

# Polaris ATLAScan Software



The Polaris **ATLAScan** software suite is a field-proven, Windows-based workflow platform that enables step-by-step operation for any 3D laser scanning survey, from planning the survey to importing field data to generating final deliverables.

## ATLAScan:

- » Manages all data associated with a scan project, including point clouds, imagery, sensor data, control points and coordinate conversions, as well as deliverables such as meshes, 3D models, primitives and measurements.
- » Incorporates high-end functionalities like automatic target-free registration, bundle adjustment, automatic target detection and matching, advanced georeferencing workflows, primitive fitting and more.
- » Minimizes processing steps and optimizes functionality, using wizards and other advanced tools to help the user shorten processing times and improve productivity.

## ATLAScan's packages

<b>Works</b>	The basic package, bundled with every Polaris scanner, includes project planning, remote Polaris control, point cloud processing, and advanced registration and georeferencing.
<b>WorksPro</b>	Provides higher-level deliverables such as feature extraction, meshing and 3D modeling, in addition to all the functions of Works.
<b>Photo</b>	Enables manipulation of external cameras and integration of imagery onto the point cloud, in addition to all the functions of WorksPro.
<b>Mobile</b>	Supports the use of Polaris as a mobile system in combination with a GNSS/INS system, in addition to all the functions of the main package.

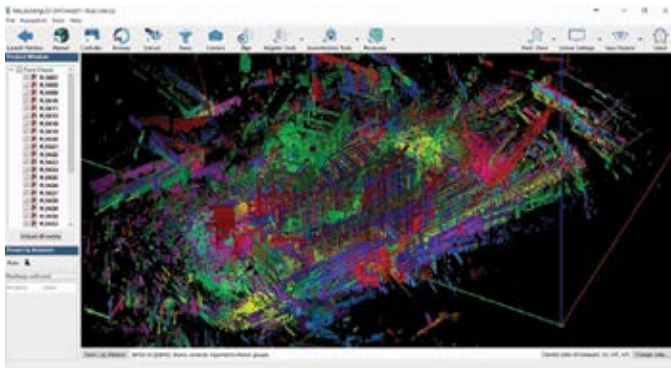
## ATLAScan's modules

<b>Plan</b>	Allows the user to plan a 3D scanning survey at the office that a less-experienced operator can automatically execute in the field.
<b>Control</b>	Remotely controls a Polaris connected via wired (Ethernet) or wireless connection. Features all options available through the on-board interface of the Polaris, as well as more advanced capabilities. Remote operation is particularly useful when using the Polaris in Stop&Go setups where the on-board interface is not accessible, but can be used for any setup at the convenience of the operator. Its complete functionality is available in the basic Works package.
<b>Process</b>	Provides a wizard-based step-by-step workflow to import, pre-process, align and georeference point cloud data and camera imagery. Features powerful, automatic, target-free pre-registration and bundle adjustment algorithms and various versatile georeferencing workflows. Its complete functionality is available in the basic Works package.
<b>Extract</b>	Features several post-processing and analyzing tools to extract information and deliverables from point cloud datasets. Includes feature extraction, meshing, 3D modeling, classification, vegetation removal, advanced point cloud colorization, external camera imagery calibration and draping, orthophoto creation, measurements, area and volume calculations, inspection and tunneling tools and more. The exact tools available depend on the ATLAScan package.

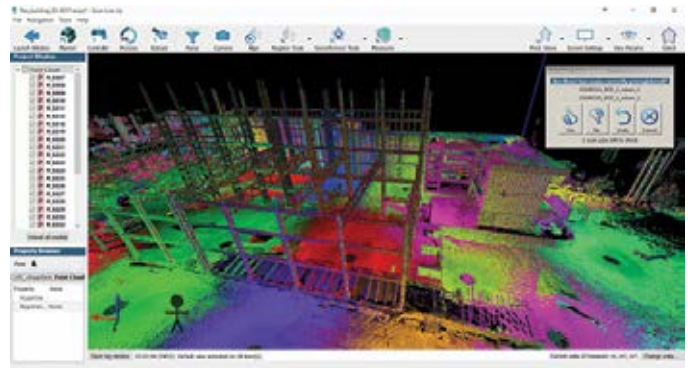
# Polaris ATLAScan Software - Key Features

## Target-free automatic alignment

A powerful pre-registration algorithm provides the capability to register point clouds without any reference from the field whatsoever: No targets, no coordinates, and no tie-points are needed<sup>5</sup>. Intermediate evaluation of the result by the user is optional, allowing for a reliable alignment solution even for very large datasets consisting of hundreds of scans with minimal user intervention.



