LAYOUT DESIGN AND PRODUCTION INTERFACE

Frederick Bluemel *

Abstract: The Layout Design Station (LDS) was conceived and system engineered jointly by Dr. Hell GmbH, Kiel, and Hell Graphic Systems, Inc., Hauppauge. For the purpose of interfacing design and production, the layout from the LDS can be transferred to the production oriented Combiskop by three different means:

- A Hard-Copy Proof, and/or
- A Floppy Disk with a Job-File
- A Transmission via Modem

The central module of the LDS is an Image Processor Unit (IPU). The IPU functions as a fast image processor and interfaces to either a 1024 x 1024 or a 512 x 512 color monitor for the display of Layout, images and high resolution text. Inputs are derived from a color TV-camera by imaging transparent or reflective copy or video tape and disk.

The LDS provides the designer with all standard geometric functions, tinting, color correction and generation of vignettes. Headline text via keyboard can be integrated for display and design purposes. All recorded images can be rotated and scale changed in real time by turning the knob of a digital encoder.

Introduction

The application of computers in pre-press data processing has so far concentrated on the automation of page make-up and the output of color separations.

* Software Engineering Manager
Hell Graphic Systems, Inc.

The input for page make-up and the various design phases of the layout by the designers, artists or art directors has so far been accomplished by conventional means. While the production and output of film separations from pre-press systems now utilizes computer control, the input for production to the page make-up station is in most cases of mechanical format. This input usually consists of a paste-up containing the geometries of the layout and rough sketches of pictures and text. The production-oriented operator of the pre-press page make-up station translates this into specific commands. Through this human interface, the possibility of manual errors is inherent. However, only the direct conversion of design data to page make-up data will eliminate interface errors. In addition, the feedback by means of a color proof will allow the originator to check his design before submitting to higher level approval.

Concept and Development

The development of the Layout Design Station (LDS) combines advanced technical capabilities with graphic arts considerations. Out of this total development effort the concept for the LDS and its peripheral components evolved. This module of the Chromacom System provides for interactive creation of the layout while considering the application of the Combiskop. This process uses color images from a coarse scanning TV camera, stored images, computer generated colored frames, and tints with free space for text.

The LDS is a workstation for preparation of page make-up during the creative phase of a page layout and design. This creation phase is supported by computer controlled image processing and layout processing. The manual task for the creation of the layout, including blocks of text and sketches up to the final layout, are replaced by:

- Simple and fast recording of pictures in coarse data by means of a television camera or video on tape.

- Interactive layout design at the color monitor using actual picture information while maintaining continual control of the progression.

- Storage of the design layout as a basis for the actual page generation at the Combiskop.

- Output of a black and white hard copy of the geometry of the design page, including image information through a contone plotter.

- Output of the layout information on a line plotter.

- Output of a proof color page including text and graphics from the Chromagraph Color Recorder CPR 403.

The application of the LDS as an active workstation within the Chromacom System effectively reduces the workload for the Scan Station as well as the Combiskop. As shown in the diagram of Figure 1, interfacing to other Chromacom stations is provided by multiple means. For transferring data to the Combiskop, three types of data transfers are available, via a hard copy proof or a floppy disk containing a job file, or by means of transmission of the job file via modem. The information given to the Scanner operator includes a list of pictures with the actual size and angle of each and the cropping. The LDS, therefore, significantly reduces the workload of the Scan Station by providing detailed picture scanning information.

The data provided by the LDS for page make-up at the Combiskop is an instruction file which includes all pre-recorded functions. This instruction file runs automatically and it is only interrupted by the operator for interactive processes such as mask generation, color correction, retouching and other functions requiring manual intervention.

Configuration of the System

The basis for the LDS is a Combiskop with a new image processor unit (IPU). The IPU provides for easy handling of pictures during the generation of the layout. The IPU contains its own image processor computer which functions as a slave to the host computer. This dedicated image processing computer and its resident software makes possible the rotation and scale change of images in REAL TIME. The hardware components shown in Figure 1 can be identified as follows:

- Camera module with black and white camera and illumination for reflective and transparent copy for size 16 x 16 to 400 x 400 mm.

- Video tape for input and selection of video images.

- Image Processing Unit with extended function and integrated digital color converter (DCC).

- Computer cabinet with host computer and controller and fast image processor BSP11.

- Operator console with function panel, digitizer and floppy disk drive.

- Color monitor with 1024 x 1024 or 512 x 512 pixels.

- Black/white contone plotter with width of 21 inches and 200 dots per inch resolution (Versatec 8222F).

- Optional line plotter.

- One 80 MB and one 300 MB disk drive, or two 300 MB disk drives.

- Digitizer tablet for geometric functions, drawing, retouching and positioning.

These tools provide the designer with all of the

requirements to create the layout. The result of this layout is stored in two files.

- As a sequence of commands with parameters (job file).

- As a coarse image with TV resolution.

Interfacing of these design files with the production Combiskop can be accomplished by two different means:

(a) The transmission via data lines from the design station to a remote page make-up station (Combiskop). This on-line transmission provides the shortest possible turnaround time between remote design and production.

Transfer time at:	9.6 Kb/s	64 Kb/s
Movie job	4 s	0.6 s
Softcopy color	12 min.	1.8 min.
Monochrome	4 min.	0.6 min.

(b) The design files can be stored on a floppy disk for off-line processing or transmission via data lines at a later time.

