considering the available models and fold parameters. This reduces the processing time to an optimized level.

As usual, we are happy to improve the stability and usability of our software by some fixes in this version.

More information can be found in the Release Notes and on the Website:
https://geospatial.trimble.com/products-and-solutions/trimble-inpho-uasmaster
New users can contact their regional sales managers for purchasing/updating new licenses or requesting for evaluation licenses:
https://geospatial.trimble.com/where-to-buy

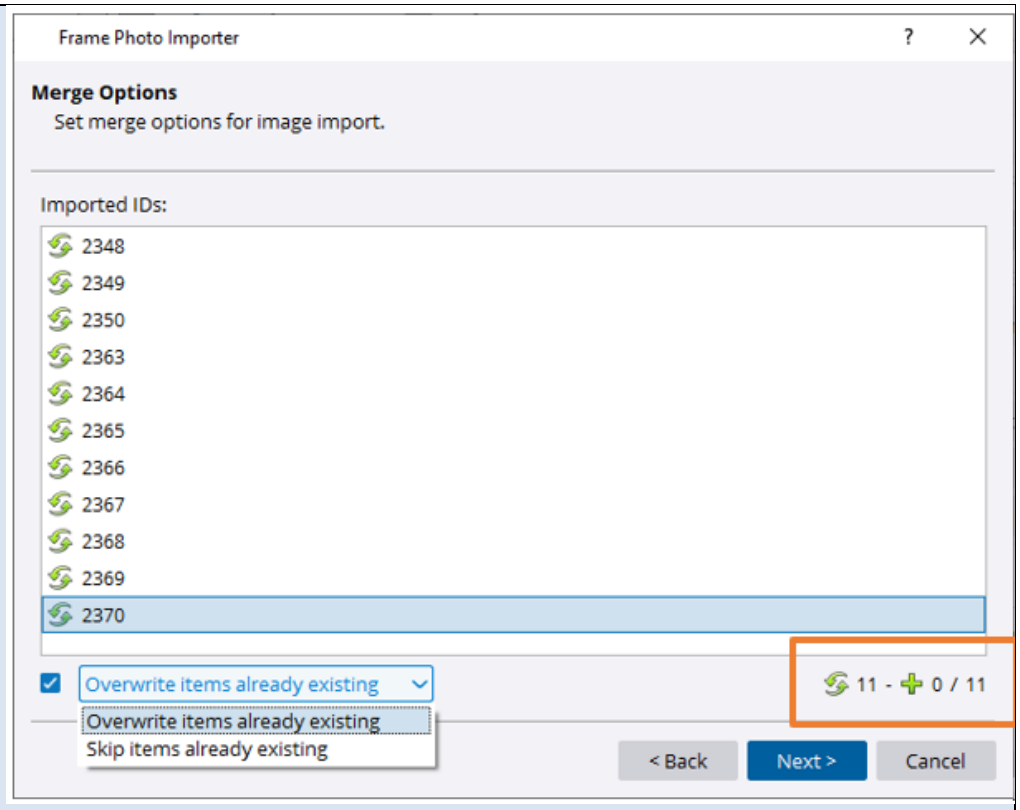
List of Changes

General notes and information:

