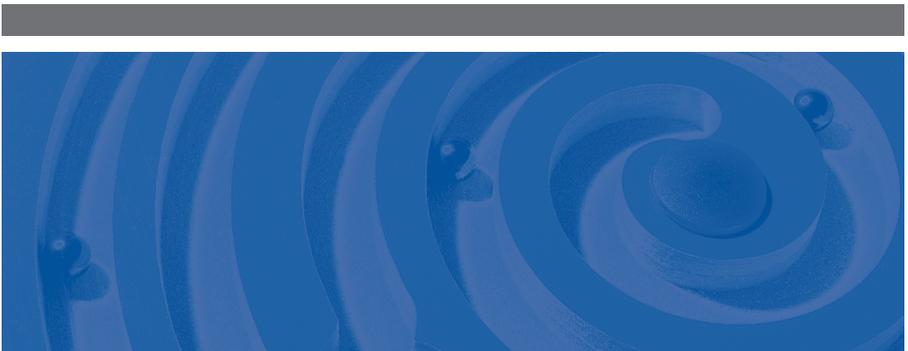




ABC's of VDP

A VARIABLE DATA PRINTING BASICS GUIDE



ABC's of VDP



A Variable Data Printing Basics Guide



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ABC's of VDP



Introduction



Larger sales. Higher returns. Greater customer loyalty. Marketing studies repeatedly show that personalizing communications can boost their effectiveness. Today, a form of digital printing called “variable data printing” (VDP) has made customized communications economical and far easier for printers to adopt. It is no wonder that it has become a fast-growing part of the digital printing industry. It offers some of the same benefits to printers as it does to those who specify print jobs: increased sales, wider margins on print services, and the opportunity to build a relationship with the customer that inspires greater loyalty.

Growing numbers of printers and print customers are reaping the benefits of digital technology. Economical short-run color printing and on-demand printing are two examples of how this technology has transformed traditional printing. *ABC's of VDP: A Variable Data Printing Basics Guide* focuses on the fast-growing and lucrative field of customizing communications, which has been made possible by the digital technology of variable data printing.

Digital printing uses computer technology to drive printing devices. Digital documents are designed on computers using layout software and electronic content—both text and images, including graphics and photos. Computers are also used to manage the digital printing workflow, from controlling jobs and equipment to billing and accounting. This technology eliminates the need for massive runs to achieve economies of scale.

Variable data printing uses digital technology to vary one or more elements in a printed piece, in the course of a print run. Content is drawn from a computerized database according to “rules” on how the content should be used during printing, for instance, which pieces of text or graphics to use and where they should be placed. As a result, VDP is ideal for taking advantage of the increasingly rewarding field of full color, graphically rich, customized communications.

ABC's of VDP

ABC's of VDP A Variable Data Printing Basics Guide contains an overview of the technology followed by a look at the benefits of variable data printing. It describes how to mount a successful one-to-one marketing campaign by integrating VDP into existing digital printing workflows. The Guide then concludes with examples of this integration that demonstrate how you can use variable data printing to your benefit.

VDP is also known as...

- Personalization
- Customization
- VI (Variable Information)
- One-to-one marketing/communication
- Versioning

What Is Variable Data Printing Technology?



At a basic level, variable data printing is the use of digital technology to link print engines to databases that contain content for the printed documents. The content can consist of text and images (including graphics and photographs) in electronic form. During the printing process, computer applications take content from the databases and integrate it into a document according to rules that specify which elements are used and where they are placed. As a result,

Far more than a mail merge or overprinting, variable data printing supports changes in text, graphics, and layout

whether a print run is ten prints or 10,000, VDP can make each piece different by changing the information on each print.

economical. Customization increases the document's attractiveness and improves the effectiveness of the message it contains. Because the database contains information related to the audience for the printed document, the document can be customized with elements that have special appeal to the audience.

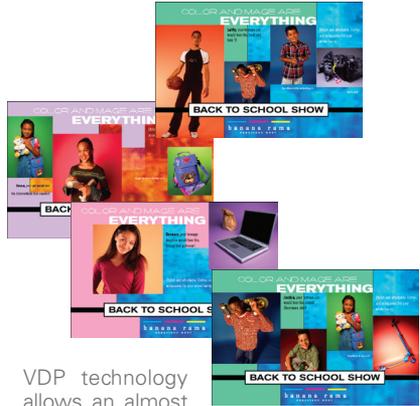
The value and potential of variable data printing stems from its ability to support customized printing and make such printing efficient and

Today's VDP is light years beyond the bland, unsophisticated direct mail of the past. It is much more powerful than it was even a few years ago. Today, it can dynamically assemble four-color images, charts, text, and other objects to create attractive, highly customized documents.

Illustration 1 Mail merge vs. VDP



Mail merge technology allows only variable text (shown in red).



VDP technology allows an almost infinite variety of text and graphics.

VDP is a distinguishing function of digital printing technology, setting that technology apart from traditional offset processes. Far more than a mail merge or overprinting, variable data printing supports changes in text, full-color graphics, and even the layout of documents. In basic mail merges, the name and address might appear in a different font and color than the rest of the document. Variable data printing with digital technology is capable of a seamless integration, in which the name and address look exactly like the rest of the document, and, from the recipients' point of view, exactly as though the document was printed expressly for them.

Illustration 2 shows the major elements in a typical variable data printing project.

Database For most variable data printing, a simple table containing the copy, graphics, and photographs that will be varied in the printed document is adequate. Such database tables can be created in applications such as Microsoft Excel.

Business rules These are rules that specify what variable content to use and where to place it. They can be written in the variable data printing language.

Content Both static and variable content can be created with a variety of software text with word-processing software, photographs (taken with a

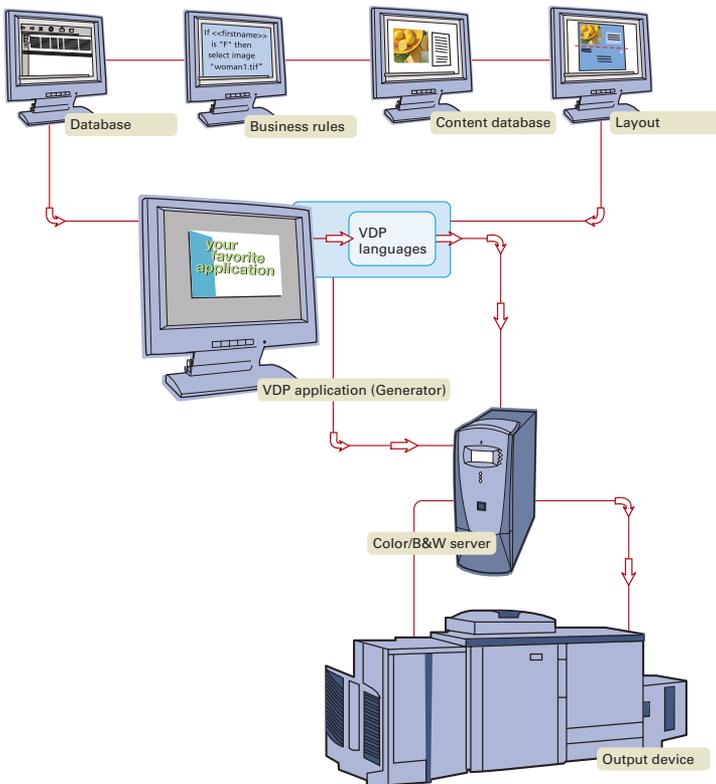
digital camera or input using a scanner) enhanced with graphics software, graphics created from graphics software, and so on.

Layout The layout for the document can be created by using common desktop publishing or word-processing software. It must be designed to accommodate variable text and images.

VDP application Software that “merges” content and prepares the document for printing.

Output devices Printing devices that turn the digital files into hard-copy prints.

Illustration 2 The VDP workflow



Databases are New Inputs into Printing

Just as ink, type, and paper are inputs into printing, consider the information from databases as the new inputs into variable data printing. A database is simply an electronic file that contains records of information organized in a particular way. For VDP printing, the database stores copy, graphics, and images in electronic format the same way a file drawer used to.

Databases are organized in two ways 1) by records and 2) by fields for each record. Each record has a predetermined number of fields. In a database about people, each person would be a record. The information for each person would be categorized into fields. A database about people, for example, might have fields for each person corresponding to their first name, last name, address, and phone number. The familiar telephone directory is an example of such a database. A car dealership might keep a database listing the cars in its inventory, along with the model, year, and features for each car.

Typically, databases store the changeable (or variable) elements in variable data printing. Variable data applications draw these elements from the databases, according to predefined rules, to create pages and documents that contain different images, text, and even layouts.

