- when it has to be **right**

Leica Geosystems

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Release Notes

Product	Leica Infinity
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Leica Infinity v4.2.1

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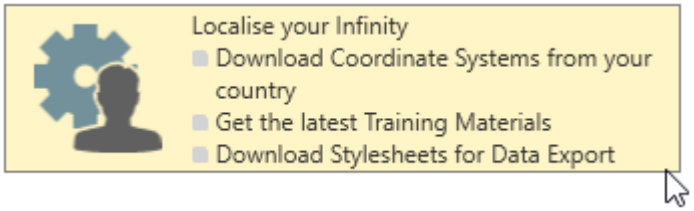
Table of Contents

1 WELCOME TO INFINITY V4.2.1

LEICA INFINITY V4.2.1	Please read the following chapters carefully to learn more about what is new.
OVERVIEW WHAT'S NEW	• Tunnel Inspection tool to create and compare tunnel profiles from point clouds along a tunnel feature • Support for Leica GS05 GNSS Smart Antenna • Generate an orthophoto directly after a stored image group orientation • Updated CLM package • Quality improvements and bug fixes
GETTING STARTED – HELP & SUPPORT	Getting started, users have access to information and useful data including coordinate systems, stylesheets, tutorials and sample data, all available from the *Localisation Tool*. From the ***Help*** menu, click on the ***Localise your Infinity*** button to access this data and the tutorials to help you get started with Infinity. 
ORDERING INFINITY	Infinity has flexible ordering options. Users can purchase a one-time permanent perpetual license or can now also buy into a subscription plan. On top of our existing Leica Infinity – Basic package, users can also purchase additional packages depending on their needs. One of them now covers the new Point Cloud Registration option. All packages and their features can be found on the Leica Infinity data sheet. Contact your local Leica representative to discuss what options are best for meeting your project and workflow needs.
YOUTUBE VIDEOS	Check the Leica Infinity YouTube page to see our playlist of videos about new features and how-to-videos.

2 INSTALLATION DETAILS

INSTALLATION INFORMATION

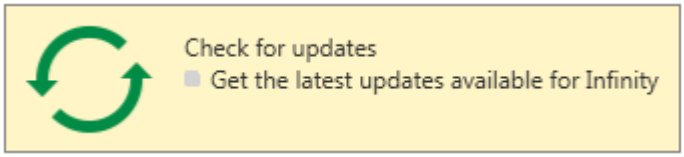
Leica Infinity v4.2.1	Build	Maintenance End Date
	45798	1st July 2024
Leica Infinity is available as a Windows 64bit only application		

With an active CCP or Leica Infinity subscription license, users will be able to update to this new version. Confirm that your Maintenance End Date is on or after the date listed above before installation.

New users can download the latest version from the Leica Geosystems myWorld support website.

CHECK FOR UPDATES

From *Help & About* choose ***Check for updates***. When a new version is available you will be notified that the update can be downloaded from myWorld.



OPERATING SYSTEM REQUIREMENTS

The following Microsoft® Windows™ operating system editions are supported:

- Windows 10
- Windows 11

Note: you must have administrative privileges on your computer to successfully install Leica Infinity.

MINIMUM HARDWARE

- Display: 1024 * 768 px
- Input: keyboard and mouse with wheel
- Processor: multi-core 2.4 GHz
- RAM: 8 GB
- Disk storage: 100 GB
- Graphics: DirectX9 compatible

RECOMMENDED HARDWARE

- Dual Display: 1920 * 1280 px
- Input: keyboard and mouse with wheel
- Processor: multi-core 3.5 GHz or more
- RAM: 32 GB or more
- Disk storage: SSD of 1 TB or more
- Graphics: DirectX11 compatible, 8 GB memory or more, CUDA capable

