Converting Wet Labs to Electronic Imaging

Jack and Sue Drafahl

Nikon Scanner, Agfa Forte Film Recorder.

Nikon Scanner, Sony Dye Sublimation.

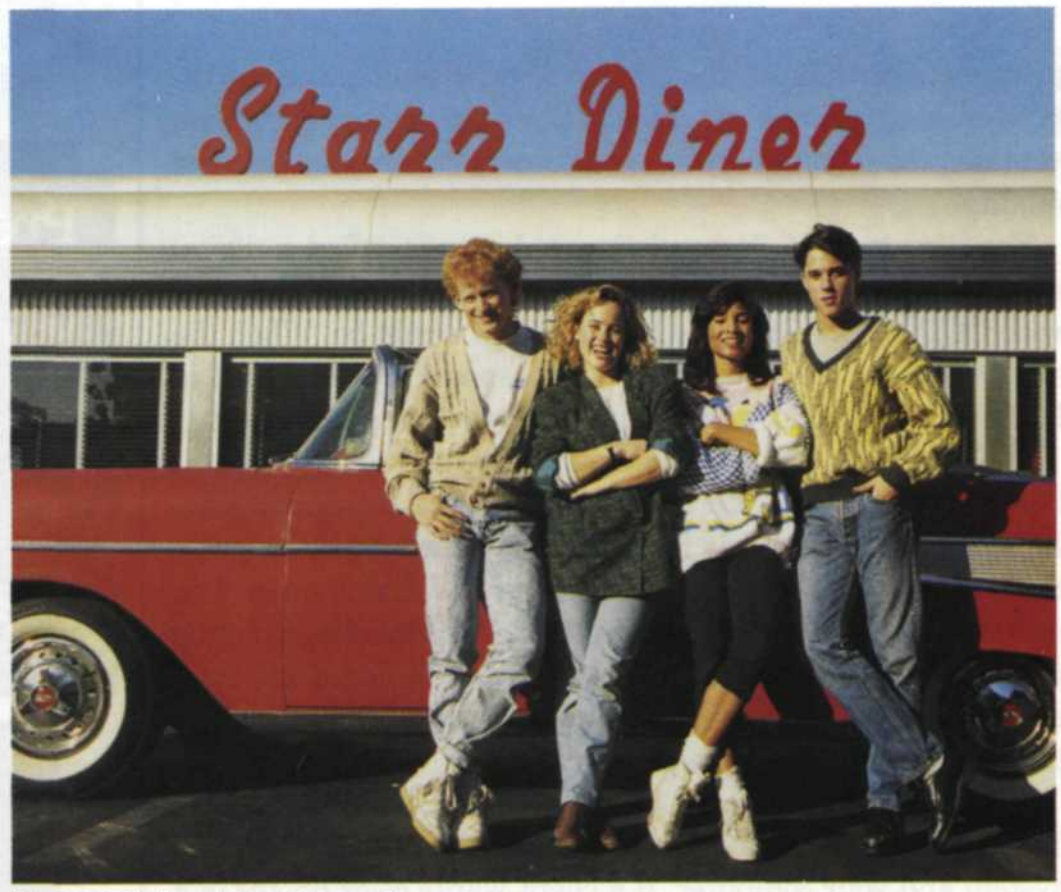
MANY PHOTO LABS are adding electronic imaging to their list of available services, while other lab managers are totally perplexed. The process is not as simple as adding a new processor or enlarger. In fact, it requires that you adopt a whole new perspective of photography. Yet, many labs are taking the plunge, while you scratch your head. We know this is a tough decision, so following are some of the problems and answers we are encountering in setting up our own electronic imaging lab.

Hardware: Input Devices

Photographs enter the electronic imaging system through various types of electronic input devices. The most common device is called a "scanner" which is available in three basic types. The first is a flat-bed scanner which looks similar to a copy machine. This scanner is used to scan black-and-white or color artwork or photos into the computer system. Most flat-bed scanners are available from 300 to 2400 DPI resolution. In our lab operation we installed an Agfa Arcus flat-bed scanner that has a resolution of 1200 DPI. The advantage of this type of scanner is that it will also scan transparencies up to 8½x11".