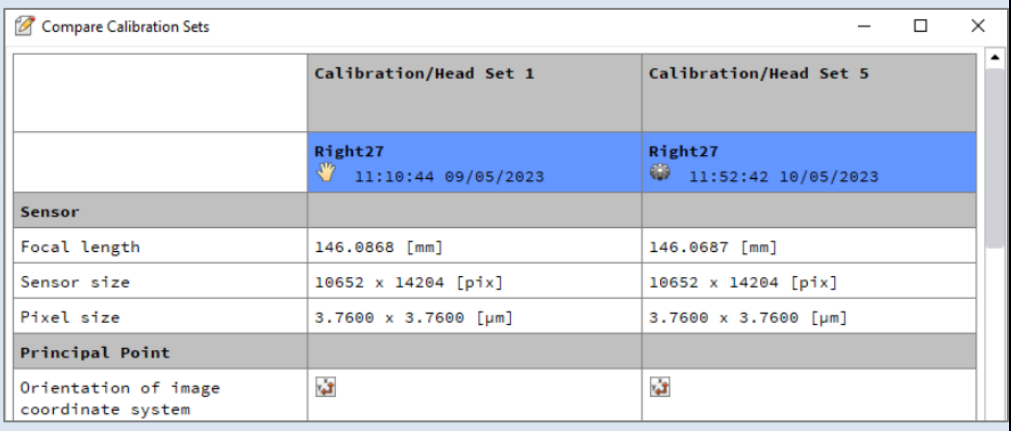
- With version 13.1 the version of the project file has been updated (13.1.0). Projects created with this and higher versions cannot be opened with older versions. Projects with an older project file format are updated during import.
- Version 13 needs a license update. Customers with maintenance automatically received the license update. A valid license for version 13 works for versions >11.0.5. Older versions are not supported with the new license..
- In order to be able to better utilize the existing hardware, UASMaster uses 40 to 48 cores for calculation-intensive steps. This makes no sense for I/O intensive steps, which is why not all cores are used for the entire processing.
- Inpho software offers multi-user support on Server Operating Systems.
- We recommend installing the current available CodeMeter Runtime version. It is included in the Bundle installation and available on our download page under 3rd Party Products as well on the WIBU homepage (www.wibu.com).

Main window and project handling

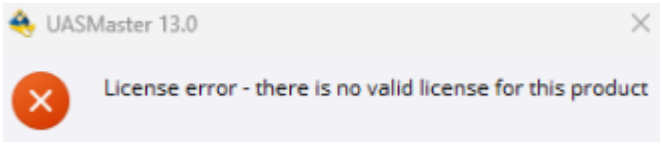
Change	Description
Information: Antivirus software interference	After an Inpho software update or antivirus software update, it can happen that previously used modules show malfunctions. The behaviour differs from case to case and is therefore not listed in more detail here. A solution is to define exception rules for the corresponding executables and DLLs in the antivirus software. Please contact imaging_support@trimble.com for further information.
Information: User-defined strategies	To transfer strategies from old to the new version, please copy the user-defined strategy files (*.ops or *.cnt) from the old to the new version. The files can be found in the folder: C:\Users\"username"\AppData\Local\Trimble\UASMaster 13.x\Strategies\UAS
Improvement 13.2.2: Image import – display number of skipped/overwritten images	In the Project Editor the option *Overwrite/skip items already existing,* available during import of image data, was improved by stating the number of images that got overwritten/skipped.