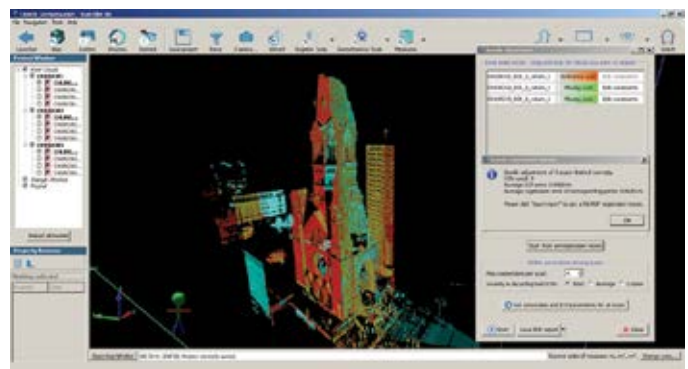
Point cloud before alignment.



Point cloud aligned automatically using only data from the Polaris compass, inclinometer, and GNSS.

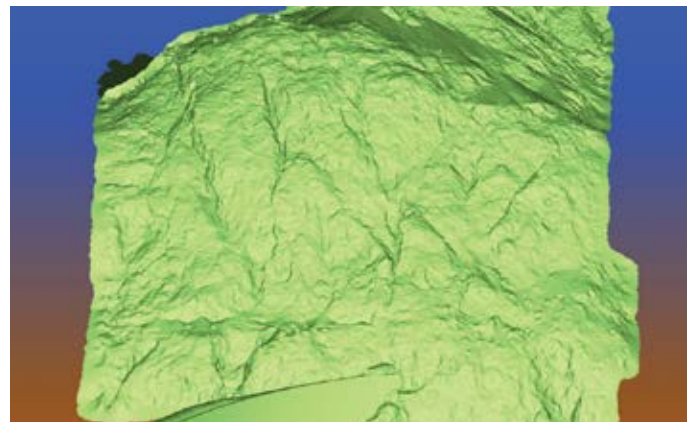
## Bundle adjustment

Performs the final alignment of a group of connected and overlapping scans using an advanced bundle adjustment algorithm, thus ensuring the best possible combined solution, even for very large datasets with many connecting scans.



## Vegetation classification and removal

ATLAScan's powerful filtering and classification algorithms use its multiple-return recording capability to automatically classify and remove vegetation, resulting in clean object surfaces for further processing and analysis.



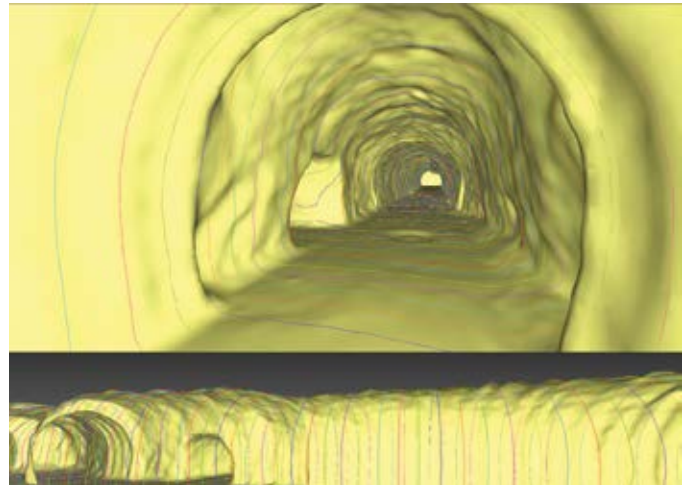
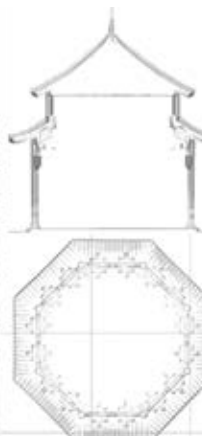
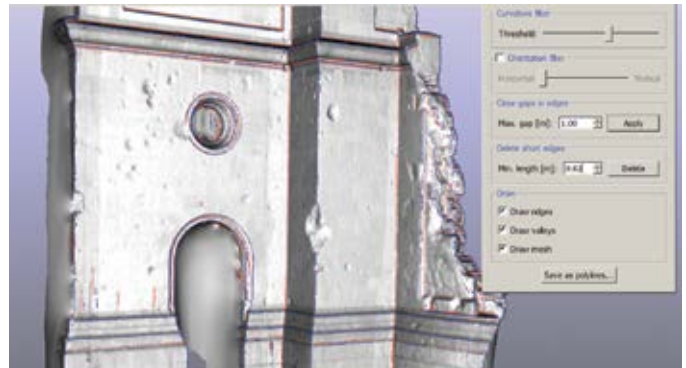
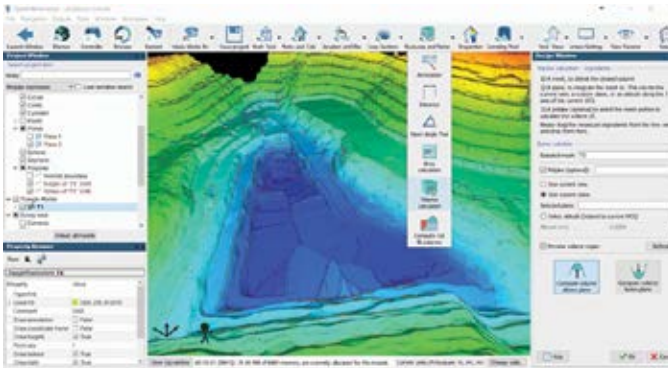
# Polaris ATLAScan Software - Key Features

