

As publications move closer to fully electronic page imposition, there is one large issue which looms as an obstacle: advertising. Publications have control over their own editorial content and as a result they are not tied to anyone else's equipment or file formats in the production of it. However, as soon as a publication starts accepting advertising pages in digital form, the issues surrounding standardization become paramount.

¹ For more information on the DDAP Association, please call 619-758-9460.

² Catalogues have been more advanced in these technologies because of the simple fact that they don't have any advertising.

This fact became obvious to the founders of the DDAP Association¹ (DDAP stands for Digital Distribution of Advertising for Publications). They realized that standards would be the key to making digital advertising a reality. With an accredited standard for digital advertising in place, the road would be clear for publication producers to take full advantage of computer-to-plate, computer-to-press, computer-to-cylinder and digital press technologies.²

There is no way to discuss DDAP without a solid understanding of accredited standards. For some general background information on standards, please refer to the article entitled Graphic Arts Standards which appears in the 1993 Linotype-Hell technical information notebook. In addition, the chart on page 51 is intended to give an overview of accredited standards, draft standards, and the associated jargon.

DDAP

The goal of the DDAP Association is "to bring about an accredited standard which will facilitate the digital distribution of advertising, from advertising agencies to publications, worldwide".³ What is the status of advertising distribution today? There are a variety of different ways that advertising pages are distributed:

³ DDAP Reporter, Premier Edition, page 1.

- **Films are duplicated and sent to numerous locations**

Advantages – Very reliable media that can be handled by almost everyone.

Drawbacks – Difficult to edit, impossible to change factors like size, films must be duplicated and sent by mail/courier (adding time to the process).

- **Digital files are distributed in proprietary or even so-called "industry standard" formats**

Advantages – Electronic data is available for editing, files may be transmitted electronically.

Drawbacks – Not part of an accredited standard, file formats may vary from vendor to vendor, users must own the same software applications.

- **Ads are transmitted by bitmap facsimile (i.e., the final mechanical is scanned and transmitted by facsimile)**

Advantages – Ability to transmit to a range of locations.

Drawbacks – Quality not good enough for many applications, difficult to edit, degradation of the image during transmission, transmission is generally longer than with electronic file transfers.

All of these methods fall short in terms of editability, quality, or by being tied to proprietary products. DDAP proponents hope to convince the industry to standardize on a file transfer approach which will ultimately provide high quality and editability, while at the same time being based on accredited

standards. To this end, the DDAP created, in March of 1992, a user requirement specification outlining their idea of what the standard should contain. Here are some of the important requirements identified by the DDAP Association:

- Must fully support an extensive list of accredited standards as well as some which are in development.
- Material is delivered in file form rather than bitmap form. (This is what is meant by the file transfer approach.)
- The means of sending the files (i.e., magnetic tapes, optical disks, network or satellite communications, etc.) should be left open to the user.
- Editing (done with the approval of the advertiser) must be possible within the following areas: page numbers, reader service numbers, localization and last minute text changes, sizing, color transforms, publication ID, business information, and color bars or print targets.

(For those interested in the specifics of the DDAP user requirement specification, it is available to non-DDAP members for \$25. Call the DDAP Association for more information: 619-758-9460.)

A fully functioning DDAP standard will provide the following benefits:

- **An editable data format** – An editable data format can be easily exchanged among a variety of users and still provide consistent results. It gives advertisers more flexibility. This can translate into later close dates for advertisers.
- **Quicker turnaround** – In comparison to film, where duplicating and distribution add to the total time required, a file transfer method can offer quicker turnaround providing that film output capabilities exist at the receive site. In addition, somewhat lower transmission times are generally possible in comparison to bitmap facsimile.
- **Better quality** – Better quality is possible in data file transfer than in bitmap facsimile.
- **“Computer-to-” technologies** – Having all the files in digital form gives the production facility the ability to take advantage of computer-to-plate, computer-to-press, computer-to-cylinder, and digital press technologies. It also provides added efficiency to sites that do distributed printing.
- **Multiple use** – These digital data formats may have multiple uses beyond print (for example, publishing documents on a CD).

