

"Man plans, God laughs" —Old Yiddish saying

THE DIGITAL FUTURE

By Howard I. Finberg

The next technological steps for PNI

Phoenix Newspapers Inc. has been an impressive leader in technology for the past five years. Its commitment to pagination has put The Arizona Republic, The Phoenix Gazette and the Arizona Business Gazette in the forefront of American newspapers concerned with issues of electronic page design and production.

And, partially as a result of technology and partially for other reasons, the appearance of each newspaper has dramatically improved. This is no idle issue, as the danger of technology has always been to increase productivity without improving the quality of life (or in our case the quality of our products).

Technology influences the newspaper in many different ways: From offset presses controlled by computers to database programs that help circulation, independent components become part of an interdependent system.

This connection is the strongest between the newsrooms and production. We are linked, tied electronically by common systems, common needs and common problems. In the same way siblings share bloodlines, editorial and production share an electronic network of bits, bytes and data.

For example, the newsrooms' color photographic files created on a Scitex scanner are linked to the production department's advertising makeup computer system, production's INPs (image network processors) are tied to the newsrooms' PMS (page makeup stations), and the art

departments' Apple Macintosh desktop computers are connected to each other and to the INP network.

The New Newsroom

More important than relationships between computer systems and more interesting than the technological feat of pagination is the way the newsrooms are organized to produce the newspaper.

Using new technology to produce a newspaper in the same method utilized 20 years ago or 5 years ago is a tremendous waste of money, manpower and creativity. It would be like building a new car using the same steel and iron frames of the model-T rather than the space-age metals and plastics of today.

New technology (and pagination is still a "new technology" for many newspapers) provides us an opportunity to address fundamental questions of how we manage the *process* of newspaper production from the perspective of the newsroom. Re-creating a "newsroom composing room" serves little purpose, as it would apply old methods to new problems. On the other hand, going off in a dozen different technological directions also does not serve the newspaper, either.

Regardless of how computers are used to design the newspaper, we are still talking about machines—pieces of equipment designed to increase productivity and profits, improve the quality of the newspaper and perform functions previously out of reach.

While pagination is the most obvious new machine in the new newsroom, there are other examples of how changing technology is affecting the way news is gathered, packaged and produced. Phoenix Newspapers is dealing with new "front end" equipment, new ways of creating graphics and illustrations, new databases of information and new procedures of producing photos. Each is an exciting opportunity, each a challenge of integration.

A crucial decision point

These newspapers are at a crucial decision point on the technological highway. It is time to map out our future requirements and goals. Not only the needs for this year, but for the next several years. The

following report outlines key areas that need to be addressed in operating and capital budget processes. More than a list of equipment requests, it is an attempt to outline problems the newsrooms face in areas where their machines are out of date, or aren't powerful enough or do not meet the needs of a newspaper of the 1990s.

The New Challenges/Design and Pagination

The Problems: Ergonomics, Color and Capabilities

The conversion to full pagination has been an excellent opportunity to solve several problems, particularly the ability to produce a newspaper in a timely manner as the composing room workforce shrank, and to send pages to our printing plants.

Pagination has changed the way we create a newspaper and the flow of work within the department. It also has raised the quality of design and overall appearance.

However, our current equipment is ill-suited to go much further. The Page Make-up Station (PMS) is an ergonomic nightmare. Without even considering the working environment of the designers (darkened rooms), the repetitive functions required by the system's antiquated keypad cursor and menu tablet are causing injury to the staff. Adjusting or even rebuilding the workstation is a stopgap solution; this equipment was not designed for the use this newspaper (or other papers) give it on a daily basis.

Beyond the physical problems caused by the equipment, there is the issue of color. When full pagination was completed (in 1988) The Republic and The Gazette were following the publisher's direction to use color sparingly. Creating a black & white newspaper on the PMS equipment was an easier task than creating today's vibrant and colorful products. The reason, although obvious, is so important that it bears repeating: You cannot "design" a color newspaper on equipment that does not accommodate color. Designing with color is not just a matter of placing an element on the page and hitting the typesetting button. To use color creativity requires a designer to see and then move those color elements

on a page. This is fundamental for effective and pleasing design. It is not possible on our current equipment.

The third major problem with the current triple-i equipment is its inadequate design capabilities. This equipment was originally created for the repetitive functions used to produce a catalog or a highly formatted magazine. The PMS was not created to handle the design of an exciting and visually interesting newspaper. Its inability to perform basic typographical functions (wrapping art elements within type, rotation of type or visuals and the output of reverse type) severely limits the creative solutions needed to produce a visually exciting newspaper. For example, the cover of the AZ Style! section is not a convoluted design. Its logo overprints on a high quality fashion photo (something magazines have done for years). However, we cannot create that cover on our current Page Makeup Stations. In fact, we need to use PNI's Ad Makeup Station (AMS) and go through a very complicated process of mockups and spec sheets to produce this cover. These computers were not designed to create editorial pages and hence the AZ Style! cover process has become long and involved.

