

The PhoToPlan Family

PhoToPlan, PhoToPlan Basic,
Pro and Ultimate

FARO®

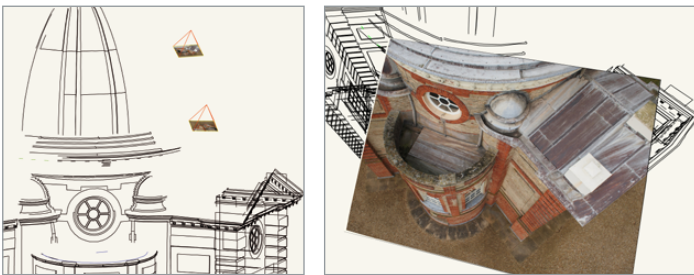


Photogrammetry Directly Within AutoCAD®

The PhoToPlan family of AutoCAD based applications allow for evaluation of photos and plans directly within AutoCAD. The programs are built on top of each other. The range of functions is increasing from PhoToPlan basic to PhoToPlan Ultimate.

2D-Functions

With PhoToPlan users may rectify photos for a 2D evaluation either with a few reference lengths from the object or with control points which have been measured on the object. The rectification planes may be positioned freely. Within AutoCAD users may draw/digitize directly on the photos or mount the photos to spatially arranged façade plans. These serve as templates for taking measurements and documenting the object photographically in the correct scale.



*On the basis of a few measured control points PhoToPlan Pro and PhoToPlan Ultimate calculate the camera position, direction and distortion of the images.
Source: English Heritage, <http://www.english-heritage.org.uk>*

3D-Functions

In addition to the functionality mentioned above, PhoToPlan Pro and PhoToPlan Ultimate offer image orientation and photogrammetric multi-image evaluation. By clicking the same point in two separate images, shot from different positions, PhoToPlan Pro and PhoToPlan Ultimate calculate the exact geometric position of this point in 3D-space. These 3D points are used to generate 3D line work and objects directly in AutoCAD.

3D surface objects such as cylinders and planes but also prismatic surfaces may be generated for a fast evaluation within PhoToPlan. If for example, a defined plane represents a wall, the window openings and sills may easily be constructed as CAD objects by tracing over the oriented image. In this way photos can be efficiently evaluated to facade plans and 3D models. With PhoToPlan Ultimate surfaces of cylindrical and prismatic objects can be projected into a plane for creating to scale image plans. Another additional function is the computing of ortho photos.

References

PhoToPlan programs are being used worldwide throughout multiple industries:

- TU Munich, chair of Building History, Building Archeology and Heritage Conversation.
- Planning department of the Cologne Cathedral (Dombauverwaltung Köln)
- Building association of the Freiburg Minster (Freiburger Münsterbauverein e.V.)
- German Archaeological Institute, a. o. in Berlin and Rome
- Musée National d'histoire et d'art, Département Archéologie, Luxembourg

Photogrammetry Fast and Efficient

- Rectifying photos precisely within CAD
- combining high resolution photos with CAD information
- fast construction of 3D wire frame and surface models with only photos
- use ReCap Photo (online) and Agisoft PhotoScan import (offline) for automatic orientation of photos by "Structure from Motion"
- easy to learn and versatile for many applications

Universally Useful

The software may be used whenever CAD information must be generated from photos. For example:

- facade plans
- excavation documentation in the field of archaeology
- recording of building damages
- inventory documentation in the preservation of monuments and historic buildings
- preservation of evidence in the field of forensics
- recording of plants and civil engineering structures
- documentation in the field of construction and architecture

Requirements

Platform	AutoCAD LT, AutoCAD and all AutoCAD based verticals, e.g. Civil 3D, Architecture or Map 3D starting from version 2015. Please contact the FARO 3D Software sales department if you are using older Autodesk products.
Operating System	Depends on the AutoCAD version (see compatibility list), 64bit system
Hardware Requirements	Computer and graphic card as suggested for the respective AutoCAD version by Autodesk. Standard digital camera
Required Reference Information (Photo Rectification)	At least 4 control points (PhoToPlan) or 2 reference measurements (PhoToPlan Basic)
Required reference information (Map Rectification)	At least 3/6/10 control points for a 1./2./3. degree polynomial transformation
Required reference information (Image Orientation)	At least 9 control points or 4 control points and the camera parameters
Supported Image Formats	All image formats supported by AutoCAD, e.g. TIF, BMP, JPEG, PNG. For merging bitonal images TIF format is recommended

Functional Range of the Different PhoToPlan Program Versions

	PP Basic	PhoToPlan	PP Pro	PP Ultimate
Rectification of photos by means of geometric characteristics and reference measurements (projective transformation)	x	x	x	x
Perpendicular or arbitrary determination of the rectification plane	x	x	x	x
Calculation of camera distortion	x	x	x	x
Further processing of the image plan with external programs	x	x	x	x
Possibility to cut images with a polygonal border and clipping of enclaves	x	x	x	x
Integrated length and height dimensioning	x	x	x	x
Integrated area evaluation	x	x	x	x
Use of all AutoCAD functionalities	x	x	x	x
Rectification of photos by means of measured control points			x	x
Rectification of scanned maps and plans (1./2./3. degree polynomial transformation)			x	x
Statistical adjustment for matching reference information			x	x
Mounting of several rectifications to one image plan			x	x
Generation of VRML and ESRI World files			x	x
Spatial join of image borders			x	x
3D drawing by means of oriented photos on 3D surfaces (plane, cylinder)				x
Determination of inner and outer orientation of photos				x
ReCap Photo import, automatic orientation of photos, „Structure from Motion“				x
Agisoft PhotoScan import, automatic orientation of photos, „Structure from Motion“ offline				x
Generation and processing of surface objects (kubit cylinders, kubit plane and prismatic surfaces)				x
Photogrammetric 3D image evaluation				x
Flatten drawing			x	x
Unwinding photos of cylindrical and prismatic surfaces to a plane				x
Orthophoto computation				x

Goods and Services

	PP Basic	PhoToPlan	PP Pro	PP Ultimate
Included tutorials and training	x	x	x	x
Support	x	x	x	x

For more information, call 800.736.0234
or visit www.faro.com