SOLUTIONS
FROM ANALOG TO DIGITAL

Vol 1. No. 1. Oct1995

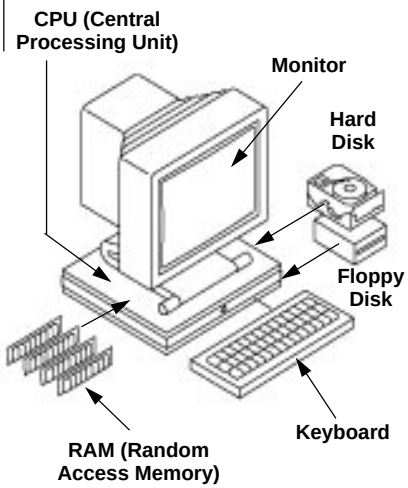
Digital Basics

Welcome to *Solutions, From Analog to Digital*, the first Acrobat PDF newsletter that shows how decision makers like you solve complex communication problems using tools like **Hot Java**, **VRML** and the **WWW.** In each issue, working professionals will tell how they used these tools, and others, to help people communicate more effectively to their respective audiences.

From outside editorials to user group input, *Solutions* will demystify the art of digital communications. Also in *Solutions* will be a **Digital Basics Section** that will discuss different aspects of computing from Adobe Acrobat to VRML.

The Computer, Engine of the Information Age

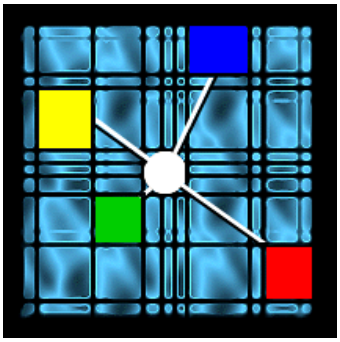
These are the basic parts of a PC



Con't. on page 2.

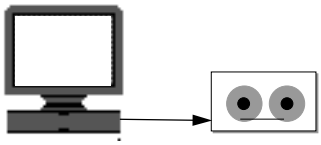
THE PROBLEM: File Formats

Hank Beck, president of *Printtables, Inc.*, a Stamford CT graphic design and production company, had a problem. NYNEX, with Xerox as printing partner, wanted to produce color binder covers for the Engineering Department but couldn't. While the design was excellent, as seen by the picture below, the job was stalled because of how the art was created.



SYSTEMS ENGINEERING

For starters, the work was done on a SUN (a powerful UNIX computer) with no network connectivity with *Printtables'* Macintosh systems. Additionally, not only were the huge 140mb files too large for the Mac to handle, but also the files themselves were saved in a format not native to the Mac. To make matters worse, there was no portable storage system other than the SUN's 6150 tape drive that would at least allow Hank to bring the files back to his office to see how the NYNEX job could be done.



The art was originally produced on a SUN workstation using Autodesk's *3D Studio* (a high-end 3D animation program) and Aldus' *PhotoStyler* (a 2D paint package). At the beginning, the 3D models were rendered at 1000 DPI (Dots Per Inch) and saved as TGA files. (The TARGA format was developed by AT&T Graphic Labs to work with their Targa board, the first successful graphics card that started running on DOS based IBM PC's. back in 1985.)

Please note that both programs are considered to be excellent design tools, the problems in this case lay in file size and system incompatibility between the SUN and Mac environments.

The first thing Hank had to do was to reduce the 140mb file size to a more manageable 40mb. He did this by discovering that the client had originally rendered the 3D model at 1000 DPI (Dots Per Inch) a resolution that was far higher than what was needed. When the designer redid the art at 400 DPI, Hank had something his staff could work with.

Step two necessitated a call to a file conversion company who knew how to move files from one medium to another. For this job, Hank wanted the files transferred from the 6150 to a 44mb SyQuest disk, (a removable hard disk that's used by both IBM's and Macintosh computers).

Once this was done, *Printtables* could prep the files for printing. To do this required using *Adobe*

0&1 On/Off +-

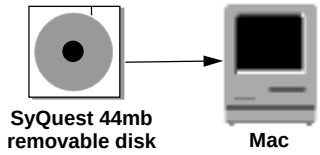
Digital counts, Analog measures.
A light switch is digital, while a thermometer is analog.
In binary, 00001010 = 10

All digital computers, whether it's a $900 IBM PC or a $20,000,000 Cray supercomputer, simply count for a living. To do this quickly requires the computer to count by two's (binary notation - 0's & 1's) using a very fast on/off digital switch called a microprocessor or CPU (Central Processing Unit). The CPU acts as the "brain "of the computer as it generates the 0's and 1's needed to do meaningful work.