CGATS

CGATS is the Committee for Graphic Arts Technologies Standards. There are eight CGATS subcommittees:

SC1 — Terminology
SC2 — Plate Dimensions
SC3 — Densitometry
SC4 — Process Control
SC5 — Material Handling
SC6 — DDAP
SC7 — Data Exchange
SC8 — Color Data Definition

The organization that supports CGATS committee activities is called NPES The Association for Suppliers of Printing and Publishing Technologies. NPES also supports U.S. international standards efforts through the United States Technical Advisory Group for Technical Committee 130 (US TAG TC 130). For more information about CGATS or NPES, please contact Mary Abbott of NPES at: 703-264-7200.

Accredited standards

DDAP will be built on both new and existing accredited standards. For the United States, this means standards that have been approved by ANSI (the American National Standards Institute). Internationally, this means standards that have been approved by ISO (the International Standards Organization). Often, a standard that is approved by ANSI is later approved by ISO.

Standards become accredited through a lot of blood, sweat, and tears. Committees made up of industry professionals propose draft standards, and then revise them until they meet the final approval of all members of the committee. In the United States, graphic arts standards are the responsibility of the CGATS committee. (CGATS is the Committee for Graphic Arts Technologies Standards.) There are eight subcommittees (SCs) within CGATS that investigate and propose draft standards. (See box to left.)

The DDAP Association provides a good example of how a standards effort gets started. Beginning in 1990, a number of advertising production industry professionals joined together to focus on the issue of digital advertising (today they are known as the DDAP Association). In 1992 they submitted a user requirement specification to CGATS which resulted in the formation of CGATS subcommittee six (SC6).

Guide to Standards Jargon

| ANSI | ISO | Other name(s) | Description |
|---|-----------|---------------|---|
| ANSI IT8.1 | ISO 10755 | DDES*, CT | Standard magnetic tape format for the exchange of color picture data between electronic prepress systems |
| ANSI IT8.2 | ISO 10756 | DDES*, LW | Standard magnetic tape format for the exchange of color line art data between electronic prepress systems |
| ANSI IT8.3 | ISO 10757 | DDES* | Standard magnetic tape format for the exchange of geometric art data between electronic prepress systems |
| ANSI IT8.4 | ISO 10758 | DDES*, DDCP | Standard output device interface (SCSI interface between color electronic prepress systems (CEPS) and direct digital color proofers (DDCP)) |
| ANSI IT8.5 | ISO 10759 | DDES* | Standard format for the exchange of monotone line art data between electronic prepress systems |
| ANSI IT8.6 | | | Standard for the exchange of graphic arts die cutting data |
| ANSI IT8.7/1 | | | Color reflection target for input scanner calibration (standard input target for color control) |
| ANSI IT8.7/2 | | | Color transmission target for input scanner calibration (standard input target for color control) |
| ANSI IT8.7/3 | | | Data for the characterization of 4-color process printing (standard output target for color control) |
| ANSI IT8.8 | | TIFF/IT | Tag image file format for media independent transport of graphic arts data (makes use of the data structure of earlier IT8 standards) |
| ANSI CGATS.5 | | | Measurement and calculation of colorimetric values for graphic arts applications |
| Draft standards: | | | |
| ANSI IT8.7/4 | | | Default three component (RGB) color data definition for use in the graphic arts industry |
| ANSI IT8.9/1 | | PIL | Page imaging language (an imaging model based on a text-oriented concept) |
| ANSI IT8.9/2 | | PIM | Page imaging model based on an object-oriented approach |
| ANSI CGATS.6 Type 1 Printing conditions | | | Defines printing conditions for Type 1 printing (which is similar to SWOP) |

Other important standard-related acronyms:**

CT – Contone (part of ANSI IT8.1 and ANSI IT8.8, TIFF/IT)

FP – Final page (part of ANSI IT8.8, TIFF/IT)

HC – High resolution contone (part of ANSI IT8.8, TIFF/IT)

JPEG – Joint Photographic Experts Group (compression standard, ISO 10918-1, CCITT T.81)

ISO TC 130 – ISO technical committee for the graphic arts

LW – Linework (part of ANSI IT8.2 and ANSI IT8.8, TIFF/IT)

SCSI – Small Computer System Interface

SWOP – Specifications for Web Offset Publications

*ANSI IT8.1-IT8.5 are sometimes referred to as DDES. Most of these standard data formats use magnetic tape as the transport media. (The exception is ANSI IT8.4 which uses SCSI.) The DDAAP Association uses DDES as an umbrella term for all of the digital data exchange standards for the graphic arts.

