

THE DIGITAL DISTRIBUTION OF ADVERTISING FOR PUBLICATION (DDAP) A TEST CASE IN OPEN PROCESS ELECTRONIC INTEGRATION

Patrice M. Dunn*

Keywords: Communication, Information, Integration, Process, Publishing, Standards

Acknowledgments: This paper, and the work represented herein, would not have been possible without the time, thought, dedication, and resources, committed to the development and implementation of modern accredited standards, by and for the graphic arts industry, by Dr. S. Thomas "Tom" Dunn, DTI; Roland Zavada, Eastman Kodak (retired); David McDowell, Eastman Kodak; Kip Smythe, NPES; Mary Abbott, NPES; Joseph L. Pedone, Saatchi & Saatchi Advertising; Klaus Schmidt, Young & Rubicam (retired); Stan Posner, AGT; Frank Scott, Time, Inc. Magazine Co.; John Romeo, *Forbes*; Gerd Koehler, Quebecor Printing; and Alan Darling, Wester Laser Graphics.

Abstract: The Digital Distribution of Advertising for Publications (DDAP) is a graphic arts industry initiative. It advocates the implementation and use of *accredited standards* to serve as the technical underpinnings for open process integration and standard process control in providing digital advertising to a variety of publications and publication printers. As the process involved with providing advertising to publications and publication printers in amongst the most complex found within the graphic arts industry this very large scale open process integration activity has clear implications to the industry as a whole.

Introduction

The Digital Distribution of Advertising for Publications (DDAP) is both a concept and, at this juncture, a beta-test for the graphic arts industry as a whole. It is a concept that assumes that the ability to achieve very large scale open process electronic integration is a prerequisite to the graphic arts industry's ability to remain competitive and vital well into the next decade.

It should be recognized that--while the DDAP concept is principally focused on the process of delivering digital advertising to print--this activity has clear implications to all of the various segments, or niche markets if you will, found within the communications milieu. The reason for this is simple. If indeed the DDAP concept

*DTI, 1855 E. Vista Way, Vista, CA 92084, U.S.A.

and process can succeed in providing very large scale open process integration to the process of supplying digital advertising materials to publications, then it will have succeeded in developing open integration for one of the most complex processes to be found within the graphic arts industry. In effect, the hard problem will be solved first.

Further assuming that DDAP can and will successfully enable open process electronic integration for this most complex of print processes, then the so-called “leap” into the design and production of alternative forms of media -- that which the general computer industry is beginning to call “repurposing information” while Dunn Technology, Inc. (DTI) refers to it as *Electronic Intermedia Publishing (EIP)* -- is a logical evolution of DDAP.

Defining a Few Terms

Digital Data Exchange Standards (DDES) - A body of accredited standards developed for the graphic arts industry by the ANSI accredited Image Technology committee (i.e. ANSI IT8), the ANSI CGATS committee, and the ISO accredited graphics technology committee (i.e., ISO TC130). DDES provides standardized exchange formats, standard device interfaces, and standard digital color process control tools for the digital information developed and used in design, production and reproduction for both graphic arts and intermedia.

Digital Distribution of Advertising for Publications (DDAP) - In 1990 a cross-section of about 80 graphic arts professionals from advertising agencies, design firms, publishing companies, service bureaus, trade shops and printing companies came together to begin dialogue on the subject of the Digital Distribution of Advertising for Publications (DDAP). After a year of research and effort this ad-hoc industry group—then known as the DDAP Committee—published its *DDAP User Requirement Specification* which provides a technical blue print by which to accomplish the digital distribution of advertising for publications (DDAP). The *DDAP User Requirement Specification* calls for the implementation and use of several of the graphic arts industry’s accredited standards (i.e., collectively known as DDES) as the foundation upon which to build the necessary open process integration required for DDAP. Recognizing the tremendous amount of educational and research work yet to be done—particularly in the area of implementing many of the industry’s existing accredited standards—the ad-hoc DDAP Committee incorporated itself as a not-for-profit educational and research organization.

