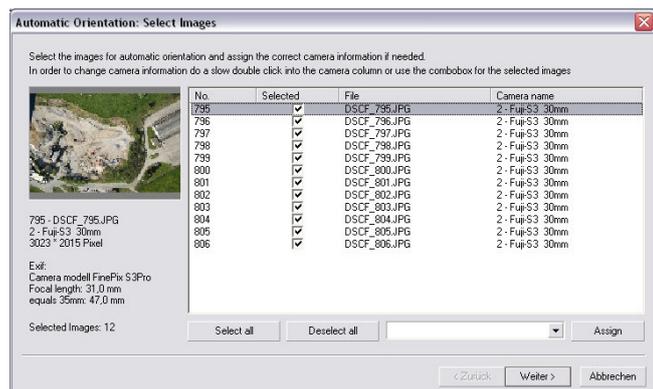


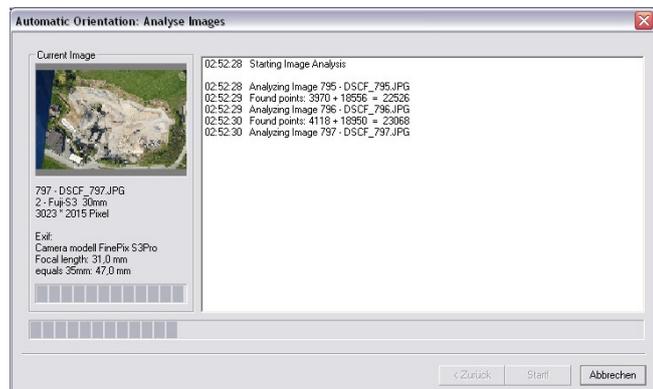
## ELCOVISION 10 – The Universal 3D-Photogrammetry System with Full Automatic Image Orientation

**ELCOVISION 10** the popular photogrammetric evaluation software package has reached the sixth generation since its market launch in 1986 being constantly upgraded and developed to meet user demands includes now a module for full automatic image orientation. There is no information required about the point of view of the images, the only requirement is that the pictures must be taken with a calibrated camera. A short step by step example will show you the process of the automatic orientation:

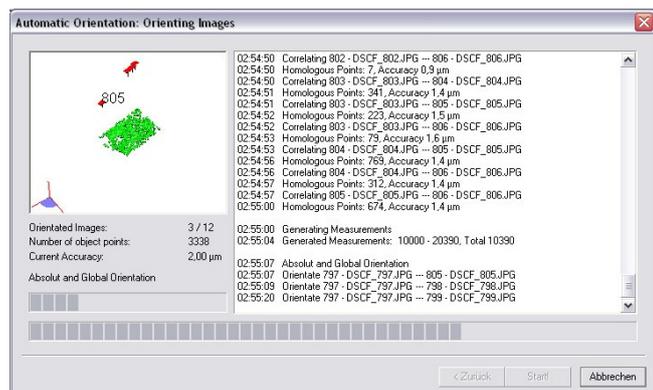
In the first step the images are loaded into a new project and the automatic orientation is started:



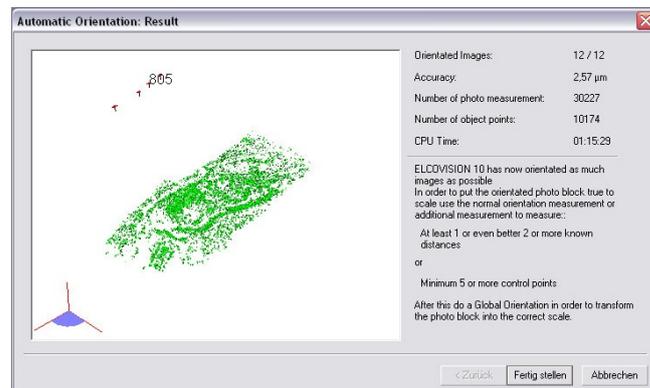
After starting the automatic orientation ELCOVISION 10 starts analyzing the images for prominent points and classifies them in a unique way:



In the next step ELCOVISION 10 uses this featured points found in the first step and runs the automatic orientation using the traditional relative, absolute and global orientation approach.