The second type of scanner is called a film scanner. These machines can scan film from 35mm up to 4x5 depending on the scanner manufacturer. The resolution of these scanners can run up to 3500 DPI. We selected the Nikon LS-3510AF 35mm film scanner for scanning color slide and negatives into our system. We scan-in our larger format transparencies using the Arcus flatbed scanner mentioned earlier.

The third and most versatile scanner is called a drum scanner. With this type of scanner all sizes of transparencies and flat art can be attached to the drum and scanned into the system at extremely high resolution. Most of the high quality



Kodak CD, Kodak Dye Sublimation.

Agfa Scanner, Agfa Forte Film Recorder.

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CRT exposure device. We have already reviewed several of these systems shown at PMA '92. Refer to our article in the April '92 issue of *Photo Lab Management* for more information on these printers.

Hardware: Computer Systems

After the photography image is converted to electrons, it is sent to a computer system. This is where most new electronic labs go wrong. They buy high quality scanners and output devices and then cut corners on their computer system. The make-or-break point of most electronic imaging systems is the speed, memory, and versatility of the computer system that runs it all. Computers for manipulation use extremely large amounts of memory and require very high speed processors. Scanned 35mm images can exceed 30 megabytes and uncompressed drum scanned files for separations can be over 300 megabytes in size.

The cost of adding a good electronic imaging center to your lab is not cheap, but most all photo equipment is expensive. Low-end electronic systems can run between $15,000 to $25,000 dollars, while mid-range systems, like the one we have, run from $30,000 to $125,000. High-end systems can start at the $100,000 mark and run over $500,000 for a complete system.

The mid-range and low-end electronic systems can be operated using either PCs or MAC computers. You need to make sure that you have the fastest operating system that your money can buy, at least 20 megabytes of RAM and 600 megabytes of hard disk space. We also store images and programs on SyQuest removable hard drives so we can easily move programs and images from one computer to another.

If you are interested in the high-end imaging systems, you will be looking at investing in a workstation like a Sun Workstation. These high-level systems have the speed, memory and image storage capability that exceed any PC or MAC.

Speed and Quality

Photographers ask, "Is the quality as good as traditional photography?" We answer with a "Yes and No." The quality of the electronic image depends on the quality of the electronic system used. From what we have seen at trade shows or products produced in our lab and other larger lab operations, we feel that only the highest end scanner, film recorders and color printers can match the quality of traditional photography. With the midrange electronic imaging equipment we have in our lab, we can equal the quality of a good traditional slide duplicate, but not replace the quality of the original.

"Is electronic imaging faster than traditional photography?"

printing separations today are made on drum scanners. This type of scanner would be used by the larger labs that do high volume production and whose customers demand the highest quality.

The next type of electronic input device is called a digital camera. Most of these cameras are modified film cameras with CCD chips installed where the film would be. When the shutter opens, the light strikes the sensors and is stored in RAM, on a hard disk or sent directly to the computer system.

The resolution of these cameras is less than scanners but it is much faster and offers the versatility of being portable. Imaging times can be as fast as 1/8000 of a second. At press time, most every camera manufacturer is working on, or has introduced, their own digital camera. We have been testing the Kodak DCS camera in our lab. We have found the camera to be very efficient on the slide duplicator, copy stand, in the studio and for location photography.

The third type of input device is called a capture board. This board is used as a translation device between a video system and your computer. If a client wants color photos of a specific frame in a video tape, you merely press the capture function when the image appears and it is sent to the computer system. The quality of the image is poor, but only because of the quality of the video image itself. We have tested several capture boards in our lab operation and have found them to work well, but we have not had enough customer demand to support such a system.

Hardware: Output Devices

Once the photographic image is input and processed in the computer system, it is ready to be sent to an output device. The most popular device is called a film recorder. These come in a variety of quality levels from the desktop publishing model to the high-end models used for service bureaus and separation houses. In our lab operation we use an Agfa Forte film recorder that images 35mm to 8x10 on 45 different types of film at 2k, 4k and 8k resolution.

