STATUS OF TIFF/IT

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Abstract: TIFF/IT is the abbreviation for ANSI Standard IT8.8-1993, *Graphic technology — Prepress digital data exchange — Tag image file format for image technology (TIFF/IT)*. It emerged in the late 80s, in response to the need to move the data structures of the earlier magnetic tape based IT8 standards into a media independent form. After the initial work and standards were completed in ANSI/IT8 the continuing discussions were moved to ISO/TC130. In moving this work forward within ISO, an important addition was made which is referred to as the P1 profile compliance level. The ISO version of TIFF/IT, ISO 12639 which carries the same title as the ANSI/IT8.8 standard, has just completed the ISO approval process and is awaiting publication. Vendor implementation, which is now widespread, has been greatly assisted by the support and endorsement of the DDAP (Digital Distribution of Advertising for Publications) Association. In ISO/TC130, Working Group 2 is currently reviewing additional concerns and it is anticipated that an addendum will be prepared to further enhance the FP (Final Page) option. FP is used to relate the various files necessary to describe a completed page and is proving to be very important in the exchange of print-ready page material.

Background

What is TIFF/IT? Before we talk about the status of TIFF/IT, I want to be sure that we are all talking about the same thing. To do that, we need to review a little history. Electronic prepress and the need to store and exchange electronic data first became a reality with the introduction of the Color Electronic Prepress Systems (CEPS) in 1979/80. Discussions of file exchange formats followed quickly in the mid '80s.

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The ANSI Efforts

This work was started in an industry group called DDES (Digital Data Exchange Standards), which became the nucleus for standards committee ANSI IT8. The five initial ANSI data file format standards that were created are listed in Table 1 This represented a major step forward in cooperation between vendors, in response to considerable pressure from users and committed leadership from industry technical people. These standards were all moved into ISO through TC130 and their ISO designations are also shown in Table 1.

Unfortunately, at the same time that these file formats were being developed, both data storage and computer hardware technologies were undergoing rapid change. These initial data exchange formats were tied to magnetic tape as the transport media. However, it quickly became apparent that media independent formats were what was really required. In looking to move the magnetic tape formats into a media independent form, the Aldus TIFF specification was a logical contender. This choice was further strengthened by the realization that most non-CEPS picture data was already being stored as TIFF files.

Studies showed that the addition of a small number of "private" tags would allow all of the information initially contained in the IT8 magnetic tape headers to be moved into TIFF-like tags. Using tags to provide the information previously contained in the file headers allowed the data portion of the files to be recorded on any media in exactly the same format and sequence as had been used with magnetic tape. With permission from Aldus, portions of TIFF Version 6 were incorporated into the ANSI standard by reference, and a series of additional "private" tags were assigned to the IT8 Committee. The ANSI standard was approved as IT8.8-1993, *Graphic technology -- Prepress digital data exchange -- Tag image file format for image technology (TIFF/IT)*. Table 2 provides an alphabetical listing of the Tags used in the TIFF/IT file formats.

TIFF/IT provides for the exchange of all of the data types, included in ANSI/IT8.1 through ANSI/IT8.5, in a fully media independent form. All of the features of the earlier standards are preserved as well as the liabilities — the onus is still on the receiving system to accomplish any data transforms required between systems. In addition the TIFF/IT format added two new file types that had not been documented in the magnetic tape formats. These were high-resolution contone data, called HC, and a file type called FP, for final page assembly. The FP file provides pointers to individual CT, LW, and HC files and provides the relative positioning data and compositing rules to allow them to be used to represent a completed page. The HC format was a normative part of the standard and FP was introduced as an informative part of the standard.

The ISO Follow-on

When this work was moved into ISO/TC130, to become ISO 12639, a special compliance level (called P1) was introduced. The goal of P1 was to simplify the issue of exchange by restricting many of the options. Issues such as picture orientation, data encoding range, etc. were all limited to the specified value that is generally consistent with the value used by most DTP (desktop publishing) software. This simplifies the interface between CEPS and DTP and also places the burden for any data translation on the sending system. Most importantly, for CT files (picture files) the default is exactly the format found in a typical TIFF file referenced by a DTP application program.

Current Status

The DIS ballot of ISO 12639 was approved (15 countries voted to approve and 1 abstained) and is being prepared for publication. However, the work on TIFF/IT is not stopping with the approval of the ISO version. Work is currently going on to develop an addendum. A key proposal is to make the definition of FP normative rather than informative. Other features are being considered that will enhance but not change the existing standard.

Will it be implemented ?

The two critical issues for any standard are the degree to which it is implemented by the vendor community and the actual utilization by the user community. Ironically these are usually intimately tied together in ways that are sometimes counter- productive — vendors usually will not implement new features without customer demand, but customers cannot test and evaluate without vendor implementations.