The information in the database would ideally be related to the audience for the printed document. It would contain information directly about the intended audience, such as names, addresses, financial data, or data that they have disclosed in business transactions or customer surveys. The information can also take the form of items of interest to them. For example, a document aimed at families with children might draw from a database that includes images of children at play with their parents or of products typically used by families, such as school supplies or toys.

Take the example of a customized marketing piece for the fictional children's clothing company, Banana Rama (Illustration 3). To announce its new line of children's styles, Banana Rama is creating a direct mail flyer that targets customers by ethnicity, sex, and age. The company understands its customer well and has compiled a database of those customers by name and attributes, such as ethnicity, sex, and age. For the printed flyer, Banana Rama will also draw from a content database consisting of images of children of different ages, sex, and ethnicity wearing the new Banana Rama clothes; images of typical gadgets enjoyed by these children; and background graphics. Using a variable data application, such as Atlas PrintShop Mail-Fiery Version, and business rules that match up images with the targeted individual, Banana

Rama can create, in the same print run, a flyer targeting parents of girls aged 7–10 years and different flyers targeting parents of boys in different age groups. The flyers can feature images of other children in the same age group wearing Banana Rama clothing and playing with their favorite toys.

The information in a database was manually entered. In the case of a telephone directory, someone typed in all the information. In more complex databases, such as those used by enterprises to manage customer relations, the information may be gathered in different places by different computer programs that feed data into a central database. The separate programs might cover different areas of customer contact, such as from the call center, off the Web site, through field service, and from sales activity. Nevertheless, at each point, someone typed some information into the database.

There are many computer programs designed to handle databases. Familiar desktop programs include Filemaker’s Filemaker Pro and Microsoft’s Excel. In an Excel spreadsheet, each row corresponds to a record, and each column identifies a field. One column would contain all first names, for example, and another, all last names. More powerful enterprise systems include products from Oracle, Sybase, SAP, and Siebel. These store large amounts of information and cross-reference them in many ways.

Illustration 3 Banana Rama direct mail piece

Pageflex Persona–Fiery Version selects images and variable type from Banana Rama’s content database to create individual postcard mailings tailored for customers’ different needs.

The diagram illustrates the process of variable data printing. On the left, a 'Content Database' contains various images of children and toys. On the right, a 'Customer Database' contains a table with customer information. The process involves selecting elements from the content database based on the customer data to create personalized postcards. The finished cards are shown in the center, featuring different images and text based on the customer's data.

Content Database

Customer Database

First_Name	Last_Name	Ethnic	Child1_Gen	Child1_Age	Child2_Gen
Janine	Demitasse	LS	F	3	0
Carmen	Jones	LS	M	3	0
Jane	Blum	LS	M	1	0

The finished cards are made from elements in the content database, driven by elements in the customer database.

The customer database information can be tied to images in the content database. For example, Carmen Jones has a male child, so a picture of a boy is pulled from the content database.

The vast majority of VDP requires nothing more than a spreadsheet. Print providers can simplify working with databases by extracting only the information needed and putting it into a spreadsheet. Extracting the relevant information is called "data mining." Print providers must identify the necessary information and who will extract it, and then specify how the information should be delivered. The database itself can come from the customer or be purchased from companies that make databases their business, so-called "List Companies."

Most often, the information delivered to the print provider takes the form of a "comma-delimited" file, which is simply a text file where commas separate the

information in fields. Spreadsheets and even word processors can open these files and automatically place the information into rows and columns. The file may be delivered on a removable disk or via email, like any other electronic file. It is then read by the variable data application.

Just as desktop publishing tools and graphics programs have enabled printers to expand their services, skill with databases can be the foundation for greater revenues. A database should be considered another tool, in this case, a tool for working with data. Printers regularly retouch photographs, adjust graphics and layouts, and coach their clients on achieving the best print quality. They can also help clients combine databases, "clean" databases by removing redundant or obsolete information, or extract relevant information. Printers who can offer a wider range of services appear better prepared than their competition and put themselves in a stronger position to win more business.

VDP Languages

Variable data printing languages specify a format for the data used in personalized printing. Here are several VDP languages:

- Fiery FreeForm & FreeForm 2 from Electronics For Imaging, Inc.
- Intelligent Printer Data Streams (IPDS): found in the AS400 and IBM mainframe environments and used with dot matrix printers
- Personalized Print Mark-up Language (PPML): the industry standard developed by the Print On Demand Initiative (PODi at <http://www.podi.org>)
- Variable data Intelligent PostScript Printware (VIPP): A proprietary VDP language from Xerox, traditionally used in the transactional black-and-white printing market
- Variable Print Specification (VPS): a VDP language from Creo

Promotional and Transactional Printing are Converging

VDP is not a new concept. Utility bills and financial statements use a basic layout and vary the customer's name, address, and data on transactions, e.g., electricity and natural gas used, purchases credited, checks paid, deposits received. Although it communicates personalized information, transactional printing—printing that captures transactions—has historically been confined to low-resolution in black-and-white with the occasional use of spot color.

In contrast, promotional printing, such as that used in direct mail campaigns and marketing or advertising collateral, employs color and eye-catching designs, but typically contains little personalized information. It relies on visual pizzazz rather than personal content to attract attention.

With variable data printing, transactional and promotional printing are beginning to converge. Transactional documents are starting to feature high-quality personalized messages. Promotional documents now include relevant individual data to support buying decisions. Take, for example, the practice of enclosing generic color promotional inserts with a monthly credit card statement. The recipient always reads the credit card statement because it contains important personalized information—in this case, the amount of money that must be repaid. The insert, in contrast, is disposable. Variable data printing offers the opportunity to embed highly relevant, colorful promotional material within the transactional statement and guarantee that its message will be noticed. VDP can also improve the usefulness of the transactional statement itself. The addition of pie charts or other graphical representations of data can make information clearer and easier to understand. (See Illustration 4).

Illustration 4 The value of color mailings

Increase attention span and recall
Color emphasizes important points and increases retention 82%

Cut through the clutter
Consumers are 55% more likely to pick up a piece of full color material

Reduce errors in understanding
Color helps messages be understood by 80%

A Strategic Necessity

The convergence of transactional and promotional printing is part of a larger trend toward specialized target marketing. Since the vehicle for communication already exists in the form of transactional printing, it makes sense to enhance it with personalized information for promotional purposes. Businesses with databases of information about their customers can use that knowledge with existing distribution mechanisms. Since 45% of the cost of any promotional mailing is postage, adding a personalized sales offer to a monthly credit statement improves the economics of the mailing. For the same postage, a bill is also a marketing campaign, offering the customer what the customer wants.

Revenues and profits associated with personalized marketing programs are 31% greater than with general marketing.

Research into the effectiveness of personalizing communications has found significant benefits, chief of which is improvement to the bottom line. Overall revenues and profits associated with personalized marketing programs are over 31% greater than those associated with general marketing. Measurable improvements also apply to the size and value of orders placed in response to personalized communications. Customers are also apt to respond more quickly and in greater numbers, as shown in Chart 2. And personalized communications apparently increase customer loyalty because repeat orders and repeat customers, as measures of customer retention, rise by over 47%.

Today's overall trend toward target marketing will only intensify tomorrow. With its intelligent database-driven focus, and dynamic visual flair, VDP technology thrives in the competitive marketing environment. For organizations with the right resources, marketing support, and business knowledge, VDP is more than just a powerful tool it's a strategic necessity.

Chart 1 Types of printed communications

(Whitepaper Effective Personalized Communications for Customer-centric Strategies, CAPV, July 11, 2003)

Promotional/Demand Generation (Nontransactional)	Transactional
<ul style="list-style-type: none">• Catalogs• Brochures• Inserts• Whitepapers• Promotional materials• Press/news releases• Newsletters	<ul style="list-style-type: none">• Proposals• Enrollment forms• Bills of materials• Correspondence (call center)• Policies• Contracts• Invoices• Statements• Purchase orders

If you're a print specifier...

Print specifiers, such as *corporate marketing departments*, *advertising agencies*, and *marketing consultants*, should care about variable data printing because they have a message they want to articulate to potential customers. They want to drive the customer relationship.

The value of using variable data printing with pull marketing is that it is far more cost-effective than push marketing

VDP gives them the option of applying a push or pull strategy. Push marketing refers to pushing information out to the customer. Direct mail is one example. Push marketing is driven by the vendor. Pull marketing, in contrast, is driven by the customer. The customer

pulls information about the products in which he or she is interested. For example, a car dealership might have a Web page where customers can select

the information they want to receive about a certain car model. The customers' choices are entered into a database from which VDP can create a personalized brochure for mailing.

The two strategies can also be used in tandem. The car dealership can obtain databases of potential customers within its geographic area and push advertising about the latest car models to them through a direct mailing. Using information in the database about the customers' family size, the advertising features models most likely to be attractive to them, e.g., SUVs and wagons for families with children, sports cars to single males. The push marketing aims to make the customer aware of the dealership's existence and services.