DDAP Association activities include providing unified management input to the development of open process integration, encouraging the widespread implementation and use of the industry’s accredited standards, providing independent testing support for the same, publishing test methodologies and testing results on the respective performance of the various implementations of accredited standards, and is working closely with ANSI CGATS—the graphic arts industry’s accredited standards development body in the U.S.A.—and with ISO TC130, the industry’s international accredited standards development organization, by providing management level user input to both.

Electronic Intermedia Publishing (EIP) - The EIP process is one that begins with the client (i.e., the individual or company that purchases media for the purpose of conveying a message) and ends with the reader (i.e., the individual who is intended to receive the message). The concept infers that it is possible to achieve a smooth flow of data from the creative process, through the reproduction preparation process, and ultimately to the printing plate, press or an alternative form of ultimate reproduction output (i.e., CD-ROM, HDTV, multimedia, etc.). Throughout this process the many considerations necessary to the graphic arts industry must be maintained.

Specifically, there must be design systems in place that respond to the diversity inherent to a variety of creative functions. We must have page imaging models, (PIMs) that will allow the data to be transported across a variety of systems while maintaining the editability of these files. Type libraries must have sufficient richness to meet the industry's requirements. Composition systems must have sufficient flexibility to satisfy the designer and the typographer. We must have some form of standard digital color calibration, communication, and process control such as that provided within the accredited *Digital Data Exchange Standards (DDES)*. A variety of hard copy output devices, including direct digital color proofing (DDCP) systems, must be available to provide the various functionality currently provided by conventional design comps and proofs, position placement proofs, and color proofs. We must have the hardware needed to develop major communication networks (i.e., fiber optics, tele-communications, etc.), the relevant and standard protocols by which to access these; and we must have standard data file formats—such as those within DDES—so that the data can be efficiently and effectively passed between the various systems and devices that are developed by different vendors but that are all needed to be integrated into this very large scale open process.

Open Process Integration - The utilization of mechanisms, such as accredited standards, by which the graphic arts industry can integrate into a whole—in an unobstructed fashion—the entire system of operations executed in the process of creating, designing, developing, and reproducing data for ultimate output to print and/or some alternative form of media (e.g., CD-ROM, multimedia, HDTV, etc.).

Owing to the very-large scale nature of this process, it is assumed that a variety of different products—developed by a variety of different hardware, software and consumables suppliers--will be integrated herein.

DDAP - Prototype 2000

The fundamental rationale that is driving DDAP correctly identifies *printing as a process*--a custom manufacturing process characterized by rapid turnaround time; a high degree of customer interaction (e.g. if the customer wants to make changes to the product specification and/or prototypes at any point in the manufacturing process then he or she may do so); and the need for precision in executing the final results independent of any and all of the variables that might exist across the ultimate output technology.

Digital Data Exchange Standards (DDES)

ANSI	ISO	Other Name(s)
ANSI IT8.1 Standard Data format for the exchange of color picture data via a magnetic tape transport mechanism.	ISO 10755	DDES*, CT, UEF
ANSI IT8.2 Standard data format for the exchange of color line art data via a magnetic tape transport mechanism.	ISO 10756	DDES*, LW
ANSI IT8.3 Standard data format for the exchange of geometric art data via multiple transport mechanisms.	ISO 10757	DDES*
ANSI IT8.4 Standard on-line graphic arts output device interface via a small computer systems interface (SCSI).	ISO 10758	DDES*, DDCP
ANSI IT8.5 Standard format for the exchange of monotone picture and line art data via a magnetic tape transport mechanism.	ISO 10759	DDES*
ANSI IT8.6 Standard for the exchange of graphic arts die cutting data.		DDES*
ANSI IT8.7/1 Color reflection target for input scanner calibration (standard input target for digital color control).	(draft)	DDES, OSCA
ANSI IT8.7/2 Color transmission target for input scanner calibration (standard input target for digital color control).	(draft)	DDES, OSCA
ANSI IT8.7/3 Data for the characterization of 4-color process printing (standard output target for digital color control).	(draft)	DDES, OSCA
ANSI IT8.8 Standard format for media independent transport of graphic arts data (makes use of the data structure of earlier IT8 standards).	CD 12639	TIFF/IT, DDES
ANSI CGATS.5 Measurement and calculation of colorimetric values for graphic arts applications.	(draft)	OSCA
ANSI CGATS.6 Type 1 printing conditions that define digital printing conditions (which are the colorimetric values of SWOP target conditions).	(draft)	Digital SWOP