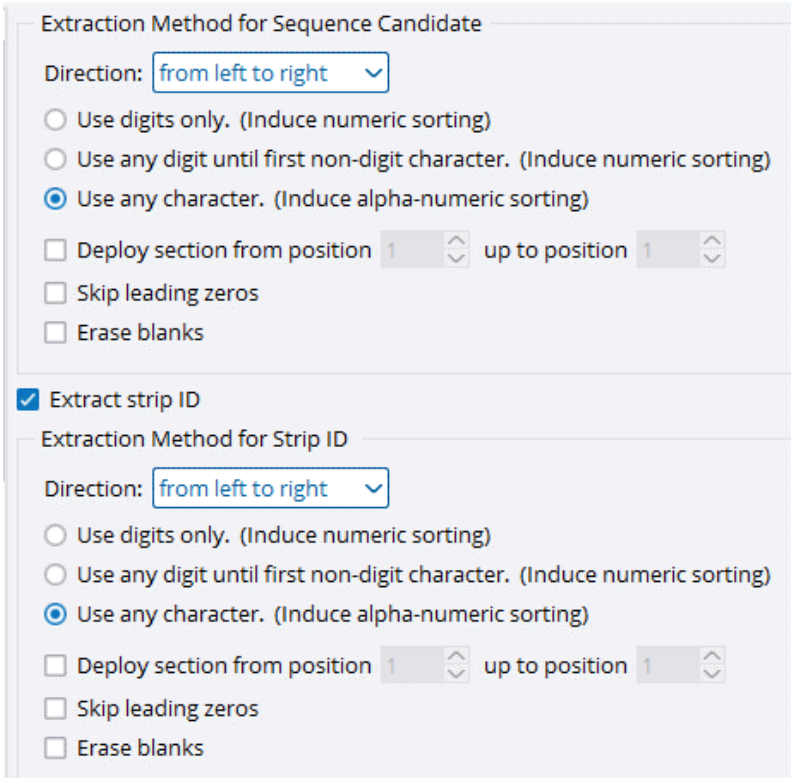
	
Improvement 13.2.2: Better Copy/Paste support in "Single Transformation"	When copying coordinates with spaces did not allow pasting in the User Interface. Examples: <*blank*>123456.123 or 123.4567<*blank*>
Improvement 13.2.2: Check about double strip definitions	If identical strip definitions with different IDs were defined in the project, MATCH-AT did not work. Now strip, photo or station elements are checked for duplicate assignments.

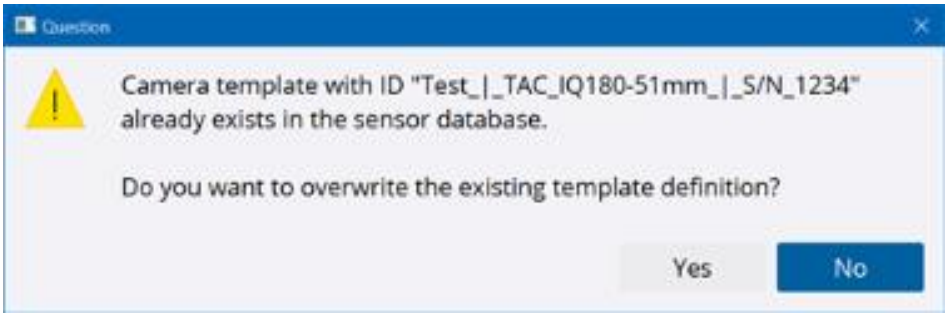
ID	Station IDs	Num	Crab Angle	Azimuth
01	01_0001,01_0002,01_0003,01_0004,01_0005,....,01_0009	9	0.0000	90.2189
1	01_0001,01_0002,01_0003,01_0004,01_0005,....,01_0009	9	0.0000	90.2189

Improvement 13.2.2: Compare Camera definition functionality	There are several corrections and enhancements for the Camera Comparison functionality in the Project Editor: • B1/B2 distortion parameters are now listed on the Camera Comparison page. • The highlight color of the sensor head information has been changed from dark blue to light blue for better readability.  • The Projects Editor's Camera Editor lists an index for the generated cameras. However, if cameras were removed, the numbering of the camera sets in the Camera Editor does not match the display in the "Compare Calibration Sets" output. Example: A camera was calibrated four times; the Camera Editor shows four subsets of the camera. Then the intermediate calibrations 2 and 3 are deleted. The Camera Editor now shows set 1 and set 2. If you now use "Compare Calibration sets" and compare both sets, the (original) number 4 stood for set 2. Now the display is identical.
Fix 13.2.2: Incorrect results for ICS coordinates systems using grid shift files	As of version 13.0, the datum grid shift (reference grid NTV2) were not taken into account in the transformation for the Inpho Coordinate Systems (ICS). When using the Trimble Coordinate Systems (TCS), the transformation worked correctly.
Fix 13.2.2: End of line recognition	Importing GNSS/IMU or EO data was not possible for files whose "end of line" definition did not include "Carriage Return" and "Line Feed". The data is recognized as being written in one line. Now it also works for files with only "Carriage Return" or only "Line Feed".

