



Cognitech® PhD scientists have pioneered the court certified use of forensic mathematical photogrammetric tools in the United States and international courts of law since 1992. The revolutionary algorithms of the Cognitech® AutoMeasure® software have been developed by a team of Cognitech® PhD Scientists. This Cognitech® technology received recognition and is in use today by the most respected United States government photogrammetry-oriented organization: the National Geospatial Agency.

Some of the exciting **NEW** features in Cognitech® AutoMeasure®¹⁴ are the 3D RAMA® Panorama Measure, the Panorama Builder and operating and measuring in the entire 360 degree visual sphere of view by using Ricoh's Theta 360 degree camera and Cognitech's 3D RAMA® Panorama Measure tool.

***The 3D RAMA® Panorama Measure** utilizes a different photogrammetric method than the MultiView Measure, allowing for much more flexible measurements of people, objects, accidents and crime scenes.

***With 3D RAMA® Panorama Measure**, the evidence image can be matched to multiple test images without the careful positioning of the test image in order to capture as many points in common as possible. *This significantly simplifies crime scene data collection and eliminates data collection and eliminates point omission errors.*

***3D RAMA® Panorama Measure** provides the ability to measure all geographical quantities such as height, area, and various distance measurements. However, points do not need to belong to the same captured image, thus allowing distances between points, that are separated by occlusion (e.g. walls, trees) and large distances, to be measured.

3D RAMA® Panorama Measure is able to generate measurements of objects in an evidence image by using a 360 degree panorama of the scene.

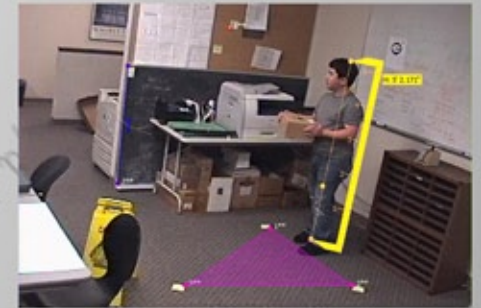


Figure 1. 3D RAMA® Panorama Measure



Figure 2. 3D RAMA® Panorama Measure

Figure 2 is a panoramic image taken with the Theta used to generate the measurements in Figure 1.

Panoramas can be created from fisheye images with Cognitech® AutoMeasure® software's Panorama Builder or imported from the Ricoh Theta 360 degree camera.



Panorama Builder accurately produces up to a full 360 degree stitched panorama from fisheye images. The stitched panoramas are unwrapped and rectified for normal rotational viewing. Panorama images produced with **Panorama Builder** can be used in 3D RAMA® Panorama Measure as well as providing accurate 360 degree crime scene photography.



Figure 3. Panorama Builder



Figure 4. Panorama Builder

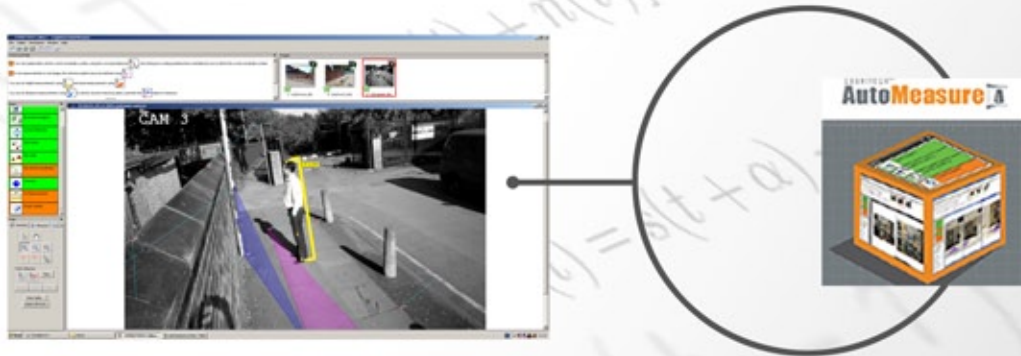
Interactive 360 degree panoramas can be created from fisheye images with fisheye images from Cognitech® AutoMeasure® software's **Panorama Builder**. **Figure 3** shows 3 fisheye images which were used to create the panorama in **Figure 4**. The panorama in **Figure 4** has been unfolded to show its wide field of view.

3D RAMA® Panorama Measure: Measuring in the Entire 360 degree Visual Sphere of View.

Ricoh's Theta 360 degree full panoramic camera data is seamlessly integrated for viewing an entire real-world 360 degree sphere of view, as seen in **Figure 5**. By taking 2 or more panoramic images with **Ricoh's Theta 360 degree camera** and using **3D RAMA® Panorama Measure**, the user can perform all geometric measurements that the 3D MultiView Measure provides with the added convenience of operating and measuring in the entire 360 degree visual sphere of view.



Figure 5. Ricoh's Theta 360 degree camera



While using the Cognitech® AutoMeasure®¹⁴ software, the individuals and the vehicles captured on the evidence video/photo can be photo-metrically identified or ruled out even if the original surveillance cameras were moved or removed (not possible with outdated Reprojection Method).

Investigators return to the scene and take one measurement and two photos on a pre calibrated digital camera from different angles to the original scene image.



Original CCTV Image



Accurate measurements from the crime scene can be performed by the Investigator at any time by using stored scene images and the camera calibration parameters (even if the scene does not physically exist anymore).

By identifying a minimum of 9 points that are the same through all three images, one being the original CCTV and two from the calibrated camera, by establishing a horizontal and vertical plane, the software computes the information.

Example showing the same point across all three images.



The Cognitech® AutoMeasure®¹⁴ software can do photogrammetry without ANY manual measurements, using only a computerized use of stereo-point correspondences between scene images. There is no need for the measuring tape and the time consuming manual measurements.

The Cognitech® AutoMeasure®¹⁴ software accurately computes any linear dimensions in the image/frame, human height, shoe size, length/height of the vehicle, the angles between any lines and surfaces (trajectories). The software additionally computes user-selected spot areas, camera location/angle, area and much more.

Step by Step Wizard



Calculate Area