These criticisms of the PMS equipment should not suggest that these machines don't have special abilities over other equipment. Pages like the stock market tables or the Arizona Business Gazette's 'New Public Listings' have been and probably will continue to be handled on current or similar production-oriented equipment.

Design cannot be a static process. It reflects our changing readership and the changing marketplace. Our equipment should not be an anchor to the past, but a means to the future. We need to move all three PNI newspapers to a higher level of design, stronger color use, and a better integration of informational elements on a page. To accomplish those goals will require that we shift work (and workers) off the PMS as quickly as financially and technically feasible. And while most newspapers are looking at their first generation of pagination equipment, PNI needs to be working toward its second generation of such computers. The knowledge for such a transition at both The Republic and Gazette has never been higher. Many of the key staff members that took the newspapers to pagination are in place for the next phase. There are three routes to consider: use triple-i's solution, abandon triple-i pagination equipment in favor of a System Integrators Inc. (SII) solution; or use a

Macintosh solution. Or we could do nothing, making do with the existing pagination equipment and deal with the ergonomic consequences, inefficiencies and color issues as they arise.

The Triple-i Solution

Triple-i's PMS 2, the Sun-based workstation that was to be the replacement for our current PMS stations, is dead. Triple-i has decided it cannot release equipment that would be not only out of date the moment it was manufactured but would be lacking the basic design tools already existing on other computers, such as the Macintosh.

Instead, triple-i is working on a software product that brings much of the function and power of our current pagination system to a Mac-based workstation. And, because this is a software solution instead of the hardware solution of the PMS 2 workstation, costs are lower and flexibility greater.

Currently called Concept Page Finisher (CPF), this product will be sent (in version 1.0) before September to a newspaper in Japan. This will not be the version offered in the U.S., but it shows the commitment that triple-i has to this product.

Concept Publishing Systems (a Mac software development company) and triple-i are jointly developing this Mac software package that combines aspects of the open computer system information (the Macintosh) and the ability to access triple-i's closed publishing system. Similar to many of the Macintosh page design programs, CPF can operate under a variety of different configurations.

Using PNI's current method of pagination as its goal, triple-i promises to deliver a Mac software package that will handle text output from our SII system and then compose pages (with ads) the way we now produce pages on the PMS. Those pages would then be output using our existing typesetters.

This will be accomplished because CPF will output pages not in PostScript (something our typesetter cannot read without translation) but in pii (pagination information interchange) format, the computer language that we use on our existing PMS/INP setup.

What makes this a promising solution is that our existing PMS could run concurrently with CPF stations. This lets us build an 'addition' to our design house—the CPF/Mac design stations—without tearing down the rest of the structure. The Republic's and Gazette's page makeup stations would continue to be used, albeit for more production oriented tasks like stock market pages rather than design functions as found on the Arts Plus cover.

The type of Mac hardware needed for this system is basically up to the newspaper. The software takes about 4 megs of random access memory (the instructions that tell the computer what to do when running a program). By current Macintosh standards, that is not a very large program for what functions it is expected to perform. To handle files from other sources for a test or evaluation of this system, an additional computer (Sun 'Sparc') on the triple-i network may be needed as a file server for low-resolution (lo-res) images. These low-res images are similar to the ones called up by the PMS. Low-resolution (lo-res) images are necessary to keep design speed at the highest level.

Triple-i did not have a firm estimate on prices for CPF, but gave the following as a guide:

- CPF software, per workstation, \$15,000
- Sparc Sun workstation for file server \$20,000
- Software to allow Macs on network to see Sun file server \$3,000

A rough estimate to replace all workstations with a new triple-i/Mac-based system would be \$240,000. This should be compared with the estimate to replace our existing equipment with the PMS 2 workstation. That installation, for PMS 2 computers alone, would have been \$960,000. (The last quote for each PMS 2 was \$60,000 per workstation; we have 15 Page Makeup Stations at the Republic and Gazette and there is one PMS in the computer room) There would be additional costs for Sun Sparc workstations as file servers.