Chart 2 Percentage improvements attributed to the use of personalization print programs

(The Value of Color, CAPV, April 9, 2003)

Response Rates	.36.0%
Average Order Size/Value of Order	.24.5%
Repetitive Orders/Retention	.47.6%
Overall Revenue/Profit	.31.6%
Response Time	.33.9%

The value of push marketing lies in making potential customers aware of a vendor and in enticing them to take the next step toward purchasing products from the vendor. Push marketing is often an initial contact in which customers receive information that encourages them to take some action. Banana Rama sent a catalog to customers in an effort to gain their interest in their new line of clothing. The brochures were customized for a particular group of people and designed specifically to target them.

Potential customers who respond to the push marketing can be given an opportunity to pull more information, as in the example of a car dealership with a Web site. By specifying the information they want about a new car, potential customers identify themselves as likely customers who already have a sense of what they want to buy and have taken a step toward a purchase from the vendor.



The value of using VDP with pull marketing is that it is far more cost-effective than push marketing. The customer has already targeted himself or herself, and the vendor prints a brochure only for a customer who is already interested in its product. The vendor provides more of what the customer is looking for and less of what they have no interest in. A pull-marketing campaign in which customers specify the information they want through a Web site is shown in Illustration 5.

Illustration 5 Web pull-marketing campaign

efi | essential to print

NEWS PRODUCTS TRAINING SUPPORT ABOUT EFI

SOFTWARE

Feature Request Form

At EFI our most valued resources are our customers. We design and develop products based on feedback from you. Much of this feedback is collected through our technical support call center, industry tradeshows and one-on-one interaction with our customers. This online feature request form is yet another way for us to gather this information. We value your opinions and ideas and appreciate hearing from you.

Note: If you are in need of technical assistance or support, please visit our technical support page. For general product information, please call 800-286-5443 or send an email to info@efi.com.

Please enter all the required fields below. (* = Required)

*First Name:

*Last Name:

Company Name:

Address:

City:

State, Province or Territory:

Zip/Postal Code:

Country (if not USA):

Phone #:

*E-mail:

***Requesting a feature for :** (check all that apply)

EDOX/DocStream Document Server

Fiery B&W Server/Controller

Fiery Color Server/Controller

Splash Server/Controller

PrintMe

The EFI SDK

Velocity Balance

Velocity OneFlow

Please describe the feature you would like EFI to create:

From time to time, EFI will send business-related email messages (product information, newsletters, etc.). Are you interested in receiving such information?

Yes No

Chart 3 New business opportunities

Because variable data printing depends on the use of databases, print providers can expand their service portfolios and tap into new revenue streams:

- **Database merging:** Combining information from several databases into one
- **Data clean-up:** Removing obsolete records and incorrect information; eliminate redundant entries
- **Data mining:** Searching large volumes of data for information relevant to a specific purpose
- **Specialized design services:** Creating document layouts and templates for variable data
- **Resource management:** Storing, tracking, updating, and otherwise managing a customer's digital assets, including files and databases
- **Customized campaign management:** Advising customers on creating and running a variable data marketing campaign
- **Response monitoring/reporting:** Tracking and analyzing feedback to marketing campaigns to help customers measure success
- **Cross-media services:** Re-purposing output for different media, such as newspapers, direct mail, or high-end publications

For print specifiers, the bottom-line benefit of variable data printing is a more effective way of communicating a message to customers:

- Higher return on investment
- More cost-effective promotions
- Better targeted communications
- Greater mind share by providing relevant information

If you're a print provider...

Print providers, such as *digital print service bureaus*, *commercial printers*, and *quick printers*, should care about VDP because the technology enables them to offer additional services—such as those listed in Chart 3—to their end customers, the print specifiers. VDP and the services related to it add value to the printed page and encourage customer loyalty. It would be much more difficult for the customer to establish a new relationship with a different service provider for each of the additional services.

Service providers gain the opportunity to move away from the price pressures of commodity-based pricing to value-based pricing. They can switch from pricing by the cost per page to pricing based on the value of services provided in a complete job.

For print providers, the bottom-line benefit of VDP is increased business opportunities that translate into new services that command higher profits.

One-to-One Marketing



The marketing opportunities presented by variable data printing are enormous. By personalizing communications, advertising and promotions can be tailored to appeal to the interests of individuals rather than broad segments of people. There is already a trend among publishers of magazines, catalogs, and direct mail toward greater specialization. Newsstands today carry magazines that target lifestyles, ranging from those with advice on how to live simply to those that profile glitz and glamour.

The concept of one-to-one marketing fine-tunes target marketing to the level of the individual. One-to-one marketing is the practice of communicating directly to each customer. This communication can take place via direct mail, phone calls, or e-mail sent over the Internet, but is not limited to those means. Terms such as “direct marketing” and “relationship marketing” can be interchangeable with one-to-one marketing when the emphasis is on reaching individuals. Relationship marketing has the added dimension of maintaining contact over a period of time to build a rapport with the individual customer, as opposed to making a one-time contact.

All forms of one-to-one marketing require information about the customer and can involve gathering more information about the customer after contact has been made. This knowledge of the customer and the customer’s interests is necessary to create the personalized communication that establishes a one-to-one relationship. The advertiser must be able to target customers that would be interested in the advertised product, and then personalize the promotion in ways that are attractive to those customers.

Marketing on the Customer’s Terms

Personalization has been around for a very long time and has usually been associated with costly customization, such as in bespoke suits and custom-built automobiles. It has been popular because it works. Consumers want to be recognized as individuals and addressed in a personalized way. Today, even though customers might recognize that the information about them came from

a database, they appreciate the extra effort that marketers have taken to get to know them and to communicate on their terms.

To varying degrees, consumers are aware that data about their activities, particularly financial transactions, are continually being gathered and shared with marketers. Sometimes, consumers deliberately share this information, as when they answer questions on a marketing survey, or when they request, or “pull,” product information. At other times, records of their activities are gathered automatically in the course of their transactions. The marketer must maintain a delicate balance between collecting information and maintaining the consumer’s trust that the information will be used for the consumer’s benefit. They can do so by using the information they have assembled to add value to the consumer’s activities on the consumer’s terms.

Through credit-card receipts, for example, a financial services company might learn that a customer has children and shops regularly at a particular children’s clothing store. The company could use that information to build customer satisfaction and loyalty by offering money-saving discounts for children’s clothing and toys. This use of the customer’s data benefits the customer. An inappropriate use of the data would challenge the relationship and risk turning the customer away.

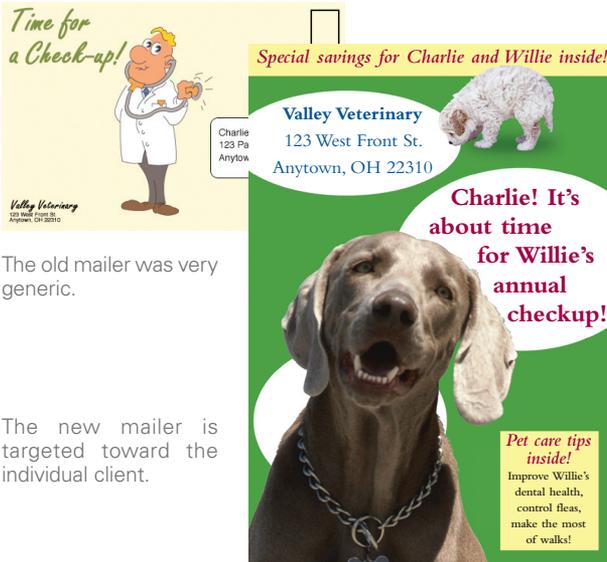
An Advantage for the Smaller Print Provider

With mass marketing, smaller print providers often found themselves at a disadvantage when forced to compete with large printers on volume. In the world of one-to-one marketing, large print volume is no longer the most effective communication strategy, and smaller companies may actually gain an advantage. The following testimony by a pet owner shows how smaller companies can benefit from one-to-one marketing.

I have a pet that I take to the local veterinarian. The vet has a good-sized business with a clientele limited to residents in our neighborhood. In the past, when it was time to take my pet in for a check-up, the vet would usually send me a generic postcard as a reminder. The card never identified my pet by name. It didn't even indicate whether my pet was a dog, a cat, or a goldfish. Yesterday, I received in the mail a full-color mini magazine. It was clearly provided to the vet by a pet food supplier. But it was addressed to me with a message that called me by name and also named my dog. There was a message telling me that it was time to take Willie in for a check-up. I was surprised and thought the vet was going the extra mile to make sure I knew he appreciated my business.