After the orientation of the images is finished the result of the orientation is displayed:

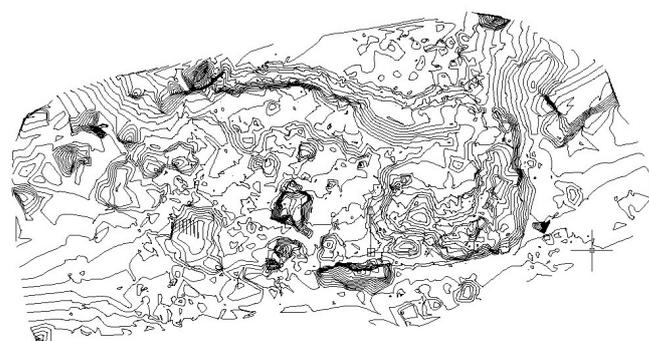


Now it is time for the first and only manual step in the automatic orientation process. The operator should define a suitable system of coordinates. This could be done by measuring at least one known distance or by measuring at least 4 control points.

As a by-product of the automatic orientation a cloud of points is generated. These points are normally very accurate surface points of the object, ELCOVISION 10 also provides them with the true color of the object. This cloud of points could be used for many applications.



In aerial photogrammetry like in this example we can generate a contour map of the area very easily using the built in functions from the ELCOVISION 10 AutoCAD Tools with a few mouse clicks:



# ELCOVISION 10 Technical Data and Function Overview

## Image Recognition and Image Processing

Reads and writes almost all known digital image formats

Full automatic raw-file converter with automatic image optimizing for maximum image quality

Integrated image processing module with colour and contrast adjustment, gamma correction etc.

Optimized image display in the magnifier for easy and precise measurement even in underexposed or overexposed image parts.

## Réseau Measurement

Fully automatic réseau measurement of digital images

Fully automatic réseau measurement of réseau images of metric cameras with automatically chosen transformation: affine, helmert, projective or polynomial

## Digital Rectification ELSP

Definition of 2D-rectification planes with known rectangles or arbitrary distance squares with 5 known distances

Definition of 2D-rectification planes by perpendicular and parallel lines and at least one known distance

Linking of 2D-rectification planes among themselves and also linking them into the 3D-space using 3D-control points

Definition of balanced 3D-rectification planes using 4 or more 3D-control points

Arbitrary trimming of the rectification planes with automatic determination of the circumference and the area of the resulting rectification plane

Optional lens distortion correction

Automatic rectification as many as desired rectification planes into a digital single picture e.g. an orthophoto

Full automatic generation of 3D-rectification planes from AutoCAD surface models

Full automatic transferring of 3D-rectified textures into AutoCAD

## Automatic Image Measurement Modes

Automatic measurement of réseau crosses with sub pixel precision

Automatic measurement of targeted points with sub pixel precision

Automatic measurement of corners and edges

Measuring assistance by epipolar lines

## Methods of Orientation

Arbitrary definition of the system of coordinates: Local by distances and/or control points, or with control points within a superior system of coordinates

Full automatic photo orientation

Single and two photo orientation  
Multi photo orientation

Bundle adjustment with up to 1000 pictures and simultaneous camera calibration

Orientation of full spherical images

## Definition of 3D Planes

Balanced spatial plane by 3 or more 3D-points

Definition of parallel planes by points or with arbitrary distance to other planes

Definition of perpendicular planes to arbitrary other spatial planes

## Measuring Methods for Point Measurement and CAD Plugin

Rectification Measurement

Mono Photo Measurement: Intersection of a measuring beam with a 3D-plane

Two Photo Measurement: Balanced spatial intersection of two measuring beams

Multi Photo Measurement: Balanced spatial intersection of two or more measuring beams

Stereoscopic Measurement: Epipolar transformation of non stereoscopic images into a stereo image pair and displaying them with various methods like LCD shutter or anaglyph images.

Measurement from full spherical images

## CAD Integration

Seamless integrated into the following CAD Systems, all drawing functions of the CAD become measurement functions

AutoCAD: Version 14 - 2010  
IntelliCAD 2000  
BricsCAD V10

## Additional CAD Functions

Superimposition of the CAD drawing into the digital images

Draw perpendiculars with one single measurement

Measuring and drawing of single segmented lines

Simultaneous measuring and drawing of 3D-trimmed lines

Simultaneous measuring and drawing of 3D-balanced lines

Simultaneous measuring and drawing of UCS aligned lines

Circle intersection construction function

Drawing of 3D-circles and circular arcs with three 3D-measurements with plausibility check

Drawing 3D-rectangles with three 3D-measurements with plausibility check

2D-projection of a drawing into any plane

Optimized merging of single lines into 2D-polylines and 3D-polylines

Integrated 3D-surface modeler generating waterproof surfaces from 3D-clouds of points and 3D-line drawings

Built-in generating of contour maps from surface models

Special measuring functions for inserting blocks with automatic block adjustment

Special measuring functions for measuring cylinders and right parallelepipeds

## Supported Operating Systems

Windows 95/98/ME  
Windows NT 4.0/2000/XP/Vista/7