Restriction 13.2.2: Older IIQ image formats	The IIQ format of older PhaseOne cameras such as P45pro, P65pro, IQ160 or IQ180 is no longer supported. The Image Viewer shows these IIQ formats as black images. In the last versions of our software, it could even happen that the original IIQ image was destroyed when the image pyramids were created for the IQ180 sensor. That's fixed. With version 13.2.2, the Image Commander shows such IIQ images as grayed out. To continue working with our software, create TIFF images with CaptureOne and use them as input data.
Improvement 13.2.1: Updated TCS manager	The bundle installer includes an updated version of the Trimble Coordinate System Manager (Version 3.9.12)
Improvement 13.2.1: Added consistency check for coordinate systems	An additional check was introduced to ensure that all used coordinate systems in a project are based on the same coordinate system database (either ICS or TCS).
Improvement 13.2.1: Additional check when importing images	A message is prompted in case there is a mismatch for the imported points and measurements regarding the image IDs. Image IDs need to be the same, so that the point and measurements can be added to the correct images.
Improvement 13.2.1: Remove Orphans	The behaviour of "Select Orphans" and then "Delete Orphans" has been revised and made faster. The GNSS dialog now shows "Remove Orphans".
Fix 13.2.1: Crash of Project Editor	When the comment section of the camera included a hash "#" sign, the Project Editor crashed when saving the project. Opening the project was no more possible. Now the camera dialog opens a warning if when the hash sign is used and does not allow to close the dialog.
Fix 13.2.1: Image overview generation in a new output folder	Writing image overviews to a new output directory did not work properly when the Image Commander was used without a loaded project file: e.g. when the images were loaded via the *Add Files* dialog. In the new version the overview generation is now started in the new output directory.
Fix 13.2.1: ITEX warning message	A wrong *Itex* warning message was written to log files while generating image pyramids. In some cases this led to a crash of the software. Error message: *itex_select_color_priv* *==> Warning[79] : %s* *Error while setting the color*

Fix 13.2.1: Project Transformation - coordinate system naming	During Project Transformation the name of the CRS was not correctly written into the project file. The name must be unique, distinguishable, and descriptive.
Fix 13.2.1: TBC subscription license error	For customers using a TBC subscription license, it could happen that UASMaster did not receive a valid license. 
Fix 13.2.1: DJI Mini 2 XMP import of IMU failed	The IMU import failed due to a different tag being used in XMP header. Now the flight angles instead of the gimbal values (being represented with 0) are used for import.
Information 13.2: End of life "Classic Style" of GUI	Dear user be informed that version 13.2 will be the last version supporting "Classic Style" user interface.
Fix 13.2: Handling of strategy files	The problem that existing strategy files could not be copied or deleted has been fixed.
New Feature 13.1.1: Output definition in the Image Commander, Image Overview generation	This new feature makes it possible to keep original images separate from working copies. Optionally, the subdirectory structure of the original images can be retained. Example: Original images of a multi-head project are saved in a multi-head structure that separates the different camera heads (e.g. images\nadir, images\left, images\right, images\forward, images\backward). These images can be copied to a defined location with the option to compress the images. For the above definition and a setting of "preserve subdirectory level 1" the copied images will show the same directory structure. It is possible to define up to 4 subdirectories.
Improvement 13.1.1: Updated sensor database	The DJI Marvic 3 Enterprise sensor definition is added to the database.
Fix 13.1.1: Wrong entry for camera principal point	Setting up a project and defining the camera will automatically change the entry of the principal point displacement. It now works correctly for version 13.1.1.
Fix 13.1.1: Image Commander creates PAN images when using Vignetting	If pyramids of IIQ images were created in the Image Commander and vignetting was carried out directly afterwards (without closing the Image Commander), this resulted in PAN images. Now the RGB information is preserved.