The print run for this one-to-one promotion would not have been large, but the impact it made was far greater than that made by the postcard. (See Illustration 6.) It is an example of personalized marketing in which the actual value of any one sale is not substantial, but the value of a long-term customer relationship is significant.

Illustration 6 Veterinarian’s mailer



The old mailer was very generic.

The new mailer is targeted toward the individual client.

Focus on Effectiveness and Value

Compared to mass marketing, or “one-to-many;” one-to-one marketing can appear to be more expensive. Historically, the cost of a marketing campaign was based largely on the cost of delivery, in which case economies of scale in print

production argued for the use of only one message broadcast to everyone.

In one-to-one marketing, the effectiveness of communications plays a bigger part in the equation. Research has established that personalized communication increases response rates and spending by the target customer. (See Illustration 7 on the next page). One-to-one communications spur relationships that result in repeat sales and customer loyalty. Generally speaking, increasing the volume of messages reduces the cost of printing but decreases the effectiveness of the communication. The quality of the response from customers therefore can raise the return on investment in a one-to-one marketing campaign above that of mass marketing.

With effectiveness as the goal, the focus of communication planning needs to shift from reducing costs to that of delivering greater value. If the people

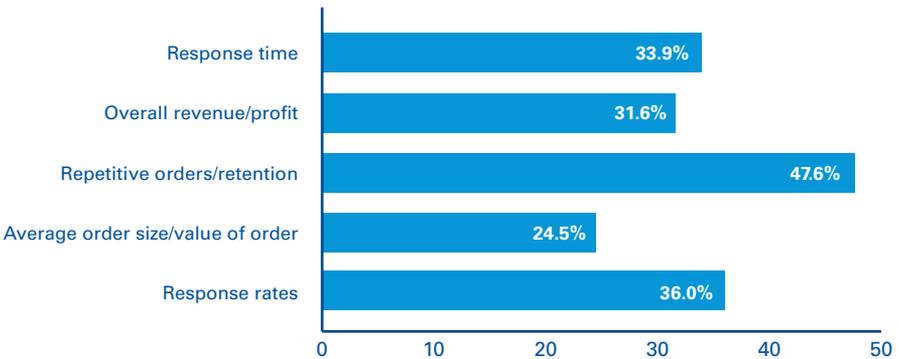
who buy printing are the only ones involved in developing marketing communications, then the purchase decision will usually be based on cost. Effective communications should also involve those who understand the target customer and who possess the data for crafting effective messages. When these people are involved, the purchase decision will be based on the greater value of enhancing the customer relationship.

The Competitive Edge

Consumers are expecting and demanding that vendors acknowledge their personal interests and preferences. They are looking for “my brand” and insisting that “my brand” be delivered in the way “I” want. In effect, by personalizing communications, marketers give consumers what they want. When a veterinarian can issue a personalized reminder and attach it to a magazine with welcome information about pets, consumers should expect that every business they deal with on a regular basis can customize and personalize their experience.

Marketers do not make the rules any more—consumers do.

Illustration 7 The benefits of 1:1 communication



Marketers do not make the rules any more—consumers do. Smart marketers understand the value of personalized communication. Technically savvy marketers also realize that the cost of producing those communications is quickly shrinking thanks to technology such as variable data printing. There is already a significant number of early adopters of variable data printing. They are the ones who have taken the risk, confident that they will gain a competitive advantage. They hope their competitors are watching them... from behind.

Getting Personal



“How did they know I was interested in that?!” The ultimate level of customization would be a unique communication for each individual, tailored to that individual’s information and interests. Short of that level, there are many other degrees of customization in one-to-one marketing.

Traditional Mass Mailer The envelope is addressed to “Resident” but every resident receives the same thing inside, such as a book of coupons. This basic approach has many variations:

1. The contents can change by ZIP code or other region (“versioning”). The coupons might be good only for businesses within the same ZIP code as the resident.
2. “Resident” can be replaced by the name of the recipient.
3. Canned messages might be rotated in the enclosed letter depending on location or some other criterion.
4. In addition to name and boilerplate message, the enclosure could include data specific to the recipient, such as the coupon for local residents.

Stationery A long-standing practice is to print variable data on “stationery.” Full-color static material, or templates, are printed via offset, and variable data are overprinted through a black-and-white digital printer for personalization.

Variable text and images Both text and images change from document to document. They are selected from a database according to rules that personalize the document.

Dynamic Layout In an advanced version of variable text and images, the arrangement of elements on a page can vary depending on their size or other attribute. In other words, the layout of a page can change.

Creating a Successful VDP Campaign



For print providers, the keys to offering successful variable data printing services lie in adopting a broad project-management perspective and in partnering with their customers. Not only do print providers need to understand the digital-printing process, they must also develop expertise in designing documents for variable data and in the use and management of databases. They should be prepared to help their customers justify the use of VDP. That means reinforcing a strategic approach to VDP projects and discerning where VDP can add value to a marketing program.

In short, successful VDP service providers integrate print expertise with database knowledge, graphic-design skills, and marketing know-how. These same elements apply to print specifiers as well, who need to look beyond the cost of printing to the effectiveness of the overall marketing program.

A model for carrying out a successful variable data campaign consists of three phases *customer acquisition*, *campaign execution*, and *measurement of results*. These phases are explained below, and lead the variable data print provider from prospecting for customers through helping customers measure the value of personalized communications. Print specifiers can easily see their role in the campaign and adapt the descriptions of the three phases for their own needs.

Customer Acquisition → Campaign Execution → Campaign Measurement

Customer Acquisition

Finding a customer for variable data printing is the first step of a successful campaign. Although basic personalized communications—such as bank and utility statements—are common, the market may not be aware of the full-color customization possible with more sophisticated technology, and the extra value it offers.

In acquiring customers, the first step is to develop target customer profiles. These profiles describe the most likely prospects, the ones who would be most receptive to the idea of a marketing program that uses variable data printing. Potential customers might include those who:

- Are currently implementing direct-mail programs
- Want to increase repeat business and face a high cost in replacing customers
- Own a database of information on their customers
- Invest in personalization on a Web site
- Are open to exploring new technology
- Have a high-margin product or service
- Have a large marketing budget

(Print specifiers can use these same guidelines to gauge how well their companies would accept the idea of a variable data marketing campaign. When a company already owns information about their customers and has been marketing through direct mail, it can understand the opportunity for establishing a more personal relationship with customers through customized marketing.)

The second step is to sell the concept of variable data printing to the customer focus on value. A marketing program using personalized communications requires a project-management perspective. It should not be strictly about technology or about printing costs. Instead, ensure that the discussion focuses on the documented effectiveness of personalized communications in improving customer relationships and sales.

- Involve and influence all the stakeholders. Include not only the people who buy print services but also the marketing managers who know their customers best and who make decisions about marketing budgets. The higher up the hierarchy your participants are, the better.
- Use lots of props and examples of successful variable data marketing programs.

- Compare VDP to Web personalization. Numerous Web sites “remember” the viewer and welcome him or her the next time the viewer visits the site. Electronic commerce sites might even make recommendations for products based on the viewer’s previous purchases on the site. This can be an effective way to communicate how business rules can drive both content and graphics.
- Review concerns over the quality and costs of digital printing, focusing on the overall value rather than the cost of print production.
- Be prepared to give an overview of the technical aspects of variable data printing and the use of databases to vary text and images in a document. This is an opportunity to point out how variable data printing has improved far beyond the use of simple overprinting or black-and-white printing in confined areas such as that found on financial statements. Show examples of personalization fully integrated into color documents.

The third step in customer acquisition is to help the customer plan the marketing program. Since the printer is the technology expert, the printer’s role is to design the technology to help the customer realize his or her goal.

- Identify the customer’s marketing goals, whether they be customer retention, re-activation, lead generation, or something else.
- Learn how the customer has conducted marketing programs in the past and help the customer uncover the end-customer’s preferred format. Remember that the end-customer calls the shots in personalized communications, and effective marketing talks to the end-customer on the customer’s terms.
- Understand what customer data is available. Can it support the intended marketing program? Can it be shaped into a database used by the variable data printing system?
- Define general budget and time limitations, and present a scope of work and quote to the customer.

Campaign Execution

With the customer on board, the next phase is to execute the variable data printing campaign agreed to in the customer acquisition phase. Most of the activities in this second phase are part of a VDP service provider's core competency. The variable data aspect calls for a knowledge of databases and how to work with them. Nevertheless, VDP service providers can consider databases nothing more than additional inputs into the printing process, just like standalone text and images.