A 3-Year Plan

Because of the problems dealing with machinery that is out of date and an ergonomic nightmare, the following is a possible plan for moving PNI off the PMS technology and onto a CPF/Mac base:

- R&D/Testing Phase: Fall of 1992

Install three Mac workstations (two in The Republic and one in the Gazette) and a new Sun Sparc as a file server, a computer to handle data files in much the same way a file cabinet handles paper information. (This equipment could be used for other purposes if PNI decides that the triple-i solution is not acceptable.) Triple-i is willing to work with PNI as a beta (testing) site for developing and improving CPF. This would postpone the purchase of software until the PNI is completely satisfied that the solution is correct.

CPF is not a pie-in-the sky product (vaporware); it is in final development. This gives triple-i a greater willingness to work with PNI on developing a product to meet our needs for both production and design. This phase would have text passed directly as text only (ASCII) files. That is a temporary situation until triple-i makes a decision regarding how SII 'Styl' format coding will be handled in CPF.

(There are currently two options regarding Styl: SII gives triple-i file format information and hence triple-i will be able to deal with stories as they are coded on the front-end system. The other option is involving an independent solution (see page 9). That option uses a 3rd party program developed by the John Juliano Co.

- Phase Two: Spring of 1993

Based on experience during R&D phase, recommendations would be made to the company regarding whether the triple-i solution is *the* solution to our pagination future. At this point a decision can be made regarding the number of workstations needed and how many of the current PMS machines would be needed for "production." (PNI would need to budget the 1993 capital expenditures based on "best case" contingency.)

- Phase Three: Spring/Summer 1993

If a green light is given, we would begin installation of the new equipment.

- Phase Four: Early 1994

Complete final installation of the new equipment.

The SII Solution

Without a massive overhaul of the way The Republic and the Gazette handle design and pagination, SII does not offer a realistic solution to pagination. Given the experiences at beta (test) sites and the talk at the ANPA-TEC show, SII's Interactive Page Layout program has not swept the newspaper industry off its feet. It has barely caused a breeze.

And the unofficial, but reliable, news that Al Edwards (SII president) has promised to deliver to triple-i information about how SII handles test formatting is a strong indication that SII is looking to other avenues for pagination solutions. If SII delivers, and it is likely they will, we will be in an excellent position to combine the best of our front-end typesetting (SII) with the best of triple-i's new equipment.

The Apple Macintosh Solution

Pagination is very real and very possible using a Macintosh computer system. The Mac offers some excellent advantages that no other vendor has, including:

- Off the shelf hardware
- An easy-to-learn user interface (the Mac has a graphic user interface and displays information about files and folders as symbols rather than text on a computer screen)
- Integration with other software solutions in the newspaper (Adobe Photoshop for photos, Aldus Freehand and Adobe Illustrator for illustrations and informational graphics)
- A cost benefit over other hardware; a Macintosh is actually more cost effective vs. a similarly equipped DOS (an IBM or clone) computer. The DOS equipment has a lower 'starting' point, but needs much more in the way of "add-ons" to bring it to the speed and processing power of a Macintosh.

The Mac as a design workstation, raises the issue of placement and tracking of ads: Can the newspapers use Macs for design and still use the current triple-i solution for advertisements?

Yes. I just saw two products that could solve this difficulty. Both provide PNI an opportunity to meet its goal of providing design flexibility in a workstation that is ergonomically correct.

The first solution involves placement of ads on the page.

To understand this process, look at the example of ads that are created for a special or specific product. AZ Style!, the Television book and ABG are such products. In discussions with the advertising department's art director, it was concluded that 80 to 90 percent of the TV book ads were created on the Mac or could be scanned in via a desktop scanner or received electronically via PressLink or AdSat system (the national TV ads).

The solution involves using Software Consulting Services (SCS), the developer of Layout 8000, to adapt PNI's current ad entry and ad placement information that is created on the SII system and then passed to triple-i. SCS would need to adapt its current Macintosh product. Called SCS/LinX, this program is a QuarkXpress (a Mac design program) extension (add-on) that reads page geometries onto Mac template pages. SCS/LinX handles ad placement information in the same way that our page geometries are passed to the Triple-i system via SII's Interactive Ad Layout program. This information, according to SCS, could be adapted for use on a Mac design system.

An SCS/LinX solution could give PNI a way to use its existing SII ad entry and placement system and its existing terminals to pass information to the Macintosh network. The difference would be in which direction (triple-i or Mac) the edition design format files are sent. These files can be sent via floppy disk, ethernet or serial/RS232 port.

On the Mac, positions and ad numbers would be placed on the pages as designed by the ad dispatch department. After a designer is finished with a section, she tells the program to call in the actual ads onto the pages. Still using the example of the Television book, these ads could reside on our existing Mac network after being created, checked and approved by the advertising department. (To move those ads, we could use either a "sneaker net" —walking the files around the building— system of putting the ads on a removable hard drive disk and carrying the files upstairs or install a file transfer "bridge" that would wire the advertising department into the newsrooms' existing network.