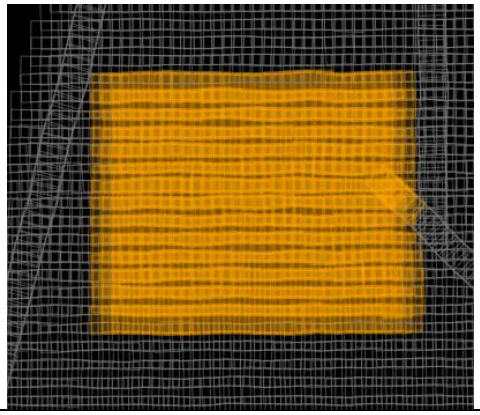
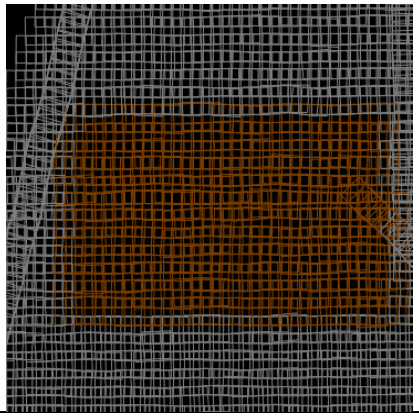
Information 13.1.1: Change of zone names in TCS	There are changes in the zone names of the Trimble Coordinates Systems database. The old names will not work for a couple of coordinate systems anymore and can cause issues with existing projects. Example: old: United States/State Plane 1983 new: United States/NAD83
New Feature 13.1: PhaseOne integration	The import of camera information and GNSS/IMU data from the EXIF header of IIQ images is implemented.
New Feature 13.1: PhaseOne raw format IIQ	Images in PhaseOne raw IIQ format can now be loaded in the Image Commander automatically. The extension is considered for import by directory or file.
New Feature 13.1: Support of new distortion model	A new distortion model is now supported within Inpho allowing corrections for symmetric radial (K1, K2, K3, ...), decentering (P1, P2, ...) and affinity (non-orthogonal, B1, B2) distortion. This format is for example used for calibrations made for PhaseOne sensors.
New Feature 13.1: Strip extraction from image ID	The image name or ID often includes already the strip ID. This information could be used to automatically extract the strip information during the project setup. 

Improvements 13.1: Overwriting of camera templates	Existing cameras that were stored in the camera database can now be updated. 
Improvement 13.1: New version of the Trimble Coordinate Systems (TCS)	The version 13.1 bundle installation implements the latest Trimble Coordinate System Manager version 3.9.11. The Trimble Coordinate System Manager is available on the download page for single component installation.
Fix 13.1: Import of "Object Points and Measurements"	Importing "Object Points and Measurements" from a project with an incomplete coordinate system definition into the target project leads to the fact that the faulty coordinate system is copied together with the object points. If now a coordinate system error is detected when importing "Object Point and Measurements" from a source project, a warning message is issued and only the image measurements are imported.
Fix 13.1: Image Viewer with single overview	The dropdown list showing the image overview levels was empty when only one overview level was available in the image. Now the available levels are visible.
Information 13.1: Update of project file format	The project file format (9.2.0) was updated with version 13.1. The project file entry shows now: $PROJECT 13.1.0 Please note that projects created with version 13.1 can no longer be opened in older versions. Older project file formats are updated when opening them in version 13.1.
Fix 13.0.2: Conflicting information of GNSS standard deviations	When reading the accuracy of the GNSS positions from the EXIF information (RTK solution), the standard deviations are correctly assigned to each position. However, the preset "Std.Dev." dialog showed a setting for navigation solution (10 m for X, Y and Z). Now the "Std.Dev." setting is adjusted to the type of GNSS solution and shows "0.100 m" for X, Y and Z for an RTK GNSS.