Begin by writing a plan of action. In consultation with the customer, determine the level of personalization that the printed product should achieve, the "call to action" that will form the promotional message for the product, and the definition of a successful program. The answers will form the foundation for the plan. From this foundation:

- Determine the graphics to be used and who will provide them
- Develop measures of success, including results that will demonstrate the return on investment
- Set the schedule and define responsibilities for all parties involved
- Specify the quantities to be printed and distributed
- Determine the delivery method

A database, or databases, of information about the target audience will be needed to drive variable data printing. The customer may have such a database already. But if the customer does not, then a database can be compiled using existing information or it can be purchased. Since the printed product leverages information from the database for its effectiveness, the database must contain all the names, addresses, images, and other information that will inspire a personal response to the printed product. This data must be organized into records and fields (categories) that match to placeholders in the variable print document and can be used by the variable data software application.

In turn, the printed product must be designed to accommodate variable information. The designer must understand the available data and plan the rules, or logic, that specify which variable elements are used and where they will be placed. Design resources can come from the printer, an outside agency, or the customer's corporate art department. Variable data is especially effective when placed where the end-customer does not expect it. For example, the

end-customer's name could be integrated into a photograph of the product as though the name had been embossed on the product. There is a great deal of room for creativity in this process which encompasses both graphic design and database innovation.

All the assets must then be collected. These include electronic files in the appropriate format, images in correct resolutions and sizes, fonts, and colors. All image variations need to be verified to ensure they will fit into the printed product. A mockup or a test copy of the final layout is useful at this point. It will give the customer a better sense of the printed product and can be used to obtain approval to proceed to printing. Finishing options can often be specified in software and carried out by the printing device without further intervention.

Campaign Measurement

Marketing programs should always have measurable results to determine their cost-effectiveness. Because variable data printing is still an evolving technology, comparisons to low-unit-cost, long-run printing are inevitable. The VDP service provider must be prepared to help the customer focus on the overall value of personalized communications—in particular, the higher returns from such marketing—instead of the cost of printing alone.

Variable data printing is not appropriate for every marketing activity. Therefore, deploying it in the right context is the first step to obtaining successful results. It is possible to maximize cost-effectiveness from the start by zeroing in on a select segment of customers chosen because they are likely to yield the highest returns. Because this segment is a fraction of the total customer base, print quantity and the associated costs are constrained from the beginning. Advocates of direct-response programs claim that personalization can increase sales from 1% to 30%. In these direct response campaigns, the number of outgoing pieces is also limited to reduce costs. Instead of, say, a one-million-unit mass mailing, they focus on 10,000 select targets.

How will success be measured? Success may be gauged by a target response rate or return on investment over a period of time. It can be measured in terms of more sales or larger sales. Success may also be defined in comparison with results from other marketing programs.

The marketing industry has developed many measures of results that take into account the complex influences on consumer behavior. Whatever measures are actually used have several aspects in common:

- **Response mechanism** There must be a means of gathering data on the end-customer's response to the marketing program. The means can be as simple as records of a purchase or telephone inquiry. It can take the form of a Web site or 1-800 telephone line that the end-customer can use to register their interest.
- **Reporting function** Response data needs to be gathered and reported over time. The length of the program and frequency of reports must be specified. The format of the reports should also be designed to display results in a useful manner so the analysts can find the information they need quickly and easily.
- **ROI calculation** Reported data will be analyzed, compared to costs, and used to calculate the return on investment in the variable data marketing program. (See Chart 4).

A variable data marketing campaign can be assembled component by component. Because digital printing is not as dependent on economies of scale as traditional printing, it allows printers to start with smaller projects and build up as initial success leads to more business in customized printing. The key to growing a variable data printing service is first to select a variable data printing solution that can be integrated into the VDP service provider's existing workflow and then scaled to meet future demands of customers.

Chart 4 Revenue and profit from personalized printing

	Current program	Increase from personalization	Personalized program
Pieces sent	375,000		375,000
Response rate	3.00%	+36%	4.08%
Orders	11,250		15,300
Average order size	\$200	+25%	\$250
Gross revenue	\$2,250,000		\$3,825,000
Direct marketing cost	\$675,000		\$843,750*
Gross margins	\$1,575,000		\$2,981,025
COGS	\$900,000		\$1,530,000
Net margin	\$675,000		\$1,451,250

*The higher print cost for personalized printing leads to higher response rate and ROI.

EFI VDP Solutions



To be successful in the commercial marketplace, a technology—regardless of its potential—must be powerful, flexible, and economically viable. Currently, there are no simple, off-the-shelf variable data printing solutions. Instead, VDP requires custom end-to-end attention to customer needs and budgetary constraints.

EFI™ recognizes the need for a customized approach and offers VDP solutions designed to fit into existing workflows so printers can easily develop customized marketing campaigns regardless of their complexity.

Integrates into Workflows

The latest in EFI's Fiery® technology delivers fast, industry-leading, adaptable variable data printing capabilities. Choose any authoring tool and create static and variable elements with EFI's flexible and open, end-to-end variable data printing solutions. EFI's VDP solutions include the most comprehensive array of VDP languages such as Fiery FreeForm™, PPML (the industry's open standard Personalized Print Markup Language), and a host of proprietary languages. EFI's solutions enable printers to take advantage of evolving VDP technologies regardless of the brand of database-management system, generator software, page-layout program, or print device.

The latest Fiery Command WorkStation™, whose single interface manages the inputs and outputs of the most complex VDP jobs, allows printers to manage their Fiery servers and variable data printing jobs from one location. The VDP Resource Manager is a utility that enables print providers to store, view, and re-use RIPped objects on networked Fiery servers. Along with a high-speed printing device, the Fiery servers eliminate production bottlenecks and allow printers to print VDP jobs faster than ever before.

By drawing from its own and its partner's technologies, EFI delivers high-performance, economical VDP solutions. These solutions are flexible and scalable so customers can easily develop customized marketing campaigns, regardless of their complexity. Because the solutions are powerful and fit easily

into printers' workflows, they also are highly cost-effective. In addition, EFI offers a comprehensive suite of tools to maximize throughput and streamline VDP production.

Authoring tools

Within EFI's VDP solutions, printers can choose among a number of authoring tools offered through EFI and its partners:

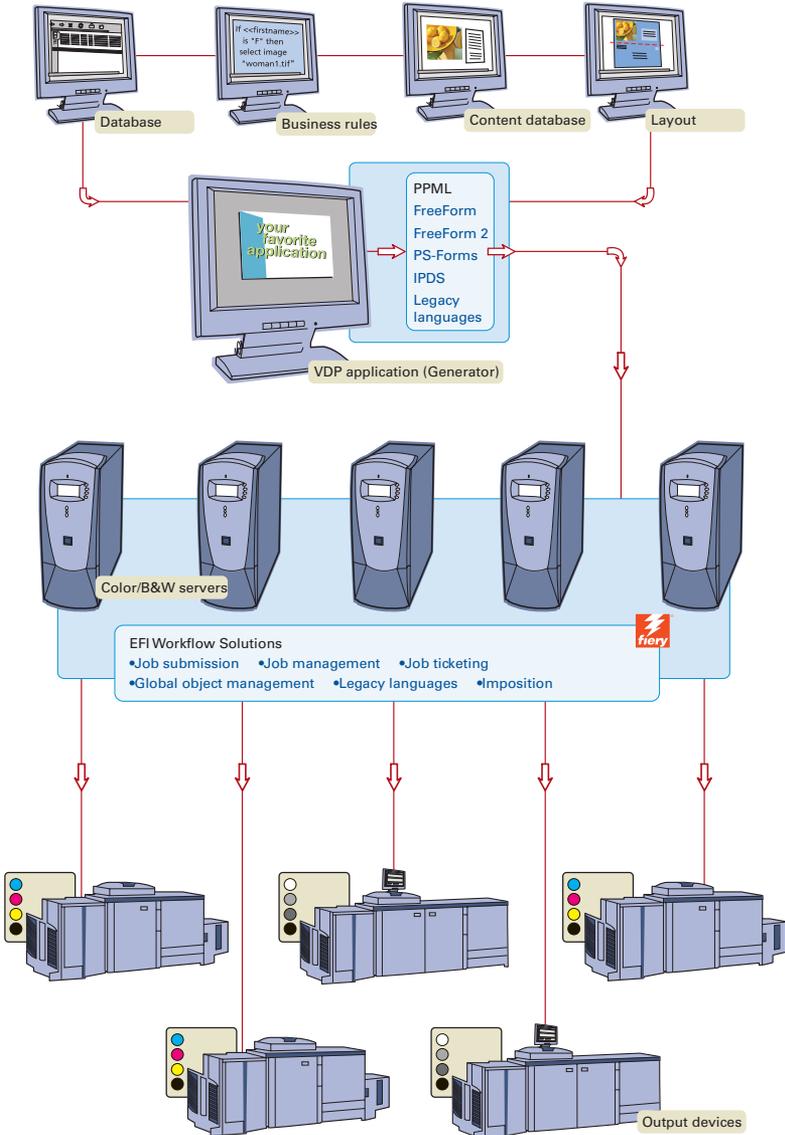
- **Fiery FreeForm:** Standard on most of EFI's Fiery servers, Fiery FreeForm makes variable data printing fast and easy. Any front-end application can be used with Fiery FreeForm to create master templates and variable information. Fiery FreeForm enables print engines to run at or near rated speed by RIPping master data—the data that does not change in a variable print job—just once.
- **Fiery FreeForm 2:** Fiery FreeForm 2 adds several features to Fiery FreeForm's strong foundation. It provides for more personalization, with support for multiple page masters. And it offers greater flexibility in integrating design and database functionality.
- **Atlas PrintShop Mail–Fiery Version:** For quick, easy, one-step variable data printing, PrintShop Mail–Fiery Version is ideal. It works with documents created in any layout or design application using any database format, and offers on-screen proofing. Simply drag and drop database fields to integrate database information into the layout of a document.
- **Pageflex Persona–Fiery Version:** A sophisticated authoring tool, Persona–Fiery Version is intended for the most demanding and complex variable data printing jobs. It is one of the first content-design applications to support the emerging PPML. The application is a complete layout program and features flexible containers for variable information that change size and position to fit pages to the content rather than content to the pages.