**Of course, there are millions of acronyms, for a more complete list, please refer to the Linotype-Hell Acronym Resource, a self-running Macintosh program which is available at no charge from Linotype-Hell. Call 800-842-9721 for a copy.

Acronyms

One of the problems facing anyone who tries to understand the issue of digital advertising is the wealth of acronyms that are used. What is worse, a single concept may be described by multiple acronyms or numbers. For example, though ANSI may assign a number to a particular standard, if that same standard becomes an ISO standard, another number will be assigned. There may also be a colloquial name for the standard. For example, ISO 10755 is also ANSI IT8.1, and many people refer to it as part of DDES (Digital Data Exchange Standards).

It is possible to hear DDAP aficionados conduct conversations made up almost entirely of acronyms. The frightening thing is that they actually understand each other. For those who don't know the lingo, please refer to the chart on page 51. It shows accredited standards, draft standards, and other important acronyms along with a brief description.

ANSI & Image Technology (IT)

ANSI (American National Standards Institute) doesn't develop standards, it oversees the open process by which accredited technical standards are developed. For the graphic arts, many of these standards have the acronym IT8 (Image Technology 8) attached to them. In fact, some of the first digital data exchange standards for the graphic arts are grouped under the heading ANSI IT8 (or sometimes simply IT8). (See chart on page 51.)

ANSI chartered the IT8 committee in 1987 to look at issues related to digital image technology in the graphic arts. In 1989 it became clear that graphic arts standards in other areas (i.e., plate size and thickness, film size, etc.) also needed to be developed, and so ANSI chartered CGATS. In 1994 the work of IT8 was merged with the work of CGATS under the name CGATS.

Where does DDAP stand now?

At the time this article was written (September of 1994), CGATS SC6 is working on draft standards to address the concerns identified by the DDAP Association. Two are currently in progress for non-editable digital data file formats. Why is CGATS SC6 working on two non-editable file formats when the stated requirement of the DDAP Association includes editability? The answer is simple. CGATS SC6 knows that all of the requirements cannot be fulfilled immediately. They look for interim solutions and push for completion of standards that will make it possible to accomplish even more. The non-editable formats will allow immediate implementation while the technical innovations necessary for editability are being developed.

Full implementation of DDAP will require development of standards for page assembly that do not exist today. One version (ANSI IT8.9/2, PIM) is currently in the draft development stage. (See chart on page 51.)

Fonts make editability a particularly thorny issue. To be able to edit a file, the person doing the editing must have access to the same fonts used to create the document. But these fonts cannot be sent along with the file without violating the font licensing agreement.⁴

⁴ This is the same reason why you can't give your fonts to a service bureau. The service bureau must own the fonts to output your file. However, fonts can be included in EPS (encapsulated PostScript) files, but only because the font information in an EPS file cannot be used for further editing.

The DDAP Association is also involved in testing. They have produced two documents summarizing the test results of projects on color picture data compression and DDCP repeatability (DDCP stands for direct digital color proofing). Here are brief summaries of those tests. (The full documents are available to non-DDAP members for \$50 each. Call the DDAP Association for more information: 619-758-9460.)

- **Color picture data compression** – JPEG compression can effectively reduce the size of the large files used in the color printing process. However, issues related to speed of compression/decompression, compression ratio, workflow, and quality all pose questions for supporters of DDAP. The study looked at a number of these issues, and also raised questions that may be answered by future researchers.

For example, in their tests the DDAP Association found that images that had been compressed and decompressed could appear “more or less satisfactory” when proofed and printed, even though the films exhibited significant problems. This could certainly be a concern for those who evaluate film in the production process. To this end, the study looked at ways to anticipate film artifacts.

They found that flat color areas in proofs begin to show artifacts at compression ratios of 15 to 1. These artifacts become more objectionable as compression ratios increase to 20 to 1 and 40 to 1. In films, on the other hand, flat color areas begin to show artifacts at compression ratios of 8 to 1. These become more objectionable at compression ratios of 15 to 1 and higher. The study’s authors felt that further testing as well as industry consensus on quality levels would be necessary to determine suitable levels of compression.

If compression is to be used effectively in DDAP, then there has to be some accounting of how people will deal with possible artifacts. Will ads be rejected because of artifacts introduced by compression?