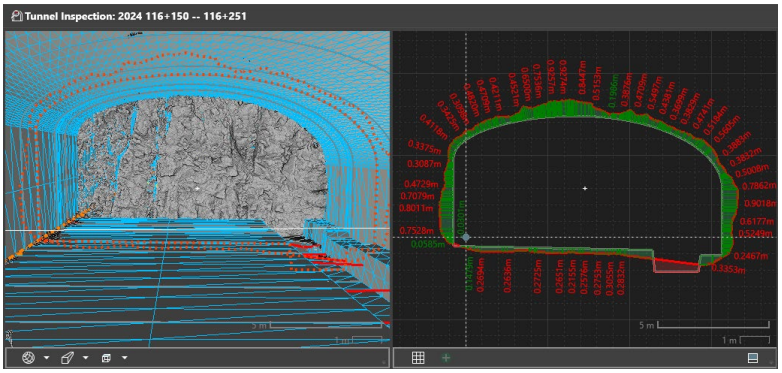
RECOMMENDED HARDWARE FOR IMAGE PROCESSING, POINT CLOUD REGISTRATION

- Dual Display: 1920 * 1280 px
- Input: keyboard and mouse with wheel
- Processor: 8 Core 3.5 GHz or more
- RAM: 64 GB or more, XMP enabled
- Disk storage: SSD of 2TB or more
- Graphics: DirectX11 compatible, 16 GB memory or more, CUDA capable

3 TUNNEL INSPECTION – COMPARE PROFILES FROM POINT CLOUDS AND DESIGN DATA

New for tunnel construction workflows, create profiles from point clouds and compare to a tunnel design is now available using the Tunnel Inspection tool.

The generated profiles are stored as part of a Tunnel Inspection object and can be viewed in cross-section and 3D views. The inspection results include deviations (profile offsets), volumes and user defined tolerance statistics. The results can be exported to CAD or saved to a PDF as a printable report.



Create Tunnel Inspection

The Create Tunnel Inspection lets you compare point cloud data to a tunnel design material surface.

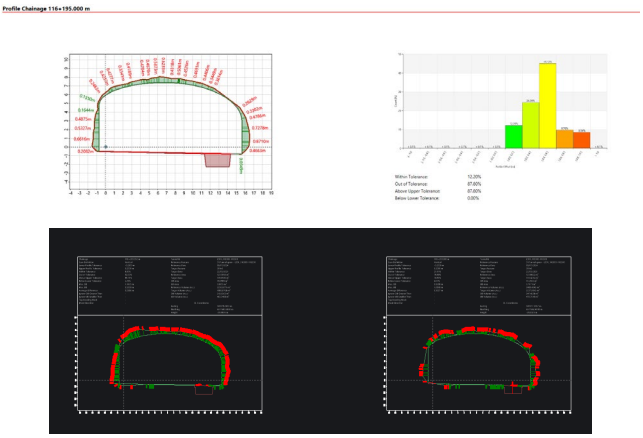
The length of inspection is configured by setting the start and end chainage such as to generate reports between a tunnel segment.

Set the profile extraction interval to consider the number of profiles to be created, including the point of interests along the alignment.

Use point cloud slicing settings to best consider the point cloud data to be used for profile generation.

Export Tunnel Inspection Results

Complete the Tunnel Inspection by saving results in two sharable formats. Share the profile with over under information as a PDF or CAD format.