Fix 13.0.2: Image Commander – RadioMetrix – Global Options	The default settings for Background Checking of 16-bit images was wrong. Correcting the setting for “Minimum Value” and “Maximum Value” did not work. Now the correct default settings are displayed and used.
New Feature 13.0.1: Support of PhaseOne IIQ images	PhaseOne IIQ images are now supported in UASMaster for image import and pyramid generation
New Feature 13.0: Added Server multi-user support	Inpho applications are able to run multiple times in parallel on one machine and multiple users can use the applications on Server operating systems. Previous limitations to run an application only once were removed. User-defined settings are stored for each user separately in sub-folders of: C:\Users\<user name>\AppData\Local\Trimble\UASMaster <version>\ Default and Global Settings can be found in sub-folders of: **C:\ProgramData\Trimble\UASMaster <version>** Conflicts will occur in case multiple users process a project using the same folder location. Parallel access to the coordinate systems for editing is limited. One license can be used for one process only.

Georeferencing

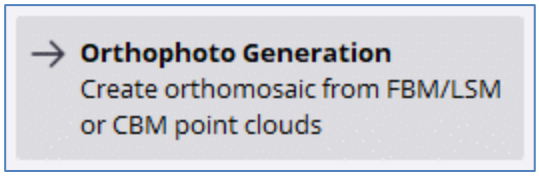
Change	Description
Fix 13.2.2: Crash while georeferencing report generation	Changing an LSR project coordinate system for a completed project and then generating the "Report" file caused the software to crash. The reason for this was that the coordinate system entry was different in the project file and the statistics file. Now the Report file shows the project coordinate system defined in the project file. The Report informs that the definitions differ. Example: Contradiction in coordinate system: * project file=[Germany (Bessel) / Germany DHDN 09 (Zone 3) [m]] * statistic file=[Local Space Rectangular (LSR)].

Improvement 13.2.1: Added Geoid information to report	The PDF report shows now the used geoid file additionally to the defined coordinate system.
Fix 13.2.1: Crash Photo Measurement Tool	Working in big projects over a longer period of time and/or while accessing the application via a remote control could lead to crashes.
Fix 13.2.1: Page number in Multi-Aerial View	This issue occurred in the Multi-Aerial View of the Photo Measurement tool. The displayed page number in the upper right corner does now start at 1 instead of 0.
Improvement 13.1: Updated PDF report file	The version of the statistics file has beem updated. The PDF report file now shows the new “affinity” coefficients in the camera description.
Improvement 13.1: Selected images are highlighted more clearly	Version 13.1  Version 13.0 
New Feature 13.0: Change point type in UASMaster Measure	It is now possible to select multiple points and change their point type at the same time. In addition, changing the point type is now also possible when measurement mode is activated.
Improvement 13.0: Graphical performance in UAS Measure	The graphical performance of UAS Measure is optimized for version 13.
Improvement 13.0: Radiometric image adjustment in PMT	The available temporary image enhancement option in the Photo Measurement Tool has been enhanced so that it can be used in the multi-viewers on all images simultaneously. So far, users had to adjust image by image. Now the corrections can be applied globally to a specific view. The changes are temporarily and are reset as soon as the view changes.

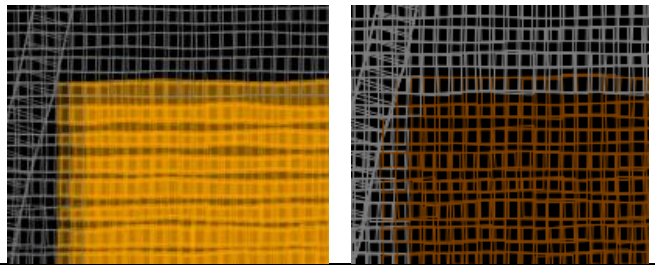
Fix 13.0: Non-successful workflow in UASMaster georeferencing	If the statistic file (.sta) did not provide interior orientation information, post-processing without camera calibration using (RTK) GNSS did not work (but works without GNSS). The report file showed empty frames, in which the tie point distribution, the tie point count and tie point accuracy charts are normally displayed. Now the missing camera information is read from the project file to complete the required data.
Information 13.0: Strategies	The predefined strategies can no longer be edited. If other settings should be used, a new strategy must be created.

