

*This article was written by David McDowell of Eastman Kodak Company and first appeared in the July/August 1994 issue of The Prepress Bulletin under the title, Electronic Data Transfer: The Dilemma of the Completed Page. It is reprinted here in its entirety with the permission of the author and the International Prepress Association (publisher of The Prepress Bulletin).*

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### **Electronic Data Transfer: The Dilemma of the Completed Page**

In many ways we seem to have come full circle in our quest for solutions to the issue of electronic data transfer. The force that initially brought the graphic arts into standards was the desire on the part of users to be able to exchange work between the early color electronic prepress systems (CEPS) marketed by different vendors. The initial digital data exchange standards (DDES<sup>®</sup>) group, formed under the sponsorship of Tom Dunn and the Lasers in Graphics Conference back in 1985, went on to become ANSI Committee IT8. Although the real need was for completed advertisements or pages, the task seemed daunting and the group settled for the various working files that made up the elements of job. Today, the key issue in graphic arts electronic data exchange is the need for standards to support the digital distribution of advertising for publications (DDAP<sup>™</sup>). We still do not have the ability to exchange completed pages, in an editable format, using an open standard.

#### **What has been done?**

<sup>1</sup> SCSI stands for small computer systems interface. DDCP stands for direct digital color proofing.

(For reference, a full list of acronyms used in this article is included on page 58.)

<sup>2</sup> TIFF/IT stands for tag image file format for image technology.

The DDES group and the IT8 Committee created the standards needed to exchange pictures (CT) and line work (LW) on magnetic tape. They went on to develop magnetic tape standards for other data types and a SCSI based CEPS to DDCP interface.<sup>1</sup> These were carried forward to ISO/TC130 and have also become ISO Standards. These standards work but unfortunately their implementation has been spotty and the solutions offered have not always been efficient, and, nine track magnetic tape is becoming obsolete.

More recently, the same data file formats initially used for tape have been incorporated in the IT8.8 TIFF/IT format.<sup>2</sup> This makes the standard media independent and it is expected that this will facilitate broader implementation. However, this still does not address the issue of flexible assembly of image elements into the completed job. Many working groups have struggled with the issues involved in complete pages. The fundamental problem has always been that there is no commonality between the way vendors brings the elements of a page together.

Within the traditional raster file CEPS environment, four different approaches offer varying hopes and possibilities:

- **IT8.4** – In the new IT8.4 (CEPS to DDCP) standard a completed page can be proofed by sending a combination of CT, LW and HC (high resolution contone data) files where each data set covers exactly the same page area. These files are accompanied by a proofing specific job description file to provide the relationship between files. This works but is neither efficient nor flexible for open exchange of files outside of color proofing.
- **IFEN** – The work done by several of the CEPS manufacturers in the IFEN project (InterCompany File Exchange Network) provided a adaptation of TIFF files known as Final Page or FP. This has not been universally accepted and currently is an informative annex in the IT8.8 TIFF/IT Standard and in the ISO version of TIFF/IT in preparation. As will be noted later, the FP approach offers a real potential for exchange of raster files.
- **PIL** – Work done by the Professional Publishing Interchange Specification Committee led to a standard identified as IT8.9/1 - Publishing Interchange Language (PIL). It employs an opaque imaging model similar to PostScript™ and allows the layout of pages using existing content file types. Its origin in a text environment as well as the lack of transparent overlay capability seems to have limited the interest in PIL. Only a few companies seem interested in working on or implementing this standard. Although it has completed ANSI review some time ago the members of the task group have not completed the necessary edits for final publication.
- **PIM** – Some work has also been done on a standard called IT8.9/2 - Page/document layout specification (often referred to as PIM or page imaging model). The task group that worked on the draft of this standard was attempting to develop a PostScript like encoding that would allow individual page elements to be defined in a variety of data formats and located with respect to each other in a page format. The addition of transparency, color trap, and other graphic arts features was considered essential. Activity with respect to PIM is not progressing largely due to a lack of interested, knowledgeable, technical participants whose companies are willing to fund the necessary development work. Before this work will progress any further the commitment is needed from both users and vendors to accomplish the necessary technical development.

## **New desktop tools**

The world is changing, however, and new tools are available. PostScript is seen by some as an answer. The reality is that the desktop world has not moved any farther toward open exchange than has the traditional CEPS world. While PostScript allows a high degree of independence between the image setting device and the software used for creation, a PostScript file cannot be easily edited once it has been created. There are also issues of predictability with respect to the speed and quality of the rendering of the PostScript files when these are moved between different output devices. PostScript does allow an encapsulated PostScript file to be included in another PostScript file so that work done one place can be picked up and used “as is” in another.