4 General Application Improvements and Fixes

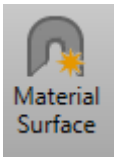
GNSS *GS05 Smart Antenna*	Tilt all day long using the GS05 Smart Antenna with tilt compensation and use Infinity for all data management and reporting needs including the post processing of static and kinematic observation campaigns.
Imaging *Create DSM & Orthophoto*	Now its possible to use the sparse point cloud (SPC) from a stored orientation of an image group to generate a DSM and Orthophoto. This is helpful to produce a georeferenced overview of the project site in a short period of time. Note, using the dense point cloud (DPC) will produce the best orthophoto results and does take longer to process.
Export *BricsCAD DWG*	Simplify drafting workflows in BricsCAD v25 by using this DWG export to include additional measure and feature information. In BricsCAD use LEICACONVERT to create civil objects that include information such as code, attributes and point quality information to quickly and easily generate CAD drafting deliverables.
3D View	Navigating in projects that have high volume of data with point clouds, surfaces, orthophotos and CAD models is improved making it easier to select, rotate and zoom throughout the project data.
3D view	Addressed the issue for displaying the kinematic track if some positions are not converted to grid after import, such as from a UAV.
Features	Addressed the issue of creating a line feature from an existing point, the point code style settings were not being applied for the line style.
Features	Addressed the issue when changing units in the project, the export settings were not being converted for Block Scaling.
TPS	Fixed an issue when check points were not visible from station setups that only have check point measurements.
TPS	Deleted points are now not available when using the Update Setups routine.
Surfaces	Fixed an issue when creating a Comparison Map using Horizontal Reference Plane the height was not being used from a selected height only point.
Services	Added ability to set the EPSG code to be used with a WMS service

5 WHAT IS NEW V4.2

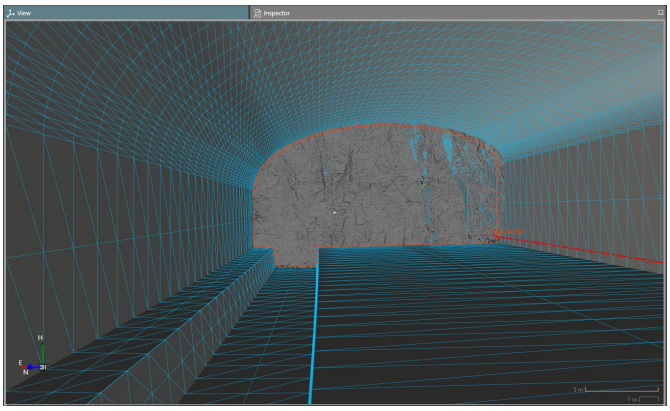
- Create Material Surfaces from Tunnel Layers
- Point Cloud Classification
- Use Image Processing Templates with defined settings
- Create a quick-stitch image from a UAV drone flight
- Performance improvements working with large surfaces
- Project Features on to surfaces
- Extract B&W Targets after importing scanner data
- Match control points by geometry for scanner registration
- Improve display of adjustment results including display legend
- Undo/Redo includes a list of last operations
- Display status for user operations
- Support the Zeno Mobile 2.0 new Project structure
- Many quality improvements and bug fixes

6 INFRASTRUCTURE MODULE

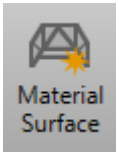
CREATE TUNNEL MATERIAL SURFACE



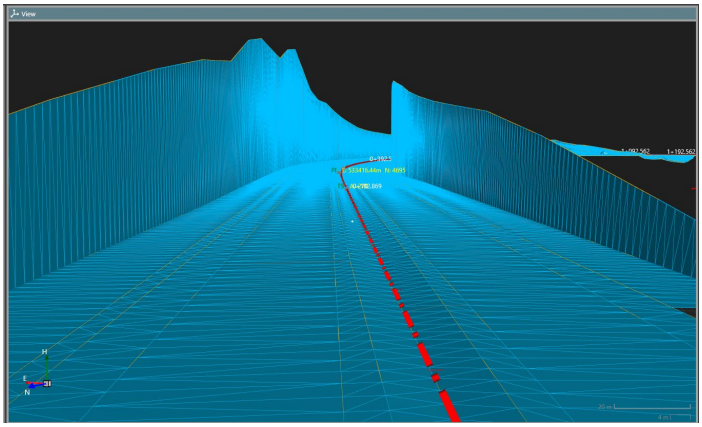
The ability to create material surfaces for a tunnel feature has been added. When a tunnel has more than one layer, it is possible to create material surfaces for each layer. By selecting the tunnel all layers will be created. Or choose a single layer to create a single material surface. The material surfaces can be shared with field software for scan, stake or check applications.