Using the same three workstations discussed under the triple-i solution, the additional cost would involve software for SCS/LinX at \$3,353 per workstation or \$25,000 for a site license (the ability to install the program in as many Macintosh computers as we wish). These prices

are for an off-shelf solution; there may be an additional cost for our SII/triple-i equipment.

The second and more practical solution would use our existing triple-i equipment.

The current AMS equipment, according to triple-i, has the ability to output ads in a file format called TIFF (tagged image file format). Using a program called Open Prepress Interchange (OPI), the TIFF ad files would be linked the high resolution (quality) ad that resides on the existing INP network.

The designer, using a Mac workstation, can access these low-resolution TIFF files for placement in QuarkXpress. The Spokane, Wash., Statesman-Review is using this solution (on triple-i equipment purchased this year) for placing ads on its pages.

OPI is in our current (1992) capital budget and is awaiting a final system integration plan before submission. Once installed, OPI will provide not only the above TIFF link for ads, but also, as it was budgeted for, allow for the processing of black & white wire photos via the Leaf Picture Desk . This OPI purchase would fit well into future pagination and other plans.

There are no cost estimates for the TIFF solution, although it was my understanding from triple-i that because we already have much of the needed equipment we would only need to purchase some additional software.

While both SCS/LinX and the triple-i TIFF solutions could work, using our existing SII tracking and control methods for ads is clearly a preferable choice. However, each solution still allows us to meet the goal of getting ad placement information onto Macintosh page templates or forms.

Text Issues

The other key issue regarding Mac pagination using our SII text editing system is the need to handle formatted type. While the Mac can quickly reformat type sent via modem or hard wire connection (Wolfer*Wire), type sent via either method comes across as ASCII (text only). The codes telling SII to pass to triple-i such information as headline size, body type size, etc. are vital to any pagination solution. For an initial testing period, a designer would be required to reformat type (duplicating the work already performed on the copy desk). Eventually, there would be a strong need for a solution that captures the existing coding and formats.

There are two solutions, one existing and one possible:

The existing solution involves a 3rd-party vendor, John Juliano Inc., which produces a QuarkXpress extension called Blue Skii Express that reads the SII formats and converts the information into Mac typesetting information.

This conversion maintains the line ends of the original SII type as it transfers text to the Mac system. This is vital as that information keeps story length consistent between both the SII system and the Mac system.

The other advantage of Blue Skii Express is that it allows for the story to be passed back to the SII system once the design has been completed. That way the final story can be maintained in our database and a complete 'history' of the story—who changed the story and what changes were made—can be kept.

Blue Skii Express is at several newspapers, including the Los Angeles Times, the Sacramento Bee and the San Francisco Chronicle and Examiner. John Juliano is most willing to work with PNI to develop a testing program and see how well our typesetting (Styl) codes interact with his solution.

One of our strongest computer assets is our current library of SII Styl codes. We have spent time (and hence money) developing the formats necessary for producing the newspaper. Any type transfer system—eventually—needs to deal with those formats. And since going to a new front-end system is not an option, Blue Skii offers us a way to continue to use those codes.

(Juliano produces a similar program for Atex users called Atan and has been successful placing that product in the newspaper industry.)

Cost for Blue Skii is \$6,000 for the first copy, \$4,000 for additional copies or \$30,000 for a site license. In July, Juliano will send a copy of the program for PNI to test.

The second solution involves discussions between SII and triple-i. If those discussions lead to sharing of file formats between SII and Triple-i, then the case for Concept Page Finisher is even stronger.

Where Does Advertising Fit?

The advertising department must have the means to meet the needs of its customers. It must have an effective way of handling computer-created ads and an effective way of moving material to whatever system is being used to produce the newspaper.

All of the steps outlined above fit the overall plans of the advertising department to serve its clients/customers via Macintosh equipment (not only at the Phoenix Center but at remote sites). (The advertising art department's equipment should be updated, along with the Republic's and Gazette's, to machines that have the processing speed and storage necessary in today's computer environment.)

More importantly, the advertising art department needs to have its equipment linked to both newsrooms and to the triple-i equipment.

It is unlikely that the advertising department will ever eliminate the need for the Ad Makeup Stations (AMS) that Triple-i supplies to PNI. This equipment is sound and functions well for what its main purpose is and should be—the creation of complicated advertisements. (A number of newspapers have recently purchased such equipment, including St. Petersburg Times, San Jose Mercury News and the Tucson Newspaper Agency.)