## Import and work with any point cloud at no extra cost

ATLAScan is not limited to Polaris data, but can import point cloud data from any sensor in the market, from handheld to long range scanners or even UAVs, and combine it all in a single project. This makes it a universal and complete point cloud processing solution for every user's needs. ATLAScan can import PTS, LAS, TXT, E57, CSV, ASC, SCAN, and PLY point cloud formats, as well as 3DS, TXT, DAE, OBJ, DXF, PLY, PLY, IFC, STL, and WRL mesh model formats.

## Exporting final deliverables

ATLAScan brings much more than accurate alignment and georeferencing of point clouds. Users can transform the raw data into real products ready for delivery, including terrain and 3D meshes, contours, sections, area and volume calculations, change detection reports, ortho-images, videos, automatic line feature extractions<sup>6</sup> and more. Deliverables are available for export in a wide range of commonly used digital formats for point clouds, meshes and CAD objects.



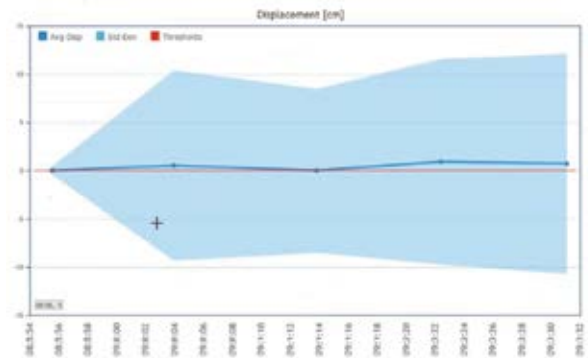
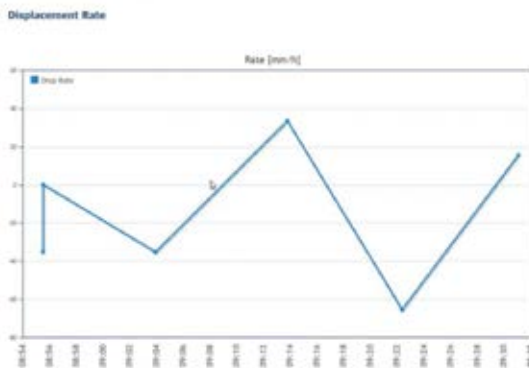
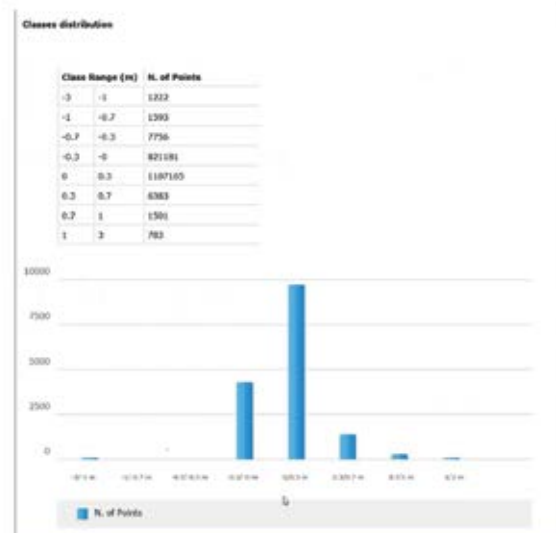
## Permanent license and viewer mode

ATLAScan comes with a perpetual license, meaning no surprises or extra charges for renewals. Furthermore, the software can run without a license in viewer mode to view already processed ATLAScan projects.

# Polaris ATLAScan Software - Key Features

## ATLAScan Monitoring Solution

The optional ATLAScan Monitoring Solution is a complete solution for continuous, real-time monitoring of mines, landslides, glaciers and any other deforming surface of critical importance. This web-based application remotely controls the Polaris, schedules its continuous operation, and processes and compares the data in real time. The user can define multiple change thresholds for the data, each with their own alarm level, so that ATLAScan triggers the appropriate alarm if the data crosses a threshold.



## Training and Support

Best-in-class training material and programs are available to Polaris users, focusing not only on the hardware and software but also on surveying strategies and advanced workflows to prepare our clients for real-world applications. Teledyne Optech's reputable technical support service is likewise prepared to promptly address our clients' requirements and needs.

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