DDES - Continued

Draft ANSI Standards	Other Name(s)
ANSI IT8.7/4 Default three component (RGB) color data definition for use in the graphic arts industry.	DDES, OSCA
ANSI IT8.9/1 Page Imaging Language (an imaging model based on a text-oriented concept).	PIL, DDES
ANSI IT8.9/2 Page Imaging Model based on an object-oriented approach to the transference of graphic arts data.	PIM, DDES

ANSI IT8.1 - IT8.6 are sometimes referred to as the first generation of DDES. Three of these standards (e.g. IT8.1, IT8.2 & IT8.5) use magnetic tape as the transport media. In the second generation of DDES the same standard data formats as are used in the first generation are preserved. The significant technical difference between the first and second generations of DDES is that the second generation decouples the standard data formats from any one transport mechanism. The DDAP Association uses DDES as an umbrella term for all of the digital standards developed by the graphic arts industry.

Other Standards Related Acronyms

ANSI	American National Standards Institute
CCITT	International Telegraph and Telephone Consultative Committee
CGATS	Committee for Graphic Arts Technologies Standards (U.S.A.)
CIE	Commission internationale de L'Eclairage (International Commission on Illumination)
CT	Contone (part of ANSI IT8.1 and ANSI IT8.8, TIFF/IT)
FDDI	Fiber Distributed Data Interface
FP	Final Page (part of ANSI IT8.8, TIFF/IT)
HC	High resolution contone (part of ANSI IT8.8, TIFF/IT)
IEC	International Electrotechnical Commission
ISO	International Standards Organization
ISO TC 130	ISO technical committee for the graphic arts
IT8	Image Technology Committee number eight (note: The U.S.A.'s first accredited standards development body for the graphic arts industry. Merged in under ANSI CGATS in 1993)
JPEG	Joint Photographic Experts group (compression standard, ISO 10918 -1, CCITT.8-1)
JTAG2	ISO/IEC Joint Technical Advisory Group on Imaging Technology
LW	Linework (part of ANSI IT8.2 and ANSI IT8.8, TIFF/IT)
OSCA	Open Systems Color Association
SCSI	Small Computer System Interface
SWOP	Specifications for Web Offset Publications

It is likely that Henry Ford, or just about any good process control engineer, would take one look at the graphic arts industry's workflow/process flow model and almost immediately declare it--at best--inelegant. A caution, however, to those inclined to pursue this path: Before jumping in and assuming that fundamental *industrial structure* changes need to be made in the name of improved efficiency one should consider, and perhaps even respect, the fact that the graphic arts industry has had a long period of time over which to refine its various processes, procedures, and industry practices. As an industry it has been in business for a long time. That, in and of itself, should be respected.

One of the underlying precepts of the DDAP Association's initiative is simply that *technology should respond to existing industrial structures and requirements--and not the other way around*. This is, admittedly, something of a radical view in this age of daily incoming "high resolution, low cost, ergonomically designed, user friendly, new revolutionary breakthrough solutions." given the popular usage of technobabble adjectives it is perhaps understandable that the members of the DDAP Association take a moment to ask a few relevant questions, such as:

- So okay, you have a "solution"--what's the problem that is being addressed?
- Can you give that to me in nouns and verbs instead of endless adjectives?
- High resolution? How about an accurate number.
- Low cost? A number please.
- Ergonomically designed? Compared to what, the rack?
- User friendly? What is the benchmark--a book or the stealth bomber?
- New revolutionary breakthrough--so what? Everybody has one of those.