However, there are many ads that could and should be created on the Mac. These ads need to be handled in the same way the newsrooms handle informational graphics; once created on the Mac, the "graphic" is processed directly to the Triple-i INP and then positioned on the newspaper page.

The advertising department needs to be in a technological position to handle not only the creation of Mac ads but the ads created by ad agencies and clients on their own Macs. This development of in-house ad creation was also noted at the ANPA-TEC show and a number of newspapers talked about handling Mac ads created by sources outside the newspaper's advertising department.

(The upcoming acceptance test of a Postscript processor for the Triple-i equipment will bring not only a new PostScript interpreter but a new processor (already paid for) to handle advertising's Macintosh ads.)

What Will Change at Phoenix Newspapers

The newspapers of PNI for the 1990s need to be designed on equipment that is safe, versatile and fast. When pagination was installed, there was no vision of color as both papers use it today. By using new equipment not only does the company have a opportunity to provide workstations that are healthier but also more creative. And, by mixing pagination and design solutions, the newspapers have more opportunities to handle new or expanded products.

The introduction of new equipment changes the way the newspaper will perform some functions; the mixing of "old" technologies and "new" technologies will not change the basic mission of the newspaper nor the basic interaction between the editorial and production function of producing full-page output.

More than changing the equipment, the newsrooms are changing the very process of how news is packaged and presented. Rather than the traditional vertical "flow from the newsroom to the composing room" structure at most newspapers, The Republic and Gazette allow for the full participation of the designers and other visual specialists in the preparation of the next day's product or section. Yet the paper's management structure mirrors the way work was once organized and processed. As companies enter the 1990s, this "from the top down" structure will change, with more work groups operating across department lines.

This provides a tremendous benefit, helping staffers see beyond their specific job function and keeping employees motivated and challenged.

New technology should help that process rather than hurt it.

New technology should let more people contribute to the presentation of the newspaper; old technology limits that creativity to the few who can master the machines and, just as important, to the number of machines available to use. Even if either newspaper wanted to change the way it brings together information for design, one limiting factor is the number of current Page Makeup Stations (8 for the Republic, 7 for the Gazette). This is no small factor when planning work schedules and page flow. Technology should help the process of getting out a newspaper, not limit it.

The 1990s will bring even more changes in the way work is organized and processed. PNI needs to position itself on the learning curve of the next generation of computer workstations. These computers should not be limited to one function because the newsroom needs people to do more than one job if the company is to prosper. Why not have the graphics editor responsible for a special section and not just the graphics inside the product? It is more cost effective to save key strokes (or input) and to train an employee to do more than one function, such as scan images for the newspaper and for resale to readers.

Technology, as this company has learned, is a dual-edged sword. It can cut the user if you aren't careful. But the benefits to be reaped make such risk part of the business of giving readers *and* advertisers the most vital, exciting and topical publication possible.

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Pagination, while very important, is the not the only area that is facing great technological changes. All parts of our interconnected newsrooms are dealing with the issues of creating stories, color, graphics on computers. What follows, in a similar format as above, are some of the other specific technology challenges that face PNI and some of the solutions to create better and more exciting newspapers.

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The New Challenges/Additional Color Processing

The Problem

With advertisers given free color separation work at PNI and the opening of the Deer Valley Center, the demands for advertising-color processing will increase.

For the first five months of 1992, The Republic, for example, scanned a total of 3,698 pictures. During the same period in 1991 a total of 2,468 images were scanned. That's an increase of 50%. For the same time period, a total of 253 advertising department scans were made versus a total of 108 in 1991. That is a 134% increase.

This becomes a concern if there is going to be sufficient time for quality checking and proofing to meet the needs and standards of both the advertiser and the advertising department. In addition, there need to be similar quality stops for editorial color.

Given the nature of this work—it takes a fixed amount of time to make a color separation—there needs to be a way to increase work flow.

The Solution

There are two possible solutions.

One is to buy another scanner and place that equipment in the advertising department. The disadvantages of this solution are as follows:

- It is expensive to have three Smart Scan machines
- There is a long training period and the danger of advertisers becoming unhappy with quality.
- Advertising would need to reallocate staff to run equipment.

The second solution involves the replacement purchase of equipment that could provide more productivity with the existing staff.

Scitex has announced a new scanner that meets that need, the Smart Scan 720. This scanner is different than the current Smart Scan equipment in the way it processes the images and its ability to hold and process at least 20 images at one time.

