



# Pix4Dbim / FEATURE LIST

## Desktop + Cloud processing

	Features	Advantages
INPUTS	Aerial (nadir and oblique) and terrestrial imagery	☁️ 🖥️ Process images taken at any angle and from any aerial manned or unmanned platform as well as from the ground
	Video (mp4 or avi format)	🖥️ Automatically extracts still frames from video files to create a project
	Any camera (compact, SLR, thermal, multispectral, GoPro, 360-degree, Tetracam, large-frame add-on, etc.)	☁️ 🖥️ Use images acquired by any camera, from small to large frames, from consumer-grade to highly specialized cameras
	Multi-camera support for the same project	☁️ 🖥️ Create a project using images from different cameras and process them together
	Camera rig support	🖥️ Process images using known rig relatives from multiple synchronized cameras, customized or from known manufacturers for more robust, accurate and faster processing
	Ground control point edit and import (.csv, .txt)	🖥️ Import and edit ground control points to improve the absolute accuracy of your project
	Local, global and arbitrary 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 a point cloud from different sources, such as LiDAR, and use it to create a DSM and orthomosaic	
PROCESSING	Processing templates	🖥️ Automate processing and generation of outputs by using standard or customized templates
	Rapid Check with Quality Report	🖥️ Rapid processing template for a dataset quick check while still on site
	Camera self-calibration	☁️ 🖥️ Optimize internal camera parameters, such as focal length, principal point of autocollimation and lens distortions, without the need of a lab calibration report
	Rolling shutter effect correction	🖥️ Correct the warp of images taken with rolling shutter cameras (like GoPro, DJI Phantoms, etc.) to maintain good accuracy, especially useful 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
	Automatic DTM/DEM extraction	🖥️ Remove above-ground objects from DSM and create a bare-Earth model. For additional control, select and delete points manually in the rayCloud to improve DTM/DEM generation
	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	🖥️ Combine individually-processed projects into one
	Project splitting	🖥️ Split large projects into sub-projects for more efficient processing
	Project area definition	🖥️ Import (.shp) or draw specific areas to faster generate results inside specific boundaries
	Targeted Feature Extraction	🖥️ Give the number of features to find, getting more features in low-texture images to assist the reconstruction or less features for large-frame images to speed up processing
Multiprocessor CPU + GPU support	🖥️ Increase the processing speed by leveraging the power of CPU cores and threads, as well as GPUs	
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 projects with no or imprecise geolocation by defining directions of one/multiple axes
	Manual tie point editing	🖥️ Annotate and edit 2D and 3D ground control points (GCPs), check points and manual tie points with the highest accuracy, using both original images and 3D information at the same time
	Project reoptimization	🖥️ Reoptimize camera positions and/or rematch images based on GCPs and manual tie points to improve reconstruction of difficult areas
	Image masking	🖥️ Carve: Remove points from 3D point cloud and create filters based on image content.
		🖥️ Mask: Clear the unwanted background in orthoplane results.
	Point cloud editing	🖥️ Global Mask: Disregard objects which appear in all images, such as a drone leg or tripod which occluded the lens during all image acquisition.
		🖥️ 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
	Polyline and surface object creation	🖥️ Annotate and measure polylines and surfaces in the point cloud.
		🖥️ Accurately refine vertexes in multiple original images.
	3D mesh and DSM editing	🖥️ Annotate and create surfaces in the point cloud to flatten an area, or to fill up holes in the mesh and DSM caused by insufficient image content.
Fly-through animation	🖥️ Create a virtual camera trajectory in 3D rayCloud viewer, play the animation in real-time, export the animation as a video (in mp4 and avi format) and the editable flightpath waypoints in .csv format	



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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
INDEX CALCULATOR	Radiometric adjustment interface	☒	Make the indices more reliable and accurate by correcting illumination effects using a radiometric target
	Reflectance map	☒	Generate an accurate Reflectance map at the preferred resolution as a basis of index maps
	Multiple region management	☒	Improve your analysis by managing and visualizing index values per region
	Automatic 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 available 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 (equal spacing, equal area, Jenks)
	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
OUTPUT RESULTS	2D output results:	☒	<ul style="list-style-type: none"> <li>• Nadir orthomosaics in GeoTIFF output format</li> <li>• Orthomosaics from user-defined orthoplane in GeoTIFF output format</li> <li>• Google tiles export in .kml and .html output formats</li> <li>• Index maps (Thermal, DVI, NDVI, SAVI, etc.) in GeoTIFF and GeoJPG format</li> <li>• Prescription maps in .shp format</li> </ul>
		☁	<ul style="list-style-type: none"> <li>• Nadir orthomosaics in GeoTIFF output format</li> </ul>
	2.5D output results:	☒	<ul style="list-style-type: none"> <li>• Nadir DSMs and DTMs in GeoTIFF format</li> <li>• DSMs from user-defined orthoplane in GeoTIFF output format</li> </ul>
		☁	<ul style="list-style-type: none"> <li>• Nadir DSMs in GeoTIFF format</li> </ul>
	3D output results:	☒	<ul style="list-style-type: none"> <li>• 3D PDF for easy sharing of 3D mesh</li> <li>• Full 3D textured mesh in .obj, .ply, .dxf, and .fbx format</li> <li>• Tiled Level-of-detail (LoD) mesh in osgb and slpk (Esri) format</li> <li>• Point cloud in .las, .laz, .xyz and .ply output format</li> <li>• Contour lines in .shp, .dxf, .pdf format</li> <li>• User-defined vector objects in .dxf, .shp, .dgn and .kml format</li> </ul>
		☁	<ul style="list-style-type: none"> <li>• Full 3D textured mesh in .obj and .fbx format</li> <li>• Point cloud in .las output format</li> </ul>
	Generate fly-through animations and flightpaths	☒	rayCloud view fly-through animation in .mp4 and .avi formats Fly-through waypoints and path in .csv format
Optimized camera position, external orientation and internal parameters, undistorted images	☒	Export Aerial Triangulation results into traditional photogrammetry software solutions (e.g. INPHO, Leica LPS, DAT/EM Summit Evolution)	
MULTI-LINGUAL	Language Options	☒	Software in English, Spanish, Chinese (traditional and simplified), Russian, German, French, Italian and Japanese



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Cloud platform

Features	Advantages
<b>PIX4D CLOUD PLATFORM</b> Visualization and analysis of the results Project documentation Sharing options	<ul style="list-style-type: none"> <li>View 2D maps and 3D models using any web browser</li> <li>Visualize current and previous days data on an intuitive timeline</li> <li>Measure distances and areas for 2D maps and 3D models</li> <li>Annotate 2D maps and 3D models with polygons and location markers</li> <li>Overlay CAD drawings to compare as-built vs. as-design</li> <li>Download and import data into CAD/BIM software</li> <li>Share projects via a simple link</li> <li>Embed project output in a webpage</li> </ul>

## HARDWARE SPECS



**CPU:** quad-core or hexa-core Intel i7/Xeon recommended



**HD:** SSD recommended



**RAM:** DDR4-2400 64 GB recommended



**GPU:** Compatible with OpenGL 3.2 (GeForce 2 GB RAM recommended)



**OS:** Windows 7, 8, 10 64 bits, Mac OS (Beta), Linux (Enterprise only)



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