More often, the intermediate files used by proprietary packages are transmitted along with the final PostScript pages. When edits are required the proprietary intermediate file is used, with the same brand of software that created it, and a new PostScript file is prepared. This has been viable only because the cost of these software packages is low enough that it is possible for most organizations to have one of each version of the most popular packages. It sort of works but it certainly is neither open nor standard.

Work is also being done by various vendors of desktop software to develop more open formats such as the Adobe Acrobat™ Portable Document Format (PDF). Unfortunately these formats, even when publicly available, are “owned” by a single vendor with often a take-it-or-leave-it approach to input from other participants.

So where does that leave the exchange of page data and DDAP?

The work of the DDAP Association in developing requirements for data exchange has indicated that editability is a requirement. There are various levels identified that run from the addition of response numbers and page headers/footers to the possibility of complete content revision. Clearly, until there is some technical innovation, complete editability in an open exchange standard cannot exist. Rather than waiting, CGATS/SC6 (the subcommittee responsible for these standards) is defining two options for non-editable exchange as intermediate solutions. These are expected to be carried forward to become ANSI standards in the near future.

The first will use the FP option (derived from the IFEN activity) as defined by the IT8.8 standard and supplemented by a more restrictive set of tag options being defined by ISO/TC130 and called TIFF/IT-P1. This compliance level only allows one choice for such options as dot range, image orientation, interleaving, etc. The FP details currently identified as informative in IT8.8 will be made normative<sup>3</sup> in the new standard. It is expected (hoped) that vendors currently capable of providing IFEN compatible solutions or participating in the Kodak Print Photo CD multi-vendor program (which also uses the TIFF/IT-P1 option) will be willing to make this file exchange option available on existing systems. If the receiving system is capable of providing editing of raster files then these files can have material added as appropriate using traditional tools.

Note: Members of the DDAP Committee, Grant Hall and Alan Darling, have developed demonstration software that makes use of the TIFF/IT-P1 format for exchange of both CT and LW files between different platforms.

The second proposal makes use of encapsulated PostScript data files and provides the constraints that will enable consistent transfer of completed material to PostScript compatible receiving systems. For example the proposed standard requires that all resources including fonts and dictionaries must be included with the file. External file references, for example Open Prepress Interface (OPI), will make use of CT files in the TIFF/IT-P1 format. It is assumed that once this approach becomes accepted, capability will be enabled that will allow overlaid text (such as response numbers, etc.) to be added in PostScript.

## Two small steps

Admittedly these are not earth shaking developments. However, they will allow exchange (but not full editing) of completed ads and pages within an open standard. Will vendors implement, or will users make use of these capabilities? The FP TIFF/IT-P1 solution needs some additional software to transform files to the TIFF/IT-P1 conditions and to generate the FP file that ties everything together. Solutions can be provided by the vendors or third parties. The PostScript solution can be implemented by users without anything new.

The real question is: Will we as an industry make the effort to do it?

## Author's note

I realize that this is more of an editorial than a report and I ask your indulgence. I feel that this is one of the more critical issues facing our industry and it seemed important to summarize, at least my understanding of, where things stand. — *David McDowell, Eastman Kodak Company*

<sup>3</sup> Normative elements within a standard describe what an implementer must do to claim conformity to the standard.

Informative elements within a standard are included to help implementers understand and interpret the standard. They give additional information, but do not include requirements.

### Acronyms used in this article

**ANSI** – American National Standards Institute  
**CD** – Compact disk  
**CEPS** – Color electronic prepress system  
**CGATS** – Committee for Graphic Arts Technologies Standards  
**CT** – Contone  
**DDAP** – Digital distribution of advertising for publications  
**DDCP** – Direct digital color proofing  
**DDES** – Digital data exchange standards  
**FP** – Final page  
**HC** – High resolution contone  
**IFEN** – Intercompany file exchange network  
**IPA** – International Prepress Association  
**IT** – Image technology  
**ISO** – International Standards Organization  
**LW** – Line work  
**OPI** – Open Prepress Interface  
**P1** – Profile 1  
**PDF** – Portable document format  
**PIL** – Publishing interchange language  
**PIM** – Page imaging model  
**SC** – Subcommittee  
**SCSI** – Small computer systems interface  
**TAG** – Technical advisory group  
**TC** – Technical committee  
**TIFF/IT** – Tag image file format for image technology

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