Blood, Bullets and Lasers… Oh My!

Ed Oliveras | SPAR Point Group | 2/20/2013



Original panoramic scene illustration, credited to 3rdTech in the February 20, 2013 article.

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In Eddie’s words

> “The idea is we are taking people’s workflow from 2D to 3D…”

> “By capturing the scene in perpetuity, we can “go back in time” as a case evolves and reexamine items that were not important at the time of the initial investigation.”

What the dated article records

This February 2013 article connects crime-scene and traffic-homicide work with measurement, evidence preservation and courtroom exhibits. It names IAFSM and SPAR, describes adoption in Florida and credits third-party tools. It supports an early public teaching role, but does not by itself establish which agencies Eddie trained.

Historical context

The following is the complete recovered article text, with original image credits and clickable source links. Product, legal and technical statements describe the time of publication. They are not current professional advice. Broken external services and retired software are not silently replaced.

These excerpts do not establish sole invention, current affiliations or every detail of a later recollection. The full original follows so readers can judge the context.

Complete recovered article

The most asked question I get from folks is… “What types of people are buying your scanners?” For the most part it is a good mix, but a large portion of market share has to go to **Forensics** and most especially **Crime Scene Investigation and Traffic Homicide**.

So what unique advantages does scanning have in CSI?

Well, there’s a reason I called my company GO3D. The idea is we are taking people’s workflow from 2D to 3D…

Traditionally, investigators are taking discrete point measurements (point A to B) that are difficult to relate to each other. As well, they are taking photos of the scene, all of just a single point of view. I’ve seen cases where not enough measurements were taken, references were placed to temporary items, similar to this video about a cold case here:

The idea is that the machine takes the measurements, leaving less room to scrutinize the investigation team for errors. The new scanners are small, portable and easy to learn and use. I compare them to DSLR cameras that are very powerful but almost all of them have a “full auto” button. Modern scanners do as well… and these scanners are often described as simply a 3D camera. Each pixel in the image represents an actual measured point; and by creating panoramic scans, one can document an entire room or intersection quickly and easily with a very small learning curve. Since it uses a laser, no ambient light is necessary to produce a reflectance image (greyscale intensity), but lighting is necessary for color scanning using an onboard bore-sighted camera. There are advantages for both sensors in CSI: The laser image can reveal things like what 20-day-old paint reflects vs. 20-year-old paint on a wall that may be a hiding place. For traffic homicide, the laser reflectance image sometimes doesn’t reveal skid marks on asphalt like a color camera will.

Laser scanning for CSI means there is less “interpretation” involved in field measurements and anything in the scene can be evaluated. It reduces the need for site revisits and it helps prevent inaccurate measurements or the common mistakes that plague us as humans. Who knows what people might miss in the moment, but find in the digital revisitation? By capturing the scene in perpetuity, we can “go back in time” as a case evolves and reexamine items that were not important at the time of the initial investigation. Using our mouse as a tape measure, we can remotely analyze evidence without disturbing the scene, which reduces the burden on investigators.

So here’s a just few ways CS & TH investigators are using scanning:

Scene documentation and preservation:

Here’s a real scenario for a traffic accident. I’ll give you some time to go read up and return. All set?

The results of the scan produce panoramic images like this one.



Original image capture

[Image courtesy of 3rdTech www.3rdtech.com]

Each pixel can be measured in 3-dimensions (x, y and z). The process to collect evidence varies by agency, but normally scans are taken before processing the scene and then when evidence markers and reference measurements are set in place. The last few terrible shooting incidents here in the USA and abroad have been laser-scanned. Scans are automatically linked together to create a composite “point cloud” that fills all the shadowing created by line-of-sight obstructions.

The end product can even be as simple as a viewer to be shown in court or for document control, similar to Google Street View, making it simple to visualize the environment. You can even put the data on a thumb drive to give to the district attorney if needed. Many scanning manufactures offer this utility or you can use a panoramic viewer if you export the scan images, like this one. All that’s required is an internet browser and an online connection if the data is hosted offsite.



Original image capture

(Image courtesy of Dustin Productions, LLC)

Diagramming and visual exhibits for evidence documentation: These end products can vary greatly, from something as simple as a 2-dimensional CAD drawing representing the scene in Plan view (overhead) or more advanced final deliverables like those used in film and gaming:

Simple diagramming tool: http://youtu.be/oKbtC92vAeU

Real-time 3D shooting reconstruction: http://youtu.be/NdaWmZgmf3s

Here's a list of the current programs that can import scan data:

3rdTech: www.3rdtech.com CAD Zone: http://www.cadzone.com/cz-point-cloud Visual Statement: http://www.visualstatement.com/en/Products/EdgeFX/PointCloudEdition.aspx ARAS 360: http://www.aras360.com/ Clouds2Max for 3DS Max: www.clouds2max.com MapScenes: http://www.mapscenes.com/ AutoCAD, Microstation, Rhino

Scientific Analysis and Inspection:

Today, as scanning is moving past the early adopter stage and much more accepted (Florida alone has over a half dozen agencies using the FARO Focus3D and even more private accident reconstructionists), there's now a body of knowledge amongst the peer community to help create best practices, specialized accessories and even coursework for high-end animation and reconstruction.

At the SPAR International Conference in Colorado this April, you'll have a chance to attend sessions with this community to see this first hand and discuss with them their techniques. Present will be an organization called IAFSM – International Association of Forensic and Security Metrology – which is helping to develop the content of the sessions and is itself a valuable resource for forensic-scanning information.

Videos linked in the original article

Watch original video: Sav72l4qX7M

Source and preservation record

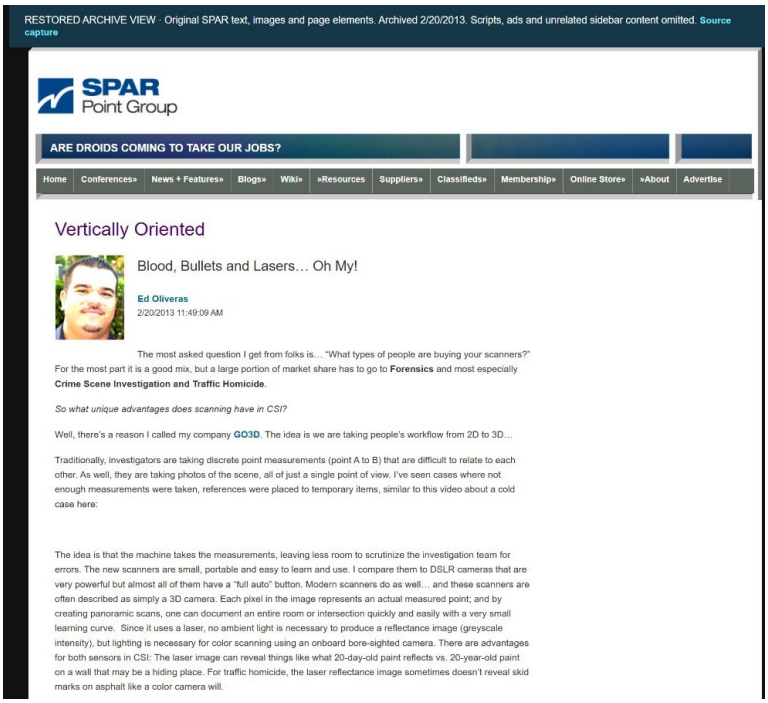
Author: Ed Oliveras. Publisher: SPAR Point Group. Original publication date: 2/20/2013. Captured and preserved from Internet Archive records.

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