Surface and Orthophoto Generation

Change	Description
Fix 13.2.2: Model determination for the coloring of the point cloud	For the “FBM/LSM” and “CBM” surface generation the central image model for the corresponding point cloud point is used for coloring the point cloud. An error occurred in the assignment, which has now been corrected. In very rare cases it happened that this process crashed.
New Feature 13.2.1: Mesh formats in a single file	It is now possible to generate single non-LOD Mesh files. The available options in the user interface are: tiled obj, single obj, tiled dae, single dae
Improvement 13.2.1: Mesh output folder	The results in the folder "Meshes" are now moved instead of copied. It saves disk space and time.
Improvement 13.2.1: Optimized automatic 3D borderline	The internal automatic borderline generation was optimized, especially when using oblique images.
Fix 13.2.1: SGM crash with GPU processing	The application crashed because of an automatic restart of the Graphics Processing Unit (GPU) driver. The Watch Dog Timer is a tool that ensures the Operating System (OS) doesn’t lose contact with the GPU. Whenever the GPU doesn't report back to the OS within a specified time, the OS will restart the GPU driver automatically. If this happens the running processes at the graphics board are interrupted and the applications crashes. Therefore, we implemented a delayed restart of the GPU driver by updating the registry entries which will automatically be carried out by installing the new software version. A closer description can be found in the Installation manual (ReferenceManual_Installation_(English)_13).

Fix 13.2.1: UAS Orthophoto generation fails	Orthophoto generation failed if the working directory had the "&" character in the folder path.
Fix 13.2.1: Point cloud export with survey feet	When exporting vector data from the Point Cloud Manager, the unit “survey feet” could not be selected as unit for the export. This has been fixed.
Improvement 13.2: More understandable GUI	UAS Edit’s “Point Cloud Manager” GUI now clarifies that Orthophoto Generation should only be performed for FBM/LSM and CBM point clouds. 
New Feature 13.2: Generation of non-LOD meshes as single file	The “uas.status” file now provides an option “-singleMesh” generating non-LOD meshes (Wavefront OBJ, Digital Asset Exchange (COLLADA)) as a single file (no tiling).
New Feature 13.2: Selectable network image directory	With the new command line option “-networkImgDir” in the uas.status file it is possible to define an individual image directory at any location to which the system has access.
Improvement 13.2: New True Ortho approach	The new True Ortho approach will significantly improve the visual consistency by reducing artefacts caused by moving objects like cars, (water) reflections, changing light conditions, etc.
Improvement 13.2: Quality of building edges	The SGM_2.5D workflow will show an improved quality of the building edges, especially in the True Orthos.
Improvement 13.2: Reduction of runtime and memory requirements	The imaging and network data flow has been significantly redesigned to reduce runtime and memory requirements.
Improvement 13.2: Optimized precision writing .las/.laz files	The precision used when writing .las/.laz files has been optimized, reducing the size of certain .laz format results.