Both transmission capabilities provide a direct job repeatability at the receiving page make-up station (Combiskop) and eliminate human errors between design and production.

A line plotter can record the final layout in a line by line fashion on paper in final size. This final drawing is a check of the creation for the designer and provides the production people with a representation of the layout geometry for image page make-up, as well as for text make-up. Repetitive artwork such as logos, symbols, masks or figures can be scanned or constructed and archived as files for use as designated by the designer.

A Layout Design Station functioning within a system environment can, therefore, have the following interfaces:

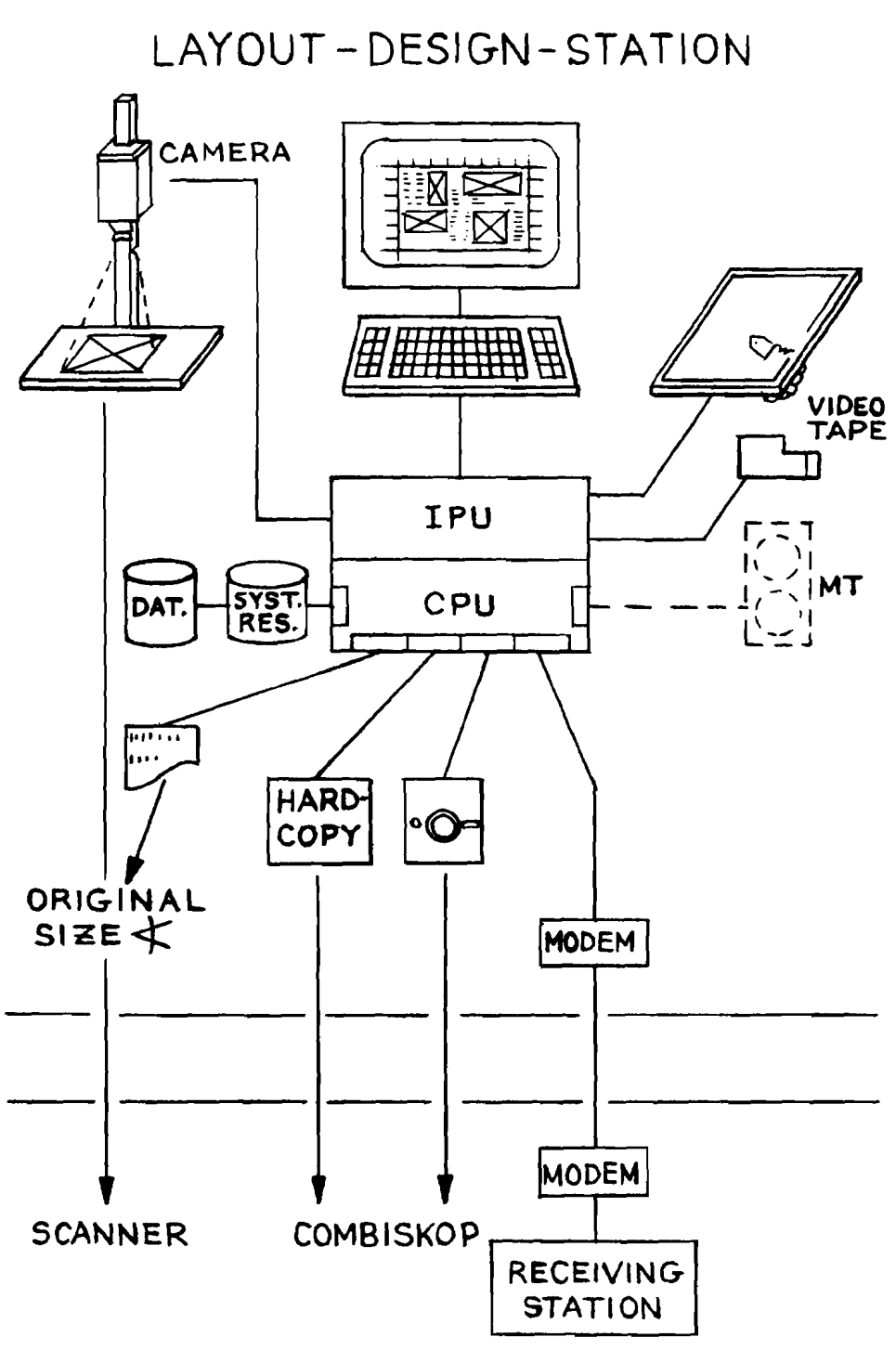
LAYOUT-DESIGN-STATION
CAMERA
VIDEO TAPE
IPU
CPU
DAT.
SYST. RES.
MT
HARD-COPY
ORIGINAL SIZE
MODEM
MODEM
SCANNER
COMBISKOP
RECEIVING STATION

FIG. 1

- An adequate transmission interface which can be considered as an automatic receiving station without operator.

- An interface to the Chromacom switching network which will provide access to the Combiskop and other work that is in progress and is required subsequently for this page make-up to be carried out.

- A Color copy output via the proof recorder CPR 403 which could provide the designer with a final color proof for acceptance of the completed page.

- A black and white copy output via film recorder as provided by the CR 401.

Conclusion

This linking of the design and layout creation to the production phase provides the designer and the production system operator with the means to reduce repeated corrections. It can be envisioned that corrections are substantially reduced by providing the art director or designer with a final color proof of his original concept (e.g. CPR 403 output). The iterations of design and production can be eliminated by the introduction of the LDS as a station in the Chromacom System.