- **DDCP repeatability** – This study investigated the color repeatability of two direct digital color proofing (DDCP) devices: the Kodak Approval™ and the 3M Digital Match Print®. Three hard copy devices (the 3M Rainbow®, the Iris™ ink jet, and the Stork® ink jet) were studied in a companion report produced by DTI. These types of devices, and the level of accuracy that they provide, may help to make WYSIWYG (what you see is what you get) more of a reality. Any level of WYSIWYG will require repeatability from these devices.

The report summarizes data including solid ink density, dot, gain, and the difference (measured as delta E) between the test results and color characterization data (in CIE L*a*b*) of SWOP® printing. (Please see the report itself for a complete accounting of the data. An appendix also investigates color process control issues for DDCP.)

Another recent success of the DDAP Association was some work done by DDAP members American Color and Quad/Graphics. These companies developed an initial implementation of the ANSI IT8.8 standard (TIFF/IT) on both Macintosh® and Sun® platforms. The work was done as a plug-in for Adobe Photoshop™ (on the Macintosh) and as a self-running application on the Sun. The implementation done by American Color and Quad/Graphics uses ANSI IT8.8 and a proposed default profile which comes from refinements being done by ISO TC 130 to the ANSI IT8.8 standard. To ensure compatibility with desk top systems, ISO TC 130 developed a set of default values for many of the options in TIFF/IT. This set of more restrictive options is known as the P1 (profile one) compliance level.

The DDAP Association is also involved in a variety of educational programs intended to increase industry awareness of the resources available to it in the form of accredited standards.

When do you RIP?

Some important questions were brought up at a recent CGATS SC6 meeting. They all have to do with workflow, specifically, the decision of when to pass a file through a raster image processor (RIP).

- If I RIP a file once to produce a digital proof, how do I know that I will get the same result when I RIP that file to produce film?
- How can I be sure that different RIPs will produce identical results?
- What about the case of a gravure printer who wants to engrave a cylinder from digital data or perhaps an offset printer who has a large format direct to plate device, can these people afford to have a PostScript error on the last page of a large document?

These are open-ended questions which point out a deeper issue: workflows on the traditional high-end systems are based upon a totally different manner of thinking than those on PostScript™ desktop systems. Both are valid for their intended markets, but as the distinctions between the desktop and the high-end blur, or even disappear, the industry as a whole is left with some difficult choices. For consistency, there are valid reasons for using a high-end workflow, i.e., RIPping a file once and using that raster data for a variety of other devices. For flexibility it helps to use a PostScript desktop approach, i.e., RIPping a file each time you send it to a different device.

Linotype-Hell

Linotype-Hell is a corporate sponsor of the DDAP Association and is also a voting member of CGATS. We are participating in DDAP efforts through CGATS SC6. Linotype-Hell is also involved with international standards efforts through the ISO. Linotype-Hell products that make use of standards discussed in this article include:

- ChromaCom® – ANSI IT8.1/ISO 10755
- ChromaCom via Shira box – ANSI IT8.2/ISO 10756
- DaVinci™ and LinoServer™ – ANSI IT8.8 (TIFF/IT)
- LinoColor™ – ANSI IT8.7/1 and ANSI IT8.7/2

This list will certainly expand with future product announcements.

Linotype-Hell has helped to develop IFEN (Intercompany File Exchange Network). IFEN, in part, is a fiber optic network that was commonly specified by Crosfield, Linotype-Hell, and Scitex. In addition, it makes extensive use of the TIFF/IT8.8 formats. (More information on TIFF and the TIFF/IT standard will appear in a future Linotype-Hell technical article.) IFEN is implemented in DaVinci and LinoServer.

Conclusion

Digital advertisements are the key issue for publications that want to go from computer to plate, cylinder, or press. Since ads are not under editorial control, they therefore must conform to standards if they are to be output electronically. Through the use of accredited standards, DDAP has the potential to do for electronic distribution what SWOP has done for publication proofing, that is, make the digital distribution of advertising a consistent, repeatable process.

Acknowledgements

Many thanks to Mary Abbott of NPES, Alan Darling of Quad/Graphics, Patrice Dunn of the DDAP Association, David McDowell of Eastman Kodak, and Stan Posner of Applied Graphics Technology for their help in producing this document. Also many thanks to the following people from Linotype-Hell: Ray Cassino, Vern Kellie, Dr. Dieter Preuß, Dennis Ryan, and Bill Van Buskirk.

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September 1994, Part Number 7039

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