Improvement 13.2: Unique material names in OBJ mesh	Material names (material optical properties, e.g. specularity, transparency, texturing) in OBJ mesh results are now unique for better compatibility with other software.
Improvement 13.2: Reduced peak memory usage	In the analysis step, the peak memory usage was reduced.
Improvement 13.2: Performance	The new version offers various other performance improvements.
Fix 13.2: Error for projects with disabled distortion	The problem for projects with disabled distortion is fixed.
Fix 13.2: Holes in the mesh	Fixed some issues that could lead to defects, like holes in the mesh results in certain scenarios.
Fix 13.2: Area of interest	Fixed an issue where estimating the automatic area of interest during the analysis step could take a long time in certain corner cases.
Fix 13.2: Suboptimal stereo models	Fixed an issue that could lead to a suboptimal stereo model selection and thus suboptimal results for some orientations.
Fix 13.2: "&" character in working directory path	Running the orthophoto generation failed if the working directory consists of an "&" character in folder path.
Fix 13.1.1: Ortho from Point Cloud produces corrupted mosaic	Generating the mosaic with "Ortho from Point Cloud" resulted in a corrupted mosaic regardless of the method the used point cloud was generated. That's fixed.
New Feature 13.1: External definition of DEM area	The DEM area can be defined using an available morphological file in WNP or SHP or DXF format. The path of the file has to be defined in the UAS.status file using the parameter: **-morph2area "*file path*"** (the path must be in double quotes) The UAS.status file must be part of the "bin" directory.

Improvement 13.1: Selected images are highlighted more clearly	Version 13.1 Version 13.0 
Improvement 13.1: SGM workflow	● The runtime for multiple components is improved, e.g. when starting large projects. ● A new mesh format “local_obj” is implemented. The new format uses single precision (float) coordinates so it is compatible with applications that do not support double precision coordinates. A custom offset can be specified for the conversion to local coordinates when using the Mesh Converter. ● The 3D mesh topology is improved by reducing artifacts. ● The new version is resilient against slowdowns caused by anti-virus software interference when exporting SLPK meshes. ● The distortion direction when using USGS camera standard works now correctly. ● The input coordinate systems are now checked earlier and the compatibility of the georeferencing of the results with other applications was improved. ● For some edge cases, a problem could lead to bright linear artifacts in the true ortho results is fixed. ● An issue that could lead to exits without error message is fixed. ● A rare segmentation fault during mesh processing is fixed. ● An issue is fixed where GPU (CUDA) processing was not working when multiple CUDA GPUs are present but not all are supported. ● A problem where the georeferencing information in the lod_dae and lod_obj mesh results was missing is fixed. ● In rare cases the edge quality in the DSM results was reduced. That’s fixed.

<table>
<tr><td>Fix 13.0.1: “Ortho from point cloud”</td><td>In version 13.0.0 the function Ortho from point cloud” gives strange looking results. The reason was an incorrect assignment of the color channels during the refactoring of the internal cache.</td></tr>
<tr><td>Improvement: 13.0: Performance improvement during mosaicking</td><td>The processing time of the mosaicking step could be improved considerably, while maintaining the proven quality and accuracy. This was achievable based on a different multi-threading and cache handling. Please note that the performance improvement can vary based on project layout, computer hardware and project size.
<table>
<tr><th>Project Details</th><th>Version</th><th>Overall Proc. Time [hh:mm:ss]</th><th>Improvement</th></tr>
<tr><td rowspan="2">10978 images
Default Parameters</td><td>V12.2</td><td>2:08:11</td><td>100%</td></tr>
<tr><td>V13.0</td><td>1:34:38</td><td>73%</td></tr>
</table></td></tr>
<tr><td>Fix 13.0: Fixed memory issue during mosaicking step</td><td>A memory issue being caused from idle threads has been fixed in mosaicking step. This contributes to the improved performance.</td></tr>
<tr><td>Change 13.0: Line measurement, Follow Up Option: Reinterpolate along line</td><td>The option “Reinterpolate along line” can be used for break lines, break-border lines and form lines. For border lines the option can be selected but is not applied. A message occurs in the output log window depending on the selected active layer.

In previous versions, the line type break-border line was not selectable as layer type.</td></tr>
<tr><td>Information 13.0: Strategies</td><td>The predefined strategies can no longer be edited. If other settings should be used, a new strategy must be created.</td></tr>
</table>

Information

For more information, contact your Trimble Inpho Support Team at imaging_support@trimble.com.
The software is available for download on
https://geospatial.trimble.com/products-and-solutions/trimble-inpho-uasmaster