It is indeed an interesting era in which the results of thoughtful human inquiry are occasionally branded as being a barrier to progress. Prior examples of this dynamic have appeared throughout history. The Cultural Revolution and the Inquisition come most readily to mind.

That aside, the DDAP Association is indeed interested in genuine progress. It's *User Requirement Specification* provides a blueprint for the accomplishment of very large scale open process integration. It is busily building the bridges that need to exist between our industry's islands of automation. And it is going about doing this with the significant advantage of understanding what the genuine technical problems are that need to be addressed. These include:

Problem	Solution
A standard data file interchange format	ANSI IT8.8 (TIFF/IT)
A standard <i>editable</i> data file interchange format	ANSI IT8.9/2 (PIM)*
Standard mechanisms by which to colorimetrically characterize digital color on input	ANSI IT8.7/1 (transmission) ANSI IT8.7/2 (reflection)

Problem**Solution**

A standard mechanism by which to characterize and drive an RGB monitor to more precisely represent the digital color that was characterized on input

ANSI IT8.7/4*

A standard mechanism by which to colorimetrically define target output conditions

ANSI IT8.7/3

A series of colorimetrically defined target output printing conditions derived through the use of standard tools and methodologies

ANSI CGATS.6 for SWOP target conditions.

Additional standard target printing conditions--both by class of output device and by various regions of the world are under development within ISO TC 130.

Standard, on-line, output device interface

ANSI IT8.4 and IT8.4a

*Draft standards nearing completion

These are all technically superior assets to have when one is looking at how to logically integrate and control a very large scale open process. Given the existing pressures that are being placed on the graphic arts industry from competitive media for more rapid turnaround times; a higher degree of custom, semi-custom, and personalized printed products; and the production of an expanded base of alternative forms of output; the open process integration espoused by the DDAP Association is critical to the continued health--one might even say the continued existence of--the graphic arts industry as a whole. It is also this standardized form of open process integration that will greatly expand the market for computer-to-plate, computer-to-gravure cylinder, and computer-to-digital press technologies.

References

ANSI IT8.7/1: Graphic arts prepress: Color reflection target for input scanner calibration, published by NPES.

ANSI IT8.7/2: Graphic arts prepress: Color transmission target for input scanner calibration; published by NPES.

ANSI IT8.7/3: Graphic arts prepress: Input data for the characterization of 4-color process printing; published by NPES.

ANSI IT8.7/4: Graphic arts prepress: Default three component (RGB) color data definition for use in the graphic arts industry; committee draft.

ANSI IT8.8 (TIFF/IT): Non-editable standard data formats - Transport mechanism independent; published by NPES.

ANSI IT8.9/2: The Page Imaging Model (PIM), which provides an editable, object oriented approach to transport mechanism independent data interchange; committee draft.

ANSI CGATS.6 Type I Printing: A standard which provides scientifically derived CIE values for SWOP printing conditions; published by NPES.

Digital Advertising Transportation Systems, The DDAP Association, November, 1994.

DEBIES Recommendations for the Electronic Job Jacket, The DDAP Reporter, Autumn 1994 edition, pp. 6-8.

The Issue of Type in DDAP, a white paper published by the DDAP Association, 1992.

DDCP Repeatability Testing, The DDAP Association, October, 1992.

Color Picture Data Compression (JPEG) Protocol Results, The DDAP Association, 1992.

The DDAP User Requirement Specification, Version 3.2, published by the DDAP Association, 1995.

The DDAP User Requirement Specification, Version 3.1—Update—published by the DDAP Association, March, 1992.

The DDAP Committee; DDAP User Requirement Specification, Version 3.1, 1991.

Characterizing and Calibrating Color Scanners with ANSI IT8.7/1 Targets, Dunn Technology, Inc. (DTI), 1992.

Spectrometric Colorimetry of Various RIP Testing Output, DTI, 1992.