The DDAP Association was created, in part, to help resolve this dilemma. Standards Committees should not, and really cannot, actively promote the implementation of a standard or evaluate the implementations offered by various vendors. However, an independent trade association has much more freedom in this area. The DDAP Association has been a strong partner with the standards community in developing the user requirements for file formats for the digital distribution of advertising material as well as a strong force in helping convince the vendor community to implement the resultant standards.

Vendor implementation

The DDAP Association has endorsed TIFF/IT-P1 as the preferred file

format for the exchange of advertising material in electronic form. Currently the DDAP Association reports that 31 vendors have implementations of TIFF/IT either installed or in development. These vary from implementation of the CT picture format only to full implementation of all of the features of TIFF/IT.

Several examples are worthy of special note. The DDAP Association has developed a series of tools that allow the user to check the conformance of the TIFF/IT tags, rename files, and (using an Adobe PhotoShop plug-in) open, view and/or correct any of the TIFF/IT file formats. Total Integration, Inc. has just released a product called Ad Check that allows a user to open an FP file, and all of the associated files, and create a composite image for screen viewing at 300 dpi. The major CEPS and proofing equipment vendors have all provided implementations that read and/or write CT, LW, and HC files in the TIFF/IT-P1 format.

User Acceptance

User adoption and practical use has been driven by publishers, service providers, and printers. Their motivations, while often having different origins, have been synergistic. For the publisher and service provider, later closings or more time have been key driving forces. For the offset printer, the emergence of direct-to-plate has created a need for digital data that is similar to the need the gravure printer has had for some time. For both, scanning and descreening or copy-dot scanning are barely tolerable intermediate solutions. Some of the more noteworthy reports of practical use include the following.

The two-page crossover TelaFlora ad that appeared on the inside cover of the April 20 issue of TV Guide was transmitted as a TIFF/IT-P1 file from Western Laser Graphics on the west coast to TV Guide on the east coast. It was then "divided" so that the left half (the inside of the cover) went to ~~the~~ several geographically located gravure printers that print TV Guide. The right hand page went to the offset printers involved and the final magazine was assembled at yet another group of printing establishments. According to Jim Tubey of TV Guide, who coordinated the effort, this could not have been accomplished without both data exchange and printing standards.

Frank Scott reported at the recent DDAP Association meeting that the goal of Time Inc. is to be as close as possible to 100% digital ad submission by the end of 1997. The preferred file format is TIFF/IT-P1.

The DDAP Association has established a "Digital Ad Lab" committee to work with publishers, separators, and printers to demonstrate the use of the established standards in the transmission of real ads. Some of their successes have included two one-page four-color ads in the March 97 issue of McCalls.

three one-page four-color ads in the March 1997 Better Homes and Gardens, as well as additional ads that appeared in Ladies Home Journal. These all were transmitted using the TIFF/IT file format. In fact, a review of the reports would indicate that there were more problems with telecommunications than with file format.

One of the Keynote speakers at the March 1997 DDAP Conference was Hans Hildorsson of IKEA. One of the worlds largest furniture companies, IKEA has 134 stores in 28 countries. During the last 2 weeks in August they publish an annual catalogue simultaneously worldwide. The current issue is expected to include 4,000 color and 20,000 text pages (taking into account all of the local customization). This will require 10 offset and 11 gravure printers (30 gravure presses). IKEA has stated that they will distribute all files using TIFF/IT-P1.

There have also been two recent announcements that represent significant industry acceptance. SICOGIF, the French master printers association, has endorsed the utilization of TIFF/IT-P1, as defined in ISO 12639, for all graphic arts data exchange within France. A similar move has been taken by the Italian printer association ASSOCIOGRAFICA on behalf of the Italian printers.

Summary

The status of TIFF/IT? I am tempted to simply say that it is strong, healthy, and growing daily in numbers of both implementers and users. But that would be too flip.

The status of TIFF/IT and its companion PDF, that has been summarized by Steve Zilles, is really a testimony to the success of the voluntary standards program and the people and industry groups that support it. At the 1985 TAGA meeting in St Paul, MN, Patrice Dunn (then Patrice Wagner) our session chair today, presented a paper that challenged the graphic arts industry to take responsibility for its own standards destiny. I believe that these standards show that the graphic arts industry has accepted the challenge and is successfully bringing the necessary standards to completion.

Table 1 Initial DDES File Format Standards

IT8.1-1988	User Exchange Format (UEF00) for the Exchange of Color Picture Data Between Electronic Prepress Systems via Magnetic Tape (DDES00), also approved as ISO 10755:1992
IT8.2-1988	User Exchange Format (UEF01) for the Exchange of Line Art Data Between Electronic Prepress Systems via Magnetic Tape (DDES00), also approved as ISO 10756:1994
IT8.3-1990	User Exchange Format (UEF02) for the Exchange of Geometric Information Between Electronic Prepress Systems via Magnetic Tape (DDES00), also approved as ISO 10757:199X
IT8.4-1993	Device Exchange Format for the On-Line Transfer of Color Proofs from Electronic Prepress Systems to Direct Digital Color Proofing Systems, also approved as ISO 10758:1994
IT8.5-1990	User Exchange Format (UEF03) for the Exchange of Monochrome Image Data Between Electronic Prepress Systems via Magnetic Tape (DDES00), also approved as ISO 10759:1994

DDES was the name of the industry group founded in late 1985, led by Dr. S. Thomas Dunn, which created the initial momentum for these standards and became the core of the ANSI IT8 Committee, which achieved ANSI accreditation in 1989.