If you want color prints directly from the computer system, you can use an output device called a dye sublimation color printer. This printer is about the same size as a laser printer, but it outputs full color photographs and costs considerably more. Most of these printers today can output 5- and 12-inch-wide paper. As progress continues, the price of these dye sublimation printers will come down and its paper costs with it.

In our lab, we still use traditional wet lab printing for both traditional negatives and negatives created on the film recorder. We are in the process of testing dye sublimation printers for future additions to our lab services. We have tested the Sony, Nikon, and Kodak printers and found the print quality to be most acceptable for our clients' jobs.

For the larger labs with high print volume, the hybrid CRT printers might be just the answer. These printers scan in images and print them onto RA-4 paper via a high resolution

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The "Yes and No" answer applies again. In most cases traditional photography will surpass electronic imaging in speed. The higher the quality of the equipment, the faster the imaging time. With the hybrid CRT printing mentioned earlier, high production electronic printing can equal traditional printing in speed.

Photo Electronic Applications

So, if electronic photography is generally less quality and slower, why would you want to do it? The answer is "Versatility." Electronic imaging can perform dozens of different lab operations all on one system. Suppose you have a small lab with a fairly high volume of color prints from color negatives. In order to cut costs, you limit yourself to film processing and color printing. Then a customer comes in with a color negative and a color slide and wants a black and white prints from each.

With traditional systems, you would make an internegative of the slide and make prints from it. The color negative would have to be printed on Panalure paper. With an electronic system, both images are scanned into the system, corrected for contrast and exposure, then printed to black and white paper in your dye sublimation printer. No wet darkroom needed to perform the same tasks, and in less time.

Retouching and Manipulation

One area where electronic imaging outperforms traditional photography is with retouching. With traditional wet lab processes, retouching damaged images can take days and is costly. With electronic retouching you merely scan in the image, use the "clone," smudge," "airbrush" and "cut and paste" tools to repair almost any image in a very short time, resulting in lower cost to the customer. Portrait labs can now easily remove objectional backgrounds, reflections in the glasses, and add a sparkle to the eyes in a matter of minutes.

We recently had a customer who was going to a 50th wedding anniversary and wanted to present a photo with the entire family, but did not have a family portrait with all family members. He brought in several individual photos and we scanned each and combined them into one photo. We then created a new negative on the film recorder and he was the hit of the party.

In our lab we are constantly scanning in photos for clients, adding drop shadows, adding text and even throwing in a graduated background. Using past methods, it would have taken a considerable amount of time and lab material before the job was done and changes were costly. We also have several clients who bring in photos for us to prepare convention displays. We scan in the photos, add boxes and text and re-output them on 4x5 negative film. We then print the final image in the wet lab on conventional large color or black and white paper.

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Justifying the Cost of Digital Imaging

So, how do you justify one of these systems? First, and most important, research your clients' needs, volume, payback and electronic application. The key to a successful operation is matching your customers' expectations to the end product generated by the system you purchase. You may like the results of the high-end system, but maybe your customers would not recognize the differences, and won't pay the prices necessary to pay back a high-end system.

One of the best ways to get your system started, and make some return on your investment, is to set up a service bureau. With this service, clients bring computer files they have created that contain lecture materials and illustrations. You simply image these files on your film recorder and process the film in your lab. This service brings in new money and a whole new client base.

When you first set up your electronic lab, divide your services into specific areas, create samples and advertise your services. In our lab, we divided our electronic imaging into four basic areas: Service Bureau, Retouching, Photo Composition, and Photo Conversion. Each of these basic areas services a specific group of our client base and keeps our system operating at least eight hours a day.

Setting Up a System

Getting started with electronic imaging may be difficult for those who are not totally computer literate. But don't worry, as most of the electronic manufacturers have excellent technical support to help you. Local college classes or lecture tours on electronic imaging can also help you make the transition. It never hurts to make friends with some computer buffs, so that when you run into computer technical problems, they can give you a helping hand.

If you plan on getting into electronic photography, don't consider it a replacement for traditional photography, but rather, a way to enhance it. The electronic photo lab should allow you to add new services, replace some of the traditional ones and create a more effective photo lab operation. The decision to add an electronic lab is a tough one and takes a commitment of time and money. But, if you are still uncertain, remember that the two other labs down the street have already decided!

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