EFI Training

The skills and knowledge required by variable data printing are still evolving, and make carrying out a successful VDP campaign challenging. EFI, as part of its VDP solution, has developed tailored support and service offerings for VDP. Web-based classes, EFI Educational Services, consulting services, and technical

support are all designed to help printers build and effectively capitalize on the benefits of variable data printing.

Illustration 8 The EFI VDP workflow



Example of a Comprehensive VDP Campaign



What are variable data printing campaigns suited for? What decisions are typically made in a VDP campaign? What kinds of information form a database for VDP? What software is used? The following three stories of VDP marketing campaigns can help answer these questions and illustrate how to plan and carry out a campaign. Read in sequence, the stories also show how a print customer can build on one VDP marketing campaign to create another.

Oceancrest University Prospects for Students

The admissions office of OceanCrest University turned to the World Wide Web to increase student enrollment. It recently created a Web site to offer prospective students information about the university and the ability to apply for its three schools. However, there were few hits. Apparently, the idea of “if you build it, they will come” was not working. Was there an easy way to drive prospective students to the site? Or better yet, was there a single method to communicate with students, both those with and without Web access?

The print specifier ABC Advertising Agency

ABC Advertising Agency has been working with OceanCrest University for many years and understands the University's vision. The Agency also understands high-school seniors and that any communication with them must include

- 1. More graphics than words.** High-school seniors are not interested in reading mounds of information that does not pertain to them. So ABC proposed photos and graphics that speak louder than text.
- 2. Subtle personalization.** ABC suggested subtle personalization because this group of consumers no longer opens mail with a “Dear Sally” look and feel. The piece cannot resemble a mail-merge piece done on an inexpensive black-and-white inkjet printer.
- 3. A Web style.** The look and feel of printed communications with the young audience should be similar to that of Web pages, with tabs and buttons. High-school seniors are accustomed to viewing graphic media on the Web.

- 4. A simple reply format for information exchange.** Prospective students must be able to reply via the Web or a Business Reply Card as quickly and conveniently as possible. The postage on the Reply Card must be prepaid to increase response levels.

Together with OceanCrest University, ABC decided to create a personalized direct-mail campaign that would urge students to indicate their interest in OceanCrest University by replying via a printed card or OceanCrest's Web site.

Following the guideline to make personalization subtle, the piece placed the student's name in several not-so-usual places. Although the lead paragraph that calls the student to action was addressed to the recipient, the student's name was placed at the beginning of the sentence and not in a "Dear Sally" format. The name of the university was given as a Web link (<http://www.oceancrest.org>) in the directions for the reply card (in the blue box towards the top).

The format of the printed piece was in keeping with a Web look-and-feel, with Web-like tabs and large color sweeps in the background to distinguish different categories. ABC placed academics as the first and largest section on the piece because academics is the most important feature of OceanCrest University.

The piece was printed on 11x17-inch paper and folded three times to qualify for "letter" mail at the Post Office. The reply card also qualified as "letter" mail, which in turn allowed the reply card to be run as automated mail to reduce postage costs. Since post-process finishing increases the amount of spoils, the mail piece was designed with creative borders so it would not require cutting.

The print provider XYZ Productions

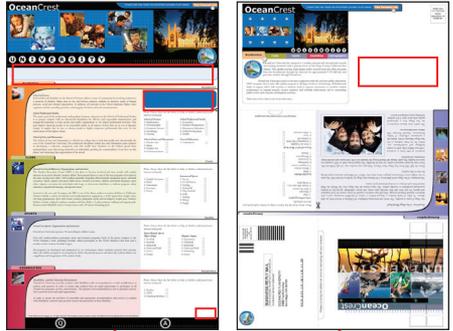
XYZ Productions had worked for ABC for quite some time. They distinguish their services with up-to-date technologies, and had recently acquired several digital printing devices. With their new equipment, XYZ could offer fast turnarounds on color jobs. More importantly, since its workflow was entirely digital, XYZ could personalize each printed piece for one-to-one marketing projects.

For the OceanCrest project, XYZ used EFI Fiery FreeForm as the variable data technology. Fiery FreeForm is a unique technology that enables common information to be RIPped only once while merging it with information that changes on each page. This allowed XYZ to send and process the layout—which did not change—once, and re-use it for every piece. (See Illustration 9).

Illustration 9 Prospecting for students

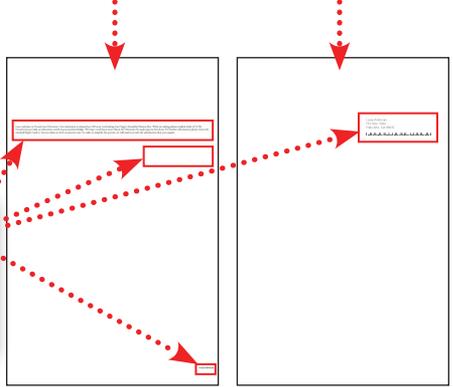
Step 1. ABC Advertising Agency designed the layout with the intention of placing the prospective student's information in the red boxes to the right. It transferred the layout to the production house as a PDF file to reduce setup fees and production costs.

ABC created the graphic elements with Adobe Illustrator, Adobe Photoshop, and Adobe Acrobat. By taking advantage of the PDF file format and workflow, ABC made print-ready files with all necessary components embedded.



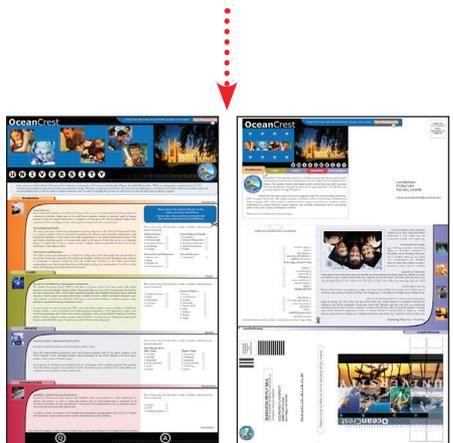
Step 2. In the production stage of the printing process, XYZ used the PDF files from ABC as references to the variable areas, and created those areas in a blank Microsoft Word document. The Word document was then connected to a database of prospective students, mostly high-school seniors, which ABC purchased from a "List Company."

NAME	ID
John Smith	123456789
Jane Doe	987654321
Mike Johnson	456789012
Sarah Brown	321098765
David White	654321098
Emily Green	210987654
James Black	876543210
Alice Grey	543210987
Robert Blue	109876543
Maria Yellow	765432109
William Purple	098765432
Olivia Pink	345678901
Benjamin Orange	678901234
Isabella Silver	901234567
Ethan Gold	234567890
Ava Bronze	567890123
Lucas Iron	890123456
Sophia Steel	123456789
Mason Copper	456789012
Charlotte Tin	789012345
Christopher Lead	012345678
Amelia Zinc	345678901
Andrew Nickel	678901234
Madison Aluminum	901234567
Christopher Lead	012345678
Amelia Zinc	345678901
Andrew Nickel	678901234
Madison Aluminum	901234567



ABC cleaned and modified the data for postal mailing requirements. ABC then performed a "mail merge" between the Word document and the database to produce pages that contained only the variable information.

Step 3. During printing, Fiery FreeForm combined the layout in the PDF files with the variable information in the Microsoft Word file to create the final pieces.



Oceancrest University Customizes Student Catalogs

When prospective students responded to OceanCrest University's variable data printing direct-mail campaign, the admissions office mailed them a complete catalog. This catalog was large at over 200 pages and costly to print, warehouse, and mail. The only person who read the entire catalog was the copy editor. Was there a way to reduce costs and make the catalog more relevant, and therefore more appealing, to the prospective students? What if the admissions office sent out only the pages the prospects requested?

