

Digital Investigations

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Over the last ten years we have all become familiar with computers. Nearly everyone reading this column has computers at work and home, and has an email address that they are comfortable using. These items have made our work product better and faster. Now, we are entering the next phase of digital life; computer imagery.

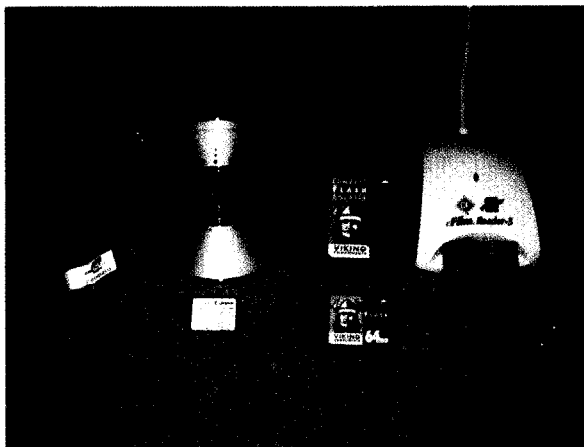
Digital cameras are slowly replacing film cameras and digital video is doing the same thing to video tapes. When you take your kids to see Santa or the Easter Bunny at the mall, you get an immediate digital photograph. Some professional photographers are using digital cameras. Soon, when you go to rent a movie, you will be looking at the DVD aisle as the VHS aisle shrinks, and then disappears. It happened to eight track tapes and record albums, it is just a matter of time.

Fire investigators are on a quest for facts and information, provided primarily by fire patterns and witness statements. Other forms of information can be very helpful to an investigator as well. Many times this information is in digital format and knowing where to look for it, how to identify it, and how to capture it can be a significant factor in the investigation.

Witnesses and bystanders are often aware of the fire and on the scene prior to the arrival of firefighters. These people are not only making observations, they are capturing information on video recorders and cameras. In the past, people were sometimes reluctant to give investigators their film because other images were on it and they feared not getting it back. With the use of some inexpensive technology, an investigator can be prepared to capture digital information, leaving the

source in the custody of the witness. Unlike film and video, digital copies are the same quality as the source.

Getting the digital information from a camera can usually be accomplished in a num-



ber of ways. A standard USB to Mini B cable can be connected from the camera to a laptop computer and downloaded. The storage media in the camera; Compact Flash, Memory Stick, Secure Digital, can be placed into a USB memory card reader or PCMCIA memory card reader, attached to a computer or laptop, and downloaded. If the information desired is already on a computer, then a USB flash drive can be used. A flash drive is a small device that attaches to the USB without the need of drivers, and can hold information, from 32 MB to 512 MB. Also, a blank CD-R can be provided, and the information can be burned to a CD. If the digital information is in another location, an email address can be provided to the witness, who can attach and email the files at a later time. As in all other aspects of involvement, witnesses won't necessarily volunteer to do these things, but if the investigator has the equipment ready to go, people will usually com-

ply. The items described, a USB cable, media reader, PCMCIA reader, flash drive, blank CD-R, are all inexpensive and easily tucked away. With these items on hand, you will be able to get the information into your possession.

Another digital source is the surveillance camera. Sometimes the cameras will be inside of the involved structure, other times they will be on adjacent structures but will capture areas that may be helpful. Newer video technology is digital and is captured on a hard drive on location. There is normally proprietary software that allows viewing of the video, although sometimes the format is universal and able to be viewed with generic software. In the case of video that can only be viewed on proprietary software,

there is sometimes a viewer file that can be downloaded with the video to allow it to be viewed outside of the software. Either way, the video can be reviewed on site to determine if it is useful to the investigation. Because the power is normally secured by firefighters, auxiliary power may be needed from a truck company or adjacent business. Once a desired video is identified, a blank CD-R is all that is needed to capture the information. The involved computer has to have a CD burner, but that has become the norm for newer computers.

Digital technology is slowly entering the investigative community. There have been two issues with the use of digital cameras; cost (quality) and admissibility in court. The cost factor is almost to the point where it is not a factor. The digital camera has to be what is currently "upper-end" quality. This is because fire scenes contain a lot of blacks and

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grays, so the camera resolution has to be high to get acceptable photos. Also, the environment is not generally good for delicate computer equipment, which is what a digital camera is. However, the quality, sturdiness, and cost are reaching the point where they are becoming more cost effective than film cameras. With a digital camera, there are no developing costs and the media used to record the images is much cheaper than film, and reusable.

Admissibility in court is still in debate. I have heard stories of courts that would not accept digital photographs, but it seems they are always secondhand and vague. The fear of some is that a digital image can be altered or enhanced, such as by adjusting, color, brightness, and contrast. The concern for this type of alteration is similar to believing that using a wide-angle or zoom lens will alter an image, or that adding or subtracting developing exposure is an alteration. When a photograph is testified to, a standard question is whether it is a true and accurate depiction of what the investigator saw on the scene. The answer can be yes, even if the photo is zoomed, wide-angled, or color balanced.

There has also been discussion that photos can be illegally or fraudulently altered to support the opinion of the investigator. This is a question of the integrity of the person investigating the fire, with the belief that a photograph could be altered enough to make an erroneous cause determination seem valid. It would be much easier for an investigator to drop a little gasoline on a fire scene, and then say it is arson than it would be to alter digital images. It has always been that when an investigator approaches the witness stand and swears to tell the truth, the testimony is accepted as the truth, open to cross-examination by opposing counsel.

Current technology has created an answer to these concerns. There are now digital cameras that record directly onto a small CD inside of the camera. The image could be downloaded onto a computer and manipulated, but the source CD would always show the photo without any enhancement, similar to a photo negative.

As with nearly all aspects of our lives, look for computer and digital technologies that will make your work more professional, successful, and reliable.