One of the delays in using the Smart Scanner (or any scanner) is the time needed for the machine to do a pre-scan (the first scan that sets up the color image data) and a final scan (the scan that creates the version that is ready for publication). During that time the operator of the equipment must wait. The Smart Scan 720 solution keeps multiple images within the scanner in a "queue" and provides dual image processors that allow for the setting of image parameters for new images in the foreground while the Smart Scan 720 performs final scan in the background. After setting the prescan parameters for all the images, an operator is free to do other work such as retouching and color correction of the final scans. Once a final scan is corrected, it is automatically processed in background.

It is that *background* processing that will greatly speed up processing of images for projects such as the Paddock Pools special sections (more than 40 scans). The faster these scans can be processed, the faster the work can begin on those images on the AMS. This would be a tremendous improvement in productivity not only in the newsrooms but in the composing room which needs those color images to finish creation of the advertisement before it can be checked and approved by the advertiser.

The Replacement Plan

The Arizona Republic and Phoenix Gazette are leaders in the country in using Scitex Smart Scan equipment. For that reason and

because newsroom staffers provide the type of feedback Scitex needs, the company will be offering PNI a special arrangement for a Smart Scan 720:

- PNI would be a beta-site for this equipment.
- Scitex will purchase our existing Smart Scan
- Scitex will acknowledge PNI's contribution as a beta-site by

reducing the price of the Smart 720.

A specific proposal will be coming from Scitex within a few weeks. For point of reference only, the list price of the Smart 720 is \$109,000; the Smart Scan (our existing equipment) is \$80,000.

The New Challenges/Wire Photo Archive Retrieval

The Problem

Both newspapers receive hundreds of photos every day. For example, The Republic receives an average of 2,100 pictures a week from the Associated Press and Reuters —or more than 100,000 pictures a year. With the installation of the Leaf Picture Desk, newspapers no longer receive images in a "paper" form, a photo printed on an analog picture processor. Before the Leaf Picture Desk, librarians could pick up these "hard copy" images to file and save. Without a hard copy, we take those wire photos and, for the most part, toss them in the digital version of a trash bin.

Not only is this a waste of resources, but it causes an additional expense anytime The Republic or Gazette needs to use a picture that is no longer in our "picture desk system." Every re-transmission of an AP photo costs \$80 to \$125.

This problem will increase as more images are sent in digital form and the longer the papers continue to "toss" those images into the trash. While newspapers cheer the improvements in quality with digital transmissions and the development of the Leaf Picture Desk, the failure to archive images will become more and more costly.

The AP Solution

The developer of the Leafax and Leaf Picture Desk has developed an archive system that runs a database using an IBM RS 6000 RISC-based machine (a very fast computer because of its unique reduced instruction

system). In addition, the newspaper would need to purchase some type of storage equipment, either traditional hard drives or a storage device that uses optical WORM (write once, ready many) disks. These optical disks look much like the compact disk players sold for home use.

This system would let Leaf Picture Desk users mark images to be sent to the archive system (single images or batch processing). Once on the archive system the library would maintain the database in much the same manner the Vu-Text database is handled.

Archived images could be accessed by any user on the local area network (in PNI's case the newsroom's already installed Macintosh ethernet network). After searching, a user could move a copy of the archive images to the network for publication or other purposes. The original would remain on the Leaf Archive unless deleted by the library or a manager of the system.

The advantage of the Leaf solution is its seamless integration into the newspaper via the Leaf Picture Desk. The disadvantage is the relatively high cost of start-up and the proprietary nature of the hardware. (We would need to buy Leaf's special database system, although PNI would purchase the archiving equipment on its own.) The bottom line start-up estimate is \$100,000. This figure is based on one system serving both newspapers.

The AXS Solution

The other major vendor with a way of handling photos and images is a software company in Berkeley, Ca., called AXS/Optical Technology Resource. AXS, already installed at the San Francisco Chronicle, provides a software solution called News Photo Access.

This software gives users the ability to capture, organize, search and display digital images.

News Photo Access resides on a file server on the Macintosh network (similar to the file server for the art department's graphics and the newspaper's other Mac files). With software loaded on any Mac on the network and the access given by the library's staff, any user could look through the AXS collection of thumbnail images for quick viewing. The actual images (compressed for storage) reside on a hard disk drive or an

optical disk drive connected to the file server. The file server contains the 'database' for the thumbnails and text (caption) information.

(A side benefit to the AXS system is its relationship with such photo services as Reuters, AFP and KRT. These companies use AXS software to archive their own photographs and are now making that 'database' available through PressLink, a dial-in service.)

A bottom line for AXS is difficult to say because of the nature of their lease flexibility, but purchase of a six-user installation package and a Sony 12" WORM drive (6.2 gig) is \$60,000 not including the cost of the file server (a Mac) to run the database.