The print specifier ABC Advertising Agency

ABC Advertising Agency again turned to variable data printing for the answer a catalog produced on demand according to the student's specifications. Together, the Agency and the University decided to customize and personalize the information sent back to prospective students. The information would speak directly to them as individuals. The admissions office would send out only those pages that a prospect requested and wanted to read.

Several different designs were submitted as proofs when OceanCrest admissions agreed on a format. The customization was based on the data collected from OceanCrest's variable data prospecting campaign. Prospective students who had indicated an interest in sports received information on sports instead of the entire catalog. When a candidate requested academic information, he/she also received a letter from the appropriate department head. This type of response encouraged the feeling of a "one-to-one" relationship with a person as opposed to a large, faceless institution.

Since the audience was young, the design of the new customized catalog followed the same guidelines as the pieces created for the prospecting program. It had the look and feel of the University's Web site and the direct-mail piece. It consisted of letter-sized sheets inserted into a window envelope, which was then mailed to the students. The packets differed in size depending on a candidate's stated interests.

The print provider XYZ Productions

Since XYZ Productions had worked successfully with ABC in the past, and offered proven variable data printing technology, the print provider was a natural choice for another VDP campaign.

Because a customized catalog, with its many pages and variations, required sophisticated VDP capabilities, XYZ used EFI Fiery FreeForm 2 and Atlas

PrintShop Mail–Fiery Version. There were a possible 72 pages for each student packet. Fiery FreeForm 2 and page conditions enabled XYZ to print only the pages requested. Of course, each page had the name and address of the recipient to heighten the personal touch.

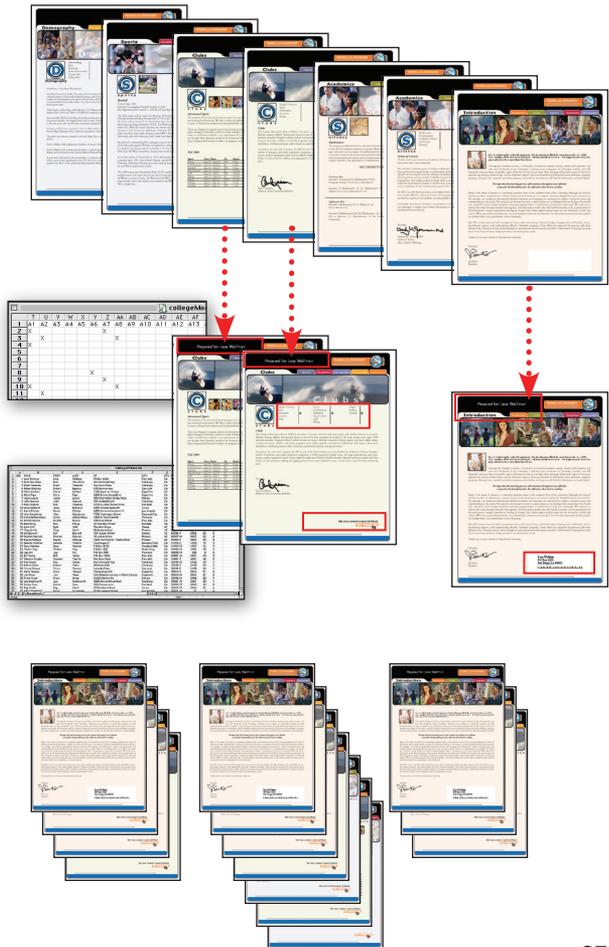
In addition, the unique caching capabilities of Fiery FreeForm 2 allowed XYZ to send and process the 72 pages once, and then make use of only those pages specified by each record in the database. Fiery FreeForm 2 is extremely efficient at this process of “versioning.” (See Illustration 10.)

Illustration 10 Customizing student catalogs

Step 1. ABC Advertising Agency created one PDF file containing all possible pages to be included in a prospective student’s packet. This file was delivered to XYZ Productions where it was used in conjunction with Atlas PrintShop Mail–Fiery Version and Fiery FreeForm 2 to produce variable-page-length documents.

Step 2. Simple page conditions were programmed to “Print” or “Skip” pages based on a value in the database. Fields from a different portion of the same database populated the personalization with name and address information. Pages that began sections such as Academics or Sports included arrows to remind students that there was more to the University than the information they requested.

Step 3. Only the information requested by each prospective student was printed, with his/her name on each piece. Each packet was placed into a window envelope with the address at the bottom of page showing through for postal delivery.



Oceancrest University Campaigns to Retain Students

The Board of Directors at OceanCrest University reviewed financial data for the past five years and noticed more and more students dropping out before graduating. The Board assembled a committee to research the causes of this, and the results were surprising. The committee concluded that students 1) lacked a sense of community, 2) were failing out of courses, 3) ran out of funds, and 4) could not clearly see a career path after graduation.

The print specifier ABC Advertising Agency

OceanCrest University turned to ABC Advertising Agency for suggestions to cure the dropout rates. ABC had been working closely with the Admissions Office on a Web strategy and direct-mail campaign to capture information about each student. By blending the collected data with the data from the Registrar, ABC proposed a solution that involved making the students feel personally valued by the University through customized communications.

ABC presented three separate mailing campaigns to strengthen communications with students

1. The first mailing (see Illustration 9) would be delivered one to two months after a student began the first year of school. It would encourage students to become involved in campus activities in which they had expressed prior interest—from the data collected on the Web and in the direct mail survey. This first communication would also include information about local businesses, to orient the student to their new surroundings.
2. The second mailing (see Illustration 10) would be delivered to second-year students as each student began upper division courses. These courses are generally more difficult, so the communication would share information about study groups or other learning services on campus. Also in this mailing would be information about local institutions that offer financial aid.
3. The third and final mailing would be targeted to seniors midway through the final year and emphasize local job information, including the Annual Career Fair.

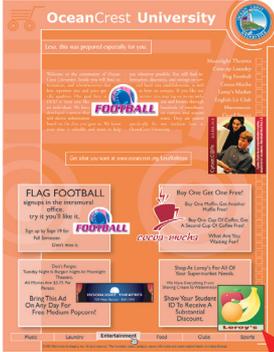
The print provider XYZ Productions

ABC Advertising Agency valued the services of XYZ Production House for all of their color VDP projects. XYZ's technological edge over its competition enabled the print house to create unique one-to-one marketing campaigns. (See Illustration 11.)

One of the key components in XYZ's digital workflow is Pageflex Persona–Fiery Version, which enables ABC and XYZ to create extremely dynamic, customer-specific pieces. XYZ uses PPML (Personalized Print Markup Language) with the Fiery color server to optimize workflows. The advantage of the PPML/Fiery workflow is that all common elements are downloaded and RIPPed to the Fiery color server only once. Efficiency is extremely important because over 75 ads are re-used from student to student in the proposed retention campaign. Pageflex Persona–Fiery Version also offers unique capabilities for automatically adjusting layouts to fit text and graphics, making customized pieces more appealing.

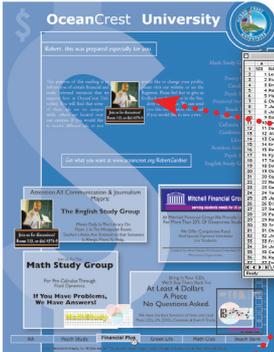
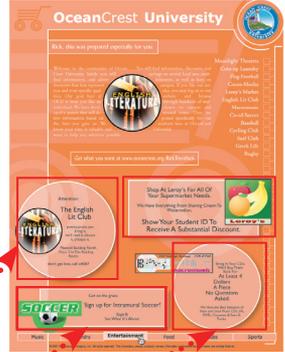
Illustration 11 Retaining students

To cure dropout rates, ABC Advertising Agency presented three separate mailing campaigns to strengthen communications with students. Each was targeted to a different group of students.



With the help of Pageflex Persona-Fiery Version, PPML, and the Fiery color server, data drives the version and all of the contents of each printed piece. Pageflex Persona-Fiery Version automatically adjusts layouts and balances columns for better-looking output.