ROAD MATERIAL SURFACE



Creating material surfaces from road features includes performance improvements. Additionally, surfaces are now resolving cross slopes to a maximum vertical angle up or down from the last road element.

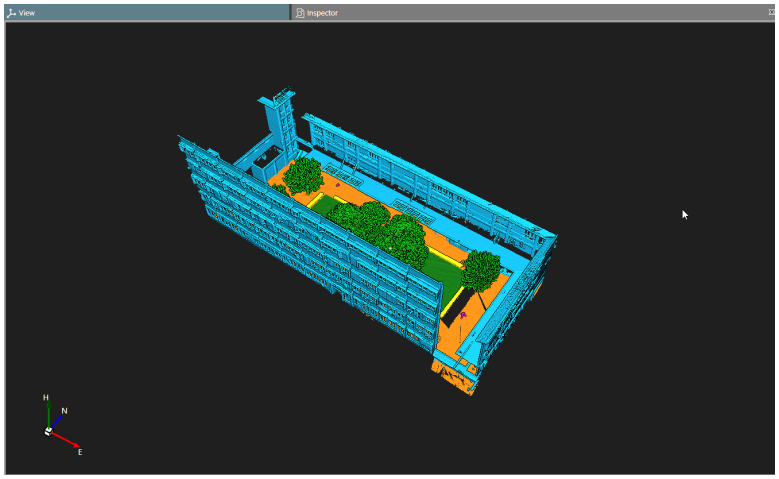


7 Point Cloud Registration Option

Register Point Clouds	It is now possible to register point clouds that are imported from data sources other than a scan sensor, such as PTS or e57. Use registration to combine different point clouds from no Leica scan sensors or point clouds from third-party image processing software. Note: it is not possible to use Registration module to register image-processed point clouds. When a dense point cloud should be fitting to an existing point cloud the DPC (dense point cloud) processed from images must use common ground control points or scan targets to optimize the image group.
Extract Black & White Targets	Added ability to manually extract Black&White targets in the project. This supports the case when, on import, the automatic extraction of targets has not worked on all targets.
Apply Control by Geometry	Added option to automatically apply control points to targets by comparing the control points geometry with register targets geometry.
Auto Rename Target	When a target is renamed, all links using that target will also be renamed.
Scan Setup Properties	The properties for a scan setup now include information on the number of scan points and the sensor that captured the scan, including the serial number.

8 Point Clouds Module

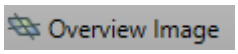
Point Cloud Classification 	Infinity projects now support point cloud classification. Users can assign class layers to a point cloud. Choose Manual Classification to open a panel that enables assigning a class layer to the selected area of the point cloud. Importing and exporting point clouds with classes are supported when using one of these formats: LAS LAZ PLY.



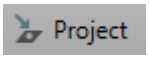
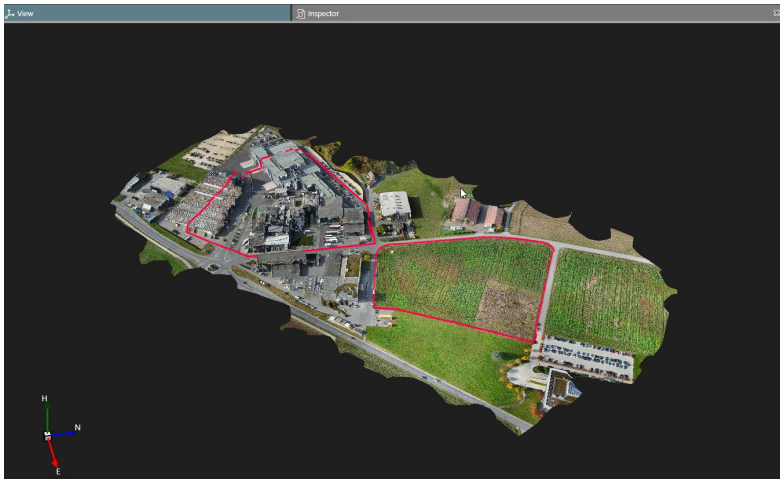
Classification Tables 	Import or create a classification table that can be used to assign to a point cloud. By default, the standard LAS 1.4 classification table is assigned when creating a new project.