A 3-Year Plan

There is a crucial need to establish a digital database for photos. This is similar to the very basic purchase of a "electronic file cabinet" or the purchase of equipment to store the text of stories written by our reporters (the SAVE system).

Every day without a digital capture system becomes a potential expense because of the nature of the news. Purchasing a Macintosh file server (for the AXS database software) and an optical storage system for the image archive should be the first step. Once both newspapers have their Mac/Leaf cards installed, such a file server would be accessible for librarians to capture images to the system. The Mac/Leaf card turns an existing Macintosh (an FX model or faster) into an AP Leaf Picture Desk. The advantage of the Mac/Leaf computer card is the easy way in which files are then transferred from the Leaf Picture Desk to the Macintosh system.

An alternative for 1992 to a capital expense would be a lease/purchase of the computer equipment. In addition, AXS would lease the user interface/access to the database, again to reduce capital expenditures at first.

In 1993, additional equipment, depending on the storage purchased, would be unlikely.

In 1994, it would be expected that a faster processor would be needed, along with additional storage.

The New Challenges/Film and Photos

The Problem

The Republic and Gazette photos editors are convinced that the future of silver-based photo processing is very limited. Given only the waste disposal issue, PNI needs to reduce its processing of photographic paper. In addition, there are issues of speed and flexibility in converting images from color to black & white.

The Solution

The company has already purchased two 'mini lab' solutions for film processing: A Fuji color negative processor for C41 chemicals and a Noritsu processor for color transparency film (E6 chemicals). These two labs greatly reduce our Wing-Lynch processing. The Wing-Lynch equipment, some of which is more than 8 years old, processes film by using chemicals once and then dumping the waste "down the drain." We want to avoid dumping chemicals.

The second phase involves the elimination of silver-based paper to make color or black & white prints of the processed negatives. Because many photos taken using color film are used on black & white pages, there has been the need to convert those images either by using a special paper to make a black & white print from a color negative or by photographing the color transparency image with a special black & white film and processing that image again. It costs PNI an estimated \$2.22 to \$3.35 per print in paper and chemicals. For example, to convert a color transparency converted into black & white print request, the cost per negative averages \$3.35. During the last year the company spent more than \$70,000 on such materials. Given the cost of silver, these costs are likely to increase in the coming years unless we continue to move this work to a digital process.

The alternative, in the first year of a two-year program, is to take the image that needs to be converted and use an electronic scanner to make the conversion digitally.

The Gazette has installed the company's first desktop black & white 35 mm film scanner, a Nikon unit driven by a Macintosh. The Republic will be purchasing a similar type of scanner this summer. These two

machines are (or will be) giving the newsrooms experiences in handling black & white images digitally. The advantages of a desktop black & white scanner are two-fold: cost and ease of use. Black & white film should not be scanned on our Scitex, as it would be like killing a flea with a shotgun. It could be done, but it is very wasteful.

The second phase, in 1993, would be the installation of three to four more scanning workstations. These workstations include the scanner and some kind of computer to "drive" them; the two choices are a MS-DOS/Windows machine or a Macintosh. Because of the ability of the Mac to do retouching and other photo processing with a program called "Photoshop," the recommended path is a Mac scanner driver. These machines would be connected to the newsrooms' ethertalk local area network.

With the installation of equipment in the second phase and training of the lab techs and photographers, PNI would be able to close down the current photo print processing rooms and cut expenses and toxic wastes.

The New Challenges/Photo Reprints

The Problem

Because of the high cost and toxic-waste concerns of producing silver-based photographic prints (see above) the issue of photo reprints is of vital concern. During the first four months of 1992, PNI sold more than 200 color prints and 150 black & white prints to readers and other media. For 1991, with little marketing, PNI sold 1,000 photographs.

It costs more than \$4.00 in paper and chemicals alone to produce a print that the company sells for \$30.00. In addition, it takes a tremendous amount of time and technical skill to duplicate what has already been accomplished in the color imaging area of both newspapers.

The Solution

There are two parts to solving this problem. One is purchase of a color printer that can be connected to the company's Mac system. This printer would sit in the library (for control of material, etc.) When a reader requests a photo for purchase the negative or color transparency would be scanned into an existing Mac station (see above re Macs to

eliminate need to print photographs). Once scanned, the image would be output on a Kodak XL 7700 digital continuous tone printer. This printer produces a high quality print that is almost identical to a print processed by hand. The cost of producing a color print by hand for resale is \$13.00 to \$15.00 per order (\$4.00 for materials, the rest for labor); the cost of material for the Kodak XL7700 is \$5.00 per sheet (\$3.00 for materials and the rest for labor). If we save \$8.00 per color reprint order, the company would save more than \$5,600 in costs; for black & white orders the savings would be more than \$4,800. Using the Macintosh computers requested to eliminate print processing in the photo lab, the only additional cost to PNI to realize these savings would be the Kodak XL7700 printer at less than \$20,000. This equipment would pay for itself in less than two years. These ROI figures do not include any assumptions regarding increased marketing of photos or a plan to raise the price of photos sold to the public.

