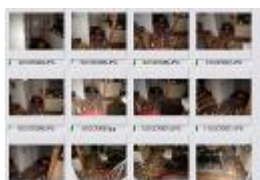
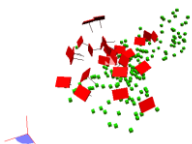


The **ELCOVISION** product line follows a very simple philosophy: the software should be as easy to use as possible and at the same time as universal as possible. For special applications such as blood spatter analysis or perpetrator height determination. **ELCOVISION Forensic** enables the simple and accurate measurement of blood splatters and their point of origin, as well as the determination of perpetrator sizes from surveillance images.

A simple example will show the workflow for blood spatter analysis. First, the crime scene is photographed with a calibrated camera and these images are oriented with **ELCOVISION 10**.



Tatortbilder



Orientierte Bilder

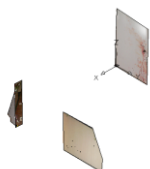
The orientation of the images can be done manually or fully automatically with **ELCOVISION 10**.



The oriented images, the so-called **ELCOVISION 10** project, are now processed with the AutoCAD or BricsCAD plugin of **ELCOVISION 10**: For example, one can make a full-scale 3D drawing of the crime scene, if needed, or a high-density point cloud can be calculated and loaded into the

drawing.

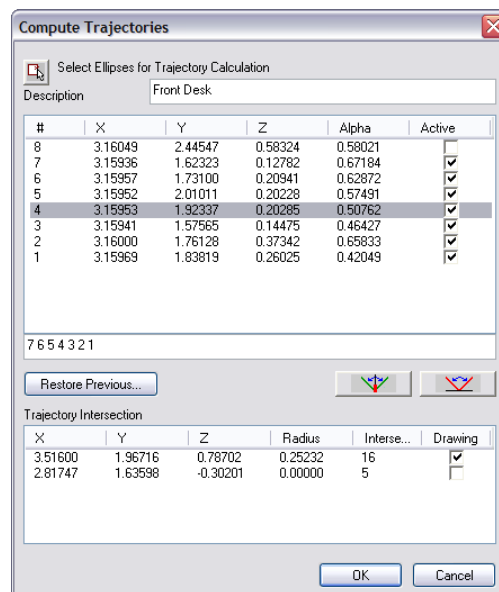
For blood spatter analysis, the most important **ELCOVISION 10** feature is the automatic rectification of surfaces into the CAD drawing. This automatically transfers each blood spatter from the crime scene into the correct 3D position in the drawing, eliminating the need for tedious measurement of individual traces. Even blood drops on curved and sloping surfaces can be used in this way.



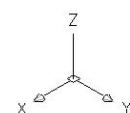
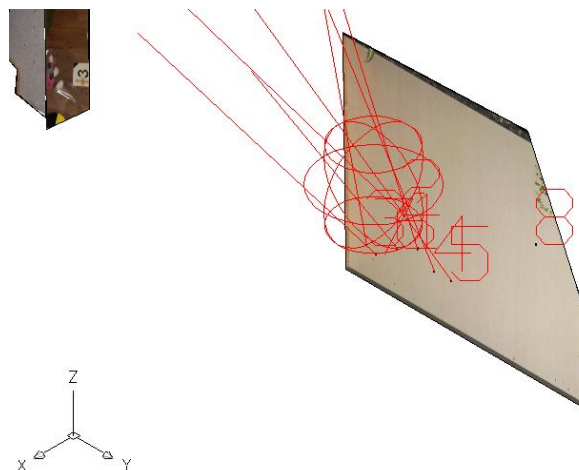
ELCOVISION Forensic has several

tools to exactly circumscribe a blood drop with an ellipse. The circumscribing ellipse is automatically exactly at the right 3D position in space.

which trajectories belong to each other and calculates the 3D origin area of these blood splashes and its accuracy range.