9 Imaging Module

Image Processing Templates 	Use Image Processing templates that include preferred settings for processing different image group acquisitions. Choose between 4 default templates which include suggested settings that support the type of image acquisition intended to be processed. Users can also create their own processing templates: Simply set the preferred settings for processing, and within the Image Processing settings window, select New Template from the template list.
Processing Settings	Added ability to choose different resolution settings for the Orientation step and the Dense Point Cloud step. Using different resolution settings can be used to reduce processing time.
Processing Settings 	Added the option to enable or disable Compute Position Covariance when using Precise Mode for processing orientation of an image group. When this setting is used, the bundle adjustment is computing the Qxx matrix for each image pose position. This results in longer processing times, and improved data confidence applicable for filtering the point cloud using the Sigma Threshold setting. Precise Orientation lets users choose the more rigorous orientation processing option, reducing processing time by not using this setting. Note: Using Precise Mode for Orientation is recommended for GS18 I and hand-held terrestrial image acquisitions as well aerial drone surveys with low flight height and smaller gigapixel sizes. Using Fast Mode is recommended for general data acquisition flights and image groups with a large number of images.
Create Dense Point from clean SPC	Users can select that sparse point cloud region that should be used to generate the dense point cloud. By selecting areas of the SPC and hiding points as desired, the DPC will be created from a reduced region. To reduce the SPC can be used to reduce processing time.

Quick Stitch Overview Image 	A new option is available for generating an overview image that is quick to process and enables users to interpret project data quickly. This overview image is similar to the ortho photo, but it is not truly rectified and will contain artefacts. Note: To achieve the best results, it is recommended to first process orientation and verify the data results of the image group before processing the overview image.

10 Features Module

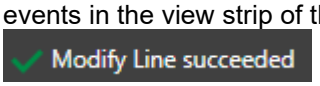
Project Feature 	Added the ability to select a line or area feature to project onto a surface, point cloud or ortho image (including any base map image). For example, importing a DXF file that includes a 2D polyline defining a boundary of a work site, but it is in 2D coordinates. Use this option to project the line on a surface feature in order to constrain the surface boundary to best compute a volume. 

11 Surfaces Module

Performance Improvements	Working with large surfaces has been improved significantly. Users who generate digital surface models from UAV data and thus working with large surfaces, will find it much quicker to select and work with surfaces including operations to clean and compute differences between the different surfaces.

12 General Application Improvements and Fixes

Network Adjustments	Added a scalebar in the graphic view to indicate the display of error ellipse and point reliability boxes.
Network Adjustments	Added a table in the report for coordinate residuals displayed N,E, Ortho Height
Network Adjustments	Added a table with a list of observations being excluded from the adjustment
Network Adjustments	Fixed the issue that when deleting the stored adjustment results the adjusted coordinates were not being removed

Undo Redo	Users can see the last 10 operations that were completed in the application and can select which point to perform the undo
User Operations	Users can now see the operation they have performed on processing or editing events in the view strip of the application 
Import Zeno Projects	Added improved support for the latest Zeno Mobile application project files
Export BricsCAD DWG	Added the option to export project data in DWG format that includes additional feature information that can be visualized in BricsCAD. This improved DWG data flow will be available in the BricsCAD 2025 release and will include detailed steps that describe how to optimize this workflow.
Coordinate Systems	Allow adding a height shift to the Compute Quick Ground coordinate system method.
Total Station Prisms	Extended the default targets list to include the monitoring prisms GMP104, GPR112 and GMP004
Cogo Report	Added information to indicate for inverse measurements which height mode is shown in the report – Grid, Ground, Ellipsoidal.