## Feature List

### Inputs
- **Aerial — nadir & oblique — and terrestrial imagery**
  - Process images taken from any angle from, any aerial or terrestrial, manned or unmanned platform

- **Video (mp4 or avi format)**
  - Automatically extracts still frames from videos to create a project

- **Any camera (compact, DSLR, thermal, multispectral, fisheye, 360°, large-frame, etc.) images in .jpg or .tiff**
  - Use images acquired with any camera, from small to large frames, from consumer-grade to highly specialized cameras (large frame add-on required for images over 55 MP)

- **Multi-camera support in the same project**
  - Create a project using images from different cameras and process them together

- **RTK/PPK + IMU data support**
  - Allows faster and more robust calibration when using the Accurate Geolocation Pipeline

- **Camera rig support**
  - Process images using known rig relatives from multiple synchronized cameras

- **Ground control point edit and import**
  - Import and edit ground control points to improve the absolute accuracy of your project

- **Known or custom reference coordinate system support in imperial or metric units**
  - Select EPSG code from known coordinate systems or define your own local system

- **Camera exterior orientation support**
  - Optimize camera exterior orientation parameters starting from GPS and IMU input parameters

- **External point cloud import**
  - Import point clouds from different sources, such as LiDAR, to generate DSMs & orthomosaics

### Processing
- **Processing templates**
  - Automatic processing and generation of outputs by using standard or customized templates

- **Rapid Check with Quality Report**
  - Rapid processing template for a quick dataset-check while still on site

- **Camera self-calibration**
  - Optimize internal camera parameters, such as focal length, principal point of autocollimation and lens distortions

- **Rolling shutter effect correction**
  - Correct the warp of images taken with rolling shutter cameras (like GoPro, DJI Phantoms, etc.) to maintain accuracy even when flying fast and low

- **Automatic Aerial Triangulation (AAT) and Bundle Block Adjustment (BBA)**
  - Process automatically with or without known camera exterior orientations: (x, y, z, w, f, k)

- **Automatic point cloud densification**
  - Produce a dense and detailed 3D point cloud, which can be used as a basis for DSM and 3D mesh

- **Automatic point cloud filtering & smoothing**
  - Use presets for point cloud filtering and smoothing options

- **Machine-learning point cloud classification**
  - Automatically classify the RGB dense point cloud into five groups: ground road surfaces, high vegetation, buildings and human-made objects

- **Automatic DTM/DEM extraction**
  - Remove above-ground objects from DSM and create a bare-Earth model

- **Automatic brightness and color correction**
  - Compensate automatically for change of brightness, luminosity and color balancing of images

- **Quality Report**
  - Assess the accuracy and quality of projects

- **Project merging and splitting**
  - Combine multiple projects into one or split large projects into several for more efficient processing

- **Project area definition**
  - Import (.shp) or draw specific areas to faster generate results inside specific boundaries

- **Custom number of keypoints**
  - Set the number of keypoints to filter noise or speed up processing

- **Multiprocessor CPU + GPU support**
  - Increase the processing speed by leveraging the power of CPU cores and threads, as well as GPUs

- **Radiometric processing and calibration**
  - Calibrate and correct the image image reflectance, taking the illumination and sensor influence into consideration

### RayCloud Editor
- **Project visualization**
  - Assess quality of optimized camera positions, 3D point cloud and mesh

- **Navigation modes**
  - View 3D point cloud and mesh in standard, trackball or first person viewing modes

- **Scale Constraint**
  - Accurately scale projects with no or imprecise geolocation by defining one/multiple distances

- **Orientation Constraint**
  - Orientate objects with no or imprecise geolocation by defining directions of one/multiple axes

- **Ground control point (GCP) / Manual tie point (MTP) editing**
  - Annotate and edit 2D and 3D GCPs, check points, and MTPs with the highest accuracy, using both original images and 3D information at the same time

- **Ellipsoid error visualization**
  - Visually assess the size of the error of the computed position of a GCP or MTP

- **Project reoptimization**
  - Reoptimize camera positions and/or rematch images based on GCPs & MTPs to improve reconstruction

- **Image masking**
  - Carve: Remove points from 3D point cloud and create filters based on image content

- **Point cloud editing**
  - Select, classify or delete points from the point cloud using various selection tools

- **Orthoplane creation**
  - Define a plane to generate a DSM and orthomosaic from building facades, bridge piles, etc