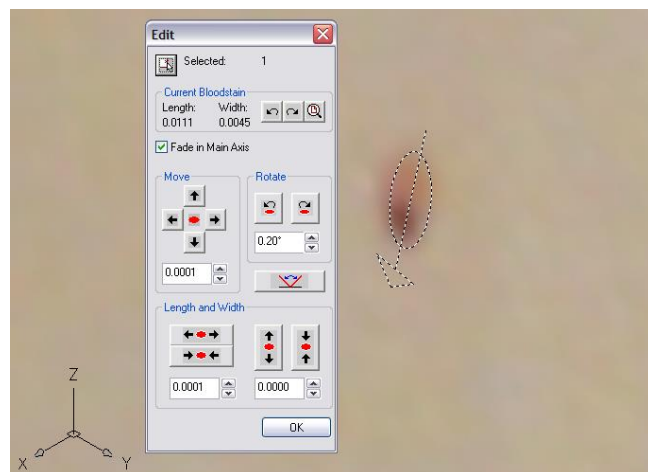


This result is immediately displayed as a sphere in the drawing so that the result can be immediately examined for plausibility. The sphere circumscribes the volume of space from which the blood splashes originate.



ELCOVISION Forensic Functions

- Blood spatter analysis
 - Accurate drawing of ellipses on 3D oriented textures. Ellipses are simply drawn with the major and minor axes.
 - Ellipses can be very finely adjusted with an ellipse editor. In doing so, they are automatically zoomed in to guarantee the highest accuracies.
 - Automatic calculation of trajectories with error probabilities for the results
- Perpetrator height determination by means of a freely movable and scalable humanoid that is superimposed on the surveillance images.
- Available for AutoCAD 2018-2022 and BricsCAD V19-V22



When enough blood spatter has been circumscribed with ellipses, the trajectory calculation tool is used. This function determines

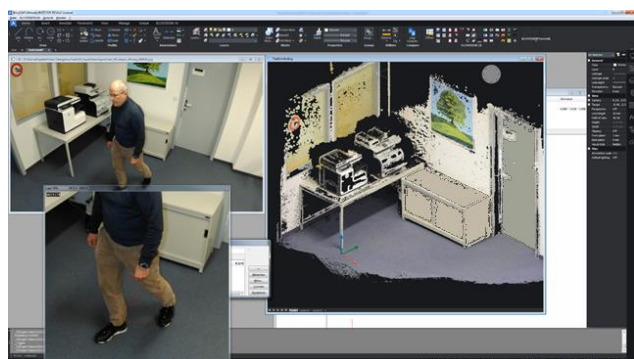
ELCOVISION Forensic - Offender Height Determination

The typical procedure of a perpetrator size determination with **ELCOVISION Forensic** is as follows:

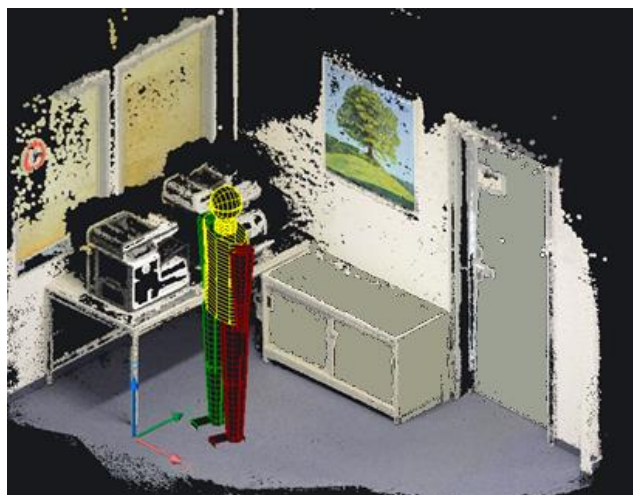
With the help of **ELCOVISION 10**, the surveillance camera is first automatically calibrated from the images subsequently taken on site using a high-quality camera and a high-density point cloud is generated.