Table 2 - Alphabetical list of TIFF/IT field names

Field Name	Tag #	Type of Parameter	Description
Artist	315	Job Identification	optional - name of person who created image, may also be used for comments on the image
BackgroundColorIndicator	34024	Color Specification	BP and BL only - indicates if background color or transparency is specified
BackgroundColorValue	34026	Color Specification	BP and BL only - specifies background color
BitsPerExtendedRunLength	34021	Data Format	LW only - specifies number of bits describing long run length encoding
BitsPerRunLength	34020	Data Format	LW only - specifies number of bits describing short run length encoding
BitsPerSample	258	Data Format	specifies the number of bits for each sample - see specific file types
ColorCharacterization	34029	Color Specification	optional - specifies ASCII table or other reference to characterize colors per IT8.7/4-199x, ISO 12641 and ISO 12642
ColorSequence	34017	Color Specification	optional - specifies sequence of colors if other than CMYK
Compression	259	Data Format	indicates if data compression is used and the method of compression
Copyright	33432	Job Identification	optional - copyright statement relating to image
DateTime	306	System Identification	optional - date and time of image creation
DocumentName	269	Job Identification	optional - document name of the scanned image
HCUsage	34030	Data Format	HC only - indicates the type of information contained within the HC file
DotRange	336	Color Specification	default - specifies 0% and 100% dot values
HostComputer	316	System Identification	optional - computer or system used to create image
IT8Header	34018	System Identification	optional - unmodified header from ISO 10755, 10756 and 10759 standards
ImageColorIndicator	34023	Color Specification	MP, BP and BL only - indicates if image (foreground) color or transparency(BP and BL only) is specified
ImageColorValue	34025	Color Specification	MP, BP and BL only - specifies image (foreground) color
ImageDescription	270	Job Identification	optional - description of subject of image, corresponds to ISO 10755, 10756, 10759 field "Picture Name"
ImageLength	257	Image Size and Orientation	image length in pixels, the number of rows of pixels in image
ImageWidth	256	Image Size and Orientation	image width in pixels, the number of pixels per row in image
InkSet	332	Color Specification	optional -specifies "CMYK" or "not CMYK" ink set and color sequence

Table 2 Continued - Alphabetical list of TIFF/IT field names

Field Name	Tag #	Type of Parameter	Description
Make	271	System Identification	optional - specifies the manufacturer name or source of scanner
Model	272	System Identification	optional - specifies model name and number of scanner
NewSubfileType	254	Data Format	default, except in FP - specifies the type of data in subfile(s), replaces older field "SubfileType" in most cases
NumberOfInks	334	Color Specification	optional - specifies the number of inks used
Orientation	274	Image Size and Orientation	default - specifies the direction of scanning relative to image orientation
PageName	285	Job Identification	optional - page name of scanned image
PhotometricInterpretation	262	Color Specification	color space type of image data (i.e., separations, WhiteIsZero, BlackIsZero, etc.) specific to file type
PixelIntensityRange	34027	Color Specification	MP only - specifies data values for 0% and 100% pixel intensity
PlanarConfiguration	284	Data Format	specifies how the color components of each pixel is interleaved (Pixel or Color or Line interleaving)
RasterPadding	34019	Data Format	default - specifies the type of ISO 10755, 10756, 10759 raster padding used, if any
ResolutionUnits	296	Image Resolution	default - specifies inch or centimeter as resolution unit
RowsPerStrip	278	File Format	specifies the number of rows for each strip of image
SamplesPerPixel	277	Data Format	specifies the number of samples which define a pixel
Site	34016	System Identification	optional - the site or location where the image was created, ISO 10755, 10756, 10759 field "Site Name"
Software	305	System Identification	optional - name of application that created image, ISO 10755, 10756, 10759 field "Program Name"
StripByteCounts	279	File Format	specifies the number of bytes in each strip of the image
StripOffsets	273	File Format	pointer to the image (to each strip of the image)
TransparencyIndicator	34028	Color Specification	HC only - specifies if transparency is used in HC file
XPosition	286	Final Page	FP only - specifies X offset on page from origin in component image IFDs in FP file
XResolution	282	Image Resolution	specifies the number of pixel per resolution unit in the width direction
YPosition	287	Final Page	FP only - specifies Y offset on page from origin in component image IFDs in FP file
YResolution	283	Image Resolution	specifies the number of pixel per resolution unit in the length direction