The second aspect of this solution deals with the using the original scan as performed by either newsroom. Since most of the color scans are handled on the Scitex system, the purchase of a link between that system and the printer would greatly reduce the time and effort necessary to produce a print worth selling to a customer. The cost of this link is unknown. (Scitex will be sending a proposal within the next few weeks.)

The New Challenges/Reporting and Writing

The Problem

There are several reporters or other staffers who do not have ergonomically correct computers or any computers (they are forced to share equipment). Given the dependence all newspapers have on text input systems during their deadline production times, PNI needs to complete its transition from the out-dated and "dangerous" (to wrist and hand) ET-960 equipment to either Coyote or PC Coyote computers.

The Solution

SII has announced they will stop production of the "green" Coyote IVs. In addition, it is unlikely that the company will support the existing Coyote 15s and 22s for more than three or four more years. This

proprietary type of equipment is fast becoming outdated in a computer world that depends on off-the-shelf solutions. In addition, a proprietary Coyote is more expensive than its PC alternative.

The Coyote PC (there is one currently in use in The Republic's Managing Editor's office) is a more effective way of installing the remaining Coyote workstations. PNI should purchase only the Coyote PC cards from SII and look for less expensive PCs than what SII offers.

SII does not offer a similar product for the Mac. Instead they offer a system called Mac/55, which links a Mac (or Macs) to the Tandem database. The advantage of this system is that it provides a quick way for Mac users to access the SII database on the Mac. The disadvantage is that the current Mac/55 system does not support SII's own Styl formatting codes. This is a serious limitation. The other serious limitation is the price of the Mac/55 system: \$40,000 for PNI's SII processors and a charge of \$800 per Mac. In addition, there would be a \$5,000 ethernet controller charge. An installation of 10 Macs would cost \$53,000. While this is an option, it is not a solution worth considering.

The New Challenges/Wire Photo Capture

The Problem

Despite the early claims of the Associated Press that digital transmission would not mean more photos, just high quality photos, newspapers are being overrun with more and more wire photographs.

In addition, there looks to be an even greater use of the Associated Press photo transmission system: AP PhotoNet

In much the same way AP moves a variety of text services — and charges both ends for this service— the wire service has announced that once the Leaf operating system 8.0 is installed at every site, they will start a new service called AP PhotoNet. One possible customer is Knight Ridder Tribune photo service. KRT photos currently move via Independent Network Systems' satellite into our Leaf station.

What the impact this move will have on photo delivery is unknown. But if we use the text service as a model, clearly non-AP photos would not receive the same priority as Associated Press photos. Cost of delivery of such photos is unknown. But it is likely that this would be another

revenue source for the wire service (and another budget drain for newspapers).

One other development regarding AP PhotoNet. The wire service is in discussions with the television networks regarding their promotional pictures. If AP sends those images via its photo service, we will need to archive hundreds of photos that we now receive via the U.S. mail. We use these images not only for the Television book but for stories about the actors and directors.

The Solution (for the storage issue)

The Republic needs to purchase another Associated Press Leaf File server. This equipment stores the digital and analog images sent via AP. In a break with tradition, the wire service will offer clients equipment on a lease to purchase plan. The Republic can purchase an additional file server for 5% of the cost of the equipment per month (about \$850) up to 95%. At the end of the lease the company has the option to purchase the server or to return it to AP. (A written proposal will arrive from AP for examination by our leasing specialists.)

Summary

These technological challenges can be meet. But they won't be solved unless the people who use the equipment are empowered to set up the most effective processes possible. It would be foolish to suggest that we can solve these issues by throwing money at the problem. But, in some cases, there needs to be an allocation of resources that ends up serving the front-line worker, whether a designer, picture editor, reporter or artist.

Technology for them is not a toy, but a means to doing a better job in an industry that is struggling to be lean and mean. Yet, we still need to produce the newspaper, write stories, take pictures, sell ads, service subscribers and deliver the newspaper. The process of producing a newspaper is not a profit center; it is hard to estimate a return on

investment. But each of the solutions shows a way to spend less money than previously, get high quality machines to ease the ergonomic concerns, and position the newspaper to do an even better job.

Will this be the last technology upgrade necessary for PNI? Hardly. But with careful planning and a reexamination of how money is spent for equipment, the shotgun approach to computers should be long gone.