ELCOVISION 10 is able to calibrate even the usually highly distorted images of surveillance cameras sufficiently well to achieve accurate results. Even glass panes in front of the surveillance camera lenses, which lead to very prominent tangential distortions and local deformations in the images, normally do not pose a major problem for the automatic camera calibration of **ELCOVISION 10**.

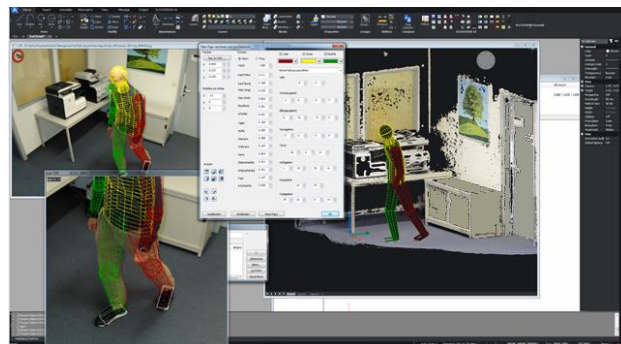
This generated high-density point cloud is then read into a supported CAD, preferably BricsCAD V20 or newer, using the **ELCOVISION 10** CAD plugin:



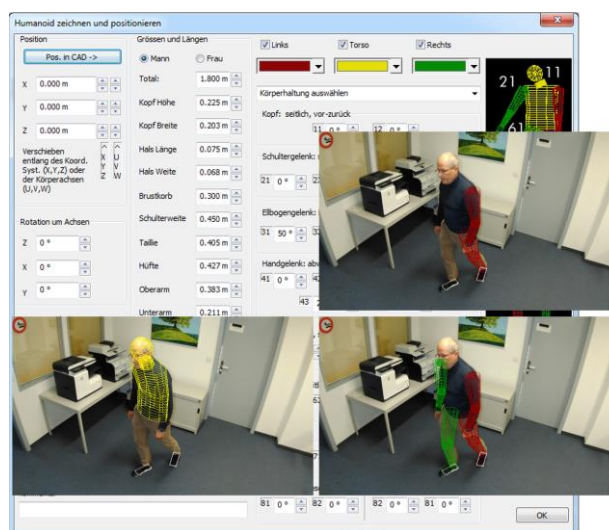
With the **ELCOVISION Forensic** module a special function is available to place a humanoid in the drawing or point cloud:



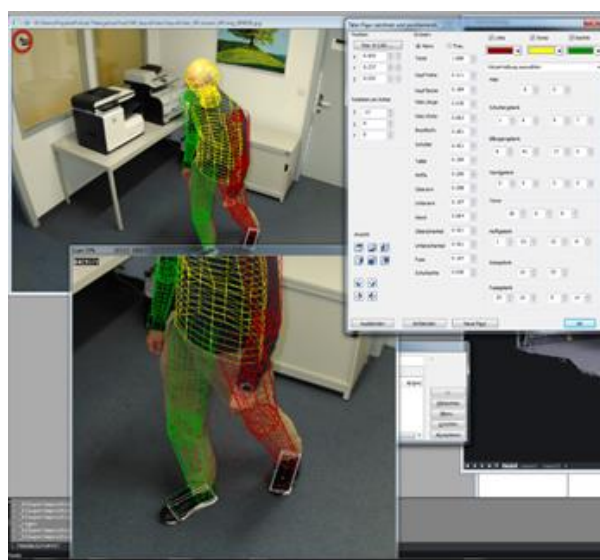
This humanoid can be bent at all joints, enlarged or reduced and positioned in such a way that it appears exactly above the perpetrator in the surveillance images. The size of the perpetrator can be hidden so that the user does not involuntarily influence himself.



To make it easier to match the humanoid, it can also be only partially superimposed on the surveillance images:



If the humanoid is fitted exactly over the perpetrator image, depending on the image quality of the surveillance camera, the perpetrator size is typically determined to within 1-2 cm..



This whole process takes only a few minutes per surveillance image for a skilled operator. An included statistical evaluation of several recorded offender sizes eliminates outliers and allows for an additional increase in accuracy.