The smallest expression in a computer is called a bit and 8 bits = a byte. A byte, in turn, is considered to be an 8 bit "word" and the more bytes a CPU can handle at one time determines, in large part, how fast the computer is. Today, most systems use 32 bit CPUs. With the advent of the Pentium and the Power PC, computers are rapidly moving into 64 bit territory.

Printtables address is:
Printtables, Inc.
49 Woodside Street
Stamford, CT
967-3111
353-9513 fax

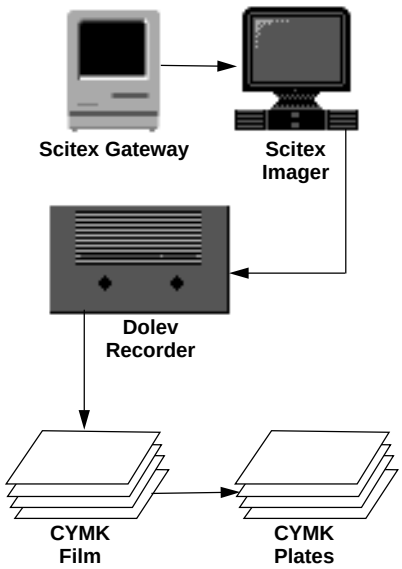
©1995
DC/the Avanti group - all rights reserved
R.E. Moran - Design Director
e-mail remoran@avantigrp.com



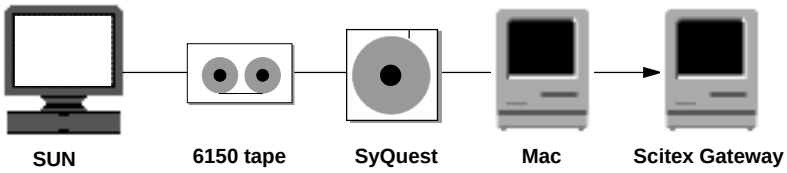
Removable drives have become popular for computer users. On the Mac, the *SyQuest* remains the most popular with storage capacities up to 270mb. For the IBM, the *Iomega Bernoulli* has held reign for years because of their well known reliability. In just five years, their storage size have increased from 10mb to 1 GB. The newcomer on the block for all systems are the MO's (Magneto Optical), a storage medium that already provides multi gigabyte (billion byte) capability at relatively low prices. The only problem with opticals is that they are still evolving at a dizzying pace (as are CD-ROMS). Current storage levels range from 256 mb for 3.5" disks to 10+ gigabytes for 12" media.

Photoshop as both file format translator and image editor. In *Photoshop*, Hank's staff merely had to open the NYNEX's TGA file and save it as a industry standard TIFF document. (Tagged Image File Format is a bitmap standard that is used by nearly all software vendors) From there, *Printtables* integrated text into the design by using *Adobe Illustrator* (a type/draw program) and *Quark Xpress* (a page layout package).

Once this was done, *Printtables* sent the art to the printer on a *SyQuest*. From there, the printer downloaded the files into his pre-press environment via the *Scitex Gateway*, a high-end imaging system that converted all the work into very high resolution raster files. These, in turn, became the guide for the Scitex Imager and the Dolev (a sophisticated film recorder) to expose the CMYK (Cyan, Magenta, Yellow and Black) separation films that were used to produce the printing plates that did the NYNEX binder covers.



Traditional 4/C printing requires four separate films to make the CMYK (Cyan, Magenta, Yellow & Black) press plates that apply the ink to the paper. To prep the plates takes three steps: 1. Expose film. 2. Place the film directly on the light sensitive printing plates and 3. Expose plates to UV light. Any light that goes through the film to the plate makes that part of the plate ink receptive while unexposed parts become ink resistive. Newer systems bypass the film step by directly imaging the plates themselves.



These are the hardware transfers that *Printtables* made to move the NYNEX job from the Sun to the Scitex Gateway system. The SyQuest removable disk was used to move files to and from Printtable's Mac since the Scitex Gateway also uses the Macintosh as the front end of their system. Timeframe for file translations and printer prep was approximately one month. If file formats were standardized for all systems, the job would have taken about two weeks to finish.