- **Polylines and surface object creation**
  - Annotate and measure polylines and surfaces in the point cloud

- **3D mesh and DSM editing**
  - Annotate & create surfaces in the point cloud to flatten an area or fill up holes in the mesh and DSM

- **Visual outlier detection**
  - Detect and visualize incorrectly-clicked MTPs (Manual Tie Points)/GCPs (Ground Control Points)

- **Fly-through animation**
  - Create a virtual camera trajectory, play the animation in real-time and export it
**HARDWARE SPECS**

- **CPU:** Quad-core or hexa-core Intel i7/Xeon recommended
- **GPU:** Compatible with OpenGL 3.2
- **HD:** SSD recommended
- **RAM:** 16GB - 60GB
- **OS:** Windows 8, 10 64 bits, Linux (upon request)

**INDEX CALCULATOR**

- **Radiometric adjustment interface**
  - Make the vegetation indices more reliable and accurate by applying radiometric corrections
- **Reflectance map**
  - Generate an accurate Reflectance map and the preferred resolution as a basis of index maps
- **Multiple region management**
  - Improve your analysis by managing and visualizing index values per region
- **NDVI map**
  - Generate singleband and NDVI maps based on pre-defined formulas without user intervention
- **Index formula editing**
  - Create and save your own formulas choosing among each input band and generate custom index maps
- **Class management**
  - Create a basis of your annotated vector map by segmenting the data into classes using statistical algorithms
- **Prescription annotation**
  - Match on-site scouts and observations by assigning annotations based on your decisions
- **Prescription map export**
  - Put your data into action and export the prescription map in .shp format

**VOLUME MANAGER**

- **Volume object creation**
  - Annotate and measure volumes based on the DSM
- **Volume object management**
  - Import and export selected volume bases in .shp files to enable easy monitoring of stockpiles on site
- **Base adjustment**
  - Adjust the reference base to fit different terrain and obtain accurate measurement

**MOSAIC EDITOR**

- **Region editing**
  - Create and edit regions on the orthomosaic; choose the best content from multiple underlying images and projection type to remove moving objects or artifacts
- **Local blending**
  - Edit only the desired portion of the orthomosaic, blend it in real-time and get the improved orthomosaic within minutes
- **Planar or ortho projection selection**
  - Select planar or ortho projection for each created region to remove artifacts

**OUTPUT RESULTS**

- **2D output results:**
  - Nadir orthomosaics in GeoTIFF output format
  - Orthomosaics from user-defined orthoplane in GeoTIFF output format
  - Google tiles export in .kml and .html output formats
  - Index maps (Thermal, DVI, NDVI, SAVI, etc.) in GeoTIFF and GeoJPG format
  - Prescription maps in .shp format

- **2.5D output results:**
  - DSMs from user-defined orthoplane in GeoTIFF output format

- **3D output results:**
  - 3D PDF for easy sharing of 3D mesh
  - Full 3D textured mesh in .obj, .ply, .dxf, and .fbx format
  - Tile Level-of-detail (LoD) mesh in osgb and slpk (Esri) format
  - Point cloud in .las, .laz, .xyz and .ply output format - Contour lines in .shp, .dxf, .pdf format
  - Classified point cloud in .las and .csv format
  - Contour lines in .shp, .dxf, .pdf format
  - User-defined vector objects in .dxf, .shp, .dgn, and .kml format

- **Fly-through animation and flight paths**
  - Export the animation in .mp4 and .avi formats and the fly-through waypoints and path in .csv format

- **Optimized camera position, external orientation and internal parameters,**
  - Export Aerial Triangulation results into third-party software (e.g. INPHO, Leica LPS, DAT/EM Summit Evolution)

- **Undistorted images**
  - If the original images were acquired using a perpective lens an undistorted copy of the calibrated images will be generated

**COLLABORATION**

- **Web share, inspection and visualization**
  - Visualize 2D maps and 3D models using any web browser -mesh & point cloud visualization options-
  - Measurement of distances, surfaces, and elevation profiles
  - Inspect and annotate using both original images and 3D information at the same time
  - Share Projects with annotations via a simple link
  - Embed project output in a webpage
  - Real-time shading for digital surface model (DSM) visualization

**MULTI-LINGUAL**

- **Language Options**
  - English, Spanish, Mandarin (zh-CH, zh-TW), Russian, German, French, Japanese, Italian and Korean
  - English, Japanese, Korean