Getting Good Color Measurements in a Distributed Environment, (Inter- & Intra-Instrument Color Measurement Repeatability), DTI, 1992.

Color Hardcopy Color Repeatability Tests, DTI, 1992.

Beta SWOP—Matching the EIP World to the Press, DTI, 1992.

Comparing Beta SWOP and Various Proofing Systems Spectrometrically, DTI, 1992.

ISO 10755 (ANSI IT8.1)—Graphic Technology, User Exchange Format (UEF00) for the exchange of color picture data between electronic prepress systems (DDES00)—magnetic tape transport mechanism, published by the International Standards Organization (ISO).

ISO 10756 (ANSI IT8.2)—Graphic Technology, User Exchange Format (UEF01) for the exchange of line art data between electronic prepress systems (DDES00)—magnetic tape transport mechanism, published by ISO.

ISO 10757 (ANSI IT8.3)—Graphic Technology, User Exchange Format (UEF02) for the exchange of geometric art information between electronic prepress systems—multiple transport mechanisms, published by ISO.

ISO 10758 (ANSI IT8.4)—Graphic Technology, Device Exchange Format for the on-line transfer of color proofs from electronic prepress systems to direct digital color proofing systems. The IT8.4a standard provides a standard output format for any color output device, published by ISO.

ISO 10759 (ANSI IT8.5)—Graphic Technology, User Exchange Format (UEF003) for the exchange of monochrome image data between electronic prepress systems (DDES00)—magnetic tape transport mechanisms, published by ISO.

ISO JPEG: Joint Photographic Experts Group accredited standard for color picture data compression, published by ISO.

The Color Paradigm, The Open Systems Color Association (OSCA), 1993.

Specifications for Web Offset Publications (SWOP) SWOP, Inc., 1993 and subsequent editions.

Anon., *Proof of the DDAP Concept—American Color & Quad/Graphics Implement the TIFF/IT Standard*, The DDAP Reporter, Summer 1994 edition, pp. 1.

Anon., *OSCA Demonstrates the OSCA On-Line Color Registry*, The DDAP Reporter, Autumn 1994 edition, pp. 3-4.

Dunn, Patrice M., S. Thomas Dunn, et. al., *The Digital Distribution of Advertising for Publications (DDAP)*, The Lasers in Graphics/Electronic Design in Print conference proceedings, Vol. 1, 1990, pp. 283.

Dunn, S. Thomas, David McDowell, et. a., *Industry Roundtable on Color Calibration, Communication, and Control*, The Lasers in Graphics/Electronic Design in Print conference proceedings, Vol. 1, 1989, pp. 277-307.

Pedone, Joseph L., *DDAP - Digital Distribution of Advertising for Publications*, The Prepress Bulletin, Vol. 81, No. 6, March/April 1992, pp. 4.

Printing Impressions, *Open Process Integration—An Interview with Joseph L. Pedone*, May 1994, pp. 68.

Romeo, John, *DDAP: It's About Business*, Printing Impressions, May 1994, pp. 66-67.

Scott, Frank; *Standards Implementations*, The DDAP Reporter, Summer 1994 edition, pp. 13-14.

Shifrin, Bruce, *TIFF/IT for Graphic Arts Application*, The Dunn Report, Vol. 12, No. 1, Jan. 1994, pp. 5-7.

Sirota, Richard J., *Breaking the Noise Barrier - The Implementation of Accredited Standards*, The Prepress Bulletin, May/June 1994, pp. 4-7.

Wagner, Patrice M. and S. Thomas Dunn, DTI, *The Issue of Standards for Electronic Prepress*, TAGA Conference Proceedings, 1985, pp. 32.

Wagner, Patrice M., S. Thomas Dunn, James D. Hitchman, Murray Oles, Eric Bernstein, et. al., *Digital Data Exchange*, The Lasers in Graphics conference Proceedings, Vol. I, 1985, pp. 32.

Zavada, Roland J., *A National Standards Coordinating Committee for the Graphic Arts Technologies*, TAGA Conference Proceedings, 1986, pp. 304.