ABC Advertising Agency designed the layout with the intention of placing ads in the predetermined spaces. ABC was also responsible for designing all of the ads and their related components (images and



		Campus Announcements											
DATE	TIME	LOCATION	EVENT	STUDENT									
10/1	8:00 PM	1000	Football	John	10001	10002	10003	10004	10005	10006	10007	10008	10009
10/2	7:00 PM	1000	Football	Jane	10010	10011	10012	10013	10014	10015	10016	10017	10018
10/3	6:00 PM	1000	Football	Bob	10019	10020	10021	10022	10023	10024	10025	10026	10027
10/4	5:00 PM	1000	Football	Alice	10028	10029	10030	10031	10032	10033	10034	10035	10036
10/5	4:00 PM	1000	Football	Charlie	10037	10038	10039	10040	10041	10042	10043	10044	10045
10/6	3:00 PM	1000	Football	Diana	10046	10047	10048	10049	10050	10051	10052	10053	10054
10/7	2:00 PM	1000	Football	Frank	10055	10056	10057	10058	10059	10060	10061	10062	10063
10/8	1:00 PM	1000	Football	Grace	10064	10065	10066	10067	10068	10069	10070	10071	10072
10/9	12:00 PM	1000	Football	Henry	10073	10074	10075	10076	10077	10078	10079	10080	10081
10/10	11:00 AM	1000	Football	Ivy	10082	10083	10084	10085	10086	10087	10088	10089	10090
10/11	10:00 AM	1000	Football	Jack	10091	10092	10093	10094	10095	10096	10097	10098	10099
10/12	9:00 AM	1000	Football	Karen	10100	10101	10102	10103	10104	10105	10106	10107	10108
10/13	8:00 AM	1000	Football	Liam	10109	10110	10111	10112	10113	10114	10115	10116	10117
10/14	7:00 AM	1000	Football	Mia	10118	10119	10120	10121	10122	10123	10124	10125	10126
10/15	6:00 AM	1000	Football	Noah	10127	10128	10129	10130	10131	10132	10133	10134	10135
10/16	5:00 AM	1000	Football	Oliver	10136	10137	10138	10139	10140	10141	10142	10143	10144
10/17	4:00 AM	1000	Football	Peter	10145	10146	10147	10148	10149	10150	10151	10152	10153
10/18	3:00 AM	1000	Football	Quinn	10154	10155	10156	10157	10158	10159	10160	10161	10162
10/19	2:00 AM	1000	Football	Rachel	10163	10164	10165	10166	10167	10168	10169	10170	10171
10/20	1:00 AM	1000	Football	Samuel	10172	10173	10174	10175	10176	10177	10178	10179	10180
10/21	12:00 AM	1000	Football	Tina	10181	10182	10183	10184	10185	10186	10187	10188	10189
10/22	11:00 PM	1000	Football	Uma	10190	10191	10192	10193	10194	10195	10196	10197	10198
10/23	10:00 PM	1000	Football	Victor	10199	10200	10201	10202	10203	10204	10205	10206	10207
10/24	9:00 PM	1000	Football	Wendy	10208	10209	10210	10211	10212	10213	10214	10215	10216
10/25	8:00 PM	1000	Football	Xavier	10217	10218	10219	10220	10221	10222	10223	10224	10225
10/26	7:00 PM	1000	Football	Yara	10226	10227	10228	10229	10230	10231	10232	10233	10234
10/27	6:00 PM	1000	Football	Zoe	10235	10236	10237	10238	10239	10240	10241	10242	10243
10/28	5:00 PM	1000	Football	Adam	10244	10245	10246	10247	10248	10249	10250	10251	10252
10/29	4:00 PM	1000	Football	Bella	10253	10254	10255	10256	10257	10258	10259	10260	10261
10/30	3:00 PM	1000	Football	Carl	10262	10263	10264	10265	10266	10267	10268	10269	10270
10/31	2:00 PM	1000	Football	Dora	10271	10272	10273	10274	10275	10276	10277	10278	10279
11/1	1:00 PM	1000	Football	Ethan	10280	10281	10282	10283	10284	10285	10286	10287	10288
11/2	12:00 PM	1000	Football	Fiona	10289	10290	10291	10292	10293	10294	10295	10296	10297
11/3	11:00 AM	1000	Football	George	10298	10299	10300	10301	10302	10303	10304	10305	10306
11/4	10:00 AM	1000	Football	Hannah	10307	10308	10309	10310	10311	10312	10313	10314	10315
11/5	9:00 AM	1000	Football	Ian	10316	10317	10318	10319	10320	10321	10322	10323	10324
11/6	8:00 AM	1000	Football	Jessica	10325	10326	10327	10328	10329	10330	10331	10332	10333
11/7	7:00 AM	1000	Football	Kyle	10334	10335	10336	10337	10338	10339	10340	10341	10342
11/8	6:00 AM	1000	Football	Laura	10343	10344	10345	10346	10347	10348	10349	10350	10351
11/9	5:00 AM	1000	Football	Mark	10352	10353	10354	10355	10356	10357	10358	10359	10360
11/10	4:00 AM	1000	Football	Nancy	10361	10362	10363	10364	10365	10366	10367	10368	10369
11/11	3:00 AM	1000	Football	Oscar	10370	10371	10372	10373	10374	10375	10376	10377	10378
11/12	2:00 AM	1000	Football	Pamela	10379	10380	10381	10382	10383	10384	10385	10386	10387
11/13	1:00 AM	1000	Football	Quinn	10388	10389	10390	10391	10392	10393	10394	10395	10396
11/14	12:00 AM	1000	Football	Rachel	10397	10398	10399	10400	10401	10402	10403	10404	10405
11/15	11:00 PM	1000	Football	Samuel	10406	10407	10408	10409	10410	10411	10412	10413	10414
11/16	10:00 PM	1000	Football	Tina	10415	10416	10417	10418	10419	10420	10421	10422	10423
11/17	9:00 PM	1000	Football	Uma	10424	10425	10426	10427	10428	10429	10430	10431	10432
11/18	8:00 PM	1000	Football	Victor	10433	10434	10435	10436	10437	10438	10439	10440	10441
11/19	7:00 PM	1000	Football	Wendy	10442	10443	10444	10445	10446	10447	10448	10449	10450
11/20	6:00 PM	1000	Football	Xavier	10451	10452	10453	10454	10455	10456	10457	10458	10459
11/21	5:00 PM	1000	Football	Yara	10460	10461	10462	10463	10464	10465	10466	10467	10468
11/22	4:00 PM	1000	Football	Zoe	10469	10470	10471	10472	10473	10474	10475	10476	10477
11/23	3:00 PM	1000	Football	Adam	10478	10479	10480	10481	10482	10483	10484	10485	10486
11/24	2:00 PM	1000	Football	Bella	10487	10488	10489	10490	10491	10492	10493	10494	10495
11/25	1:00 PM	1000	Football	Carl	10496	10497	10498	10499	10500	10501	10502	10503	10504
11/26	12:00 PM	1000	Football	Dora	10505	10506	10507	10508	10509	10510	10511	10512	10513
11/27	11:00 AM	1000	Football	Ethan	10514	10515	10516	10517	10518	10519	10520	10521	10522
11/28	10:00 AM	1000	Football	Fiona	10523	10524	10525	10526	10527	10528	10529	10530	10531
11/29	9:00 AM	1000	Football	George	10532	10533	10534	10535	10536	10537	10538	10539	10540
11/30	8:00 AM	1000	Football	Hannah	10541	10542	10543	10544	10545	10546	10547	10548	10549
12/1	7:00 AM	1000	Football	Ian	10550	10551	10552	10553	10554	10555	10556	10557	10558
12/2	6:00 AM	1000	Football	Jessica	10559	10560	10561	10562	10563	10564	10565	10566	10567
12/3	5:00 AM	1000	Football	Kyle	10568	10569	10570	10571	10572	10573	10574	10575	10576
12/4	4:00 AM	1000	Football	Laura	10577	10578	10579	10580	10581	10582	10583	10584	10585
12/5	3:00 AM	1000	Football	Mark	10586	10587	10588	10589	10590	10591	10592	10593	10594
12/6	2:00 AM	1000	Football	Nancy	10595	10596	10597	10598	10599	10600	10601	10602	10603
12/7	1:00 AM	1000	Football	Oscar	10604	10605	10606	10607	10608	10609	10610	10611	10612
12/8	12:00 AM	1000	Football	Pamela	10613	10614	10615	10616	10617	10618	10619	10620	10621
12/9	11:00 PM	1000	Football	Quinn	10622	10623	10624	10625	10626	10627	10628	10629	10630
12/10	10:00 PM	1000	Football	Rachel	10631	10632	10633	10634	10635	10636	10637	10638	10639
12/11	9:00 PM	1000	Football	Samuel	10640	10641	10642	10643	10644	10645	10646	10647	10648
12/12	8:00 PM	1000	Football	Tina	10649	10650	10651	10652	10653	10654	10655	10656	10657
12/13	7:00 PM	1000	Football	Uma	10658	10659	10660	10661	10662	10663	10664	10665	10666
12/14	6:00 PM	1000	Football	Victor	10667	10668	10669	10670	10671	10672	10673	10674	10675
12/15													

VDP Software Applications



EFI Variable Data Solutions leverage the technology and expertise of industry-leading providers:

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Glossary



AFP (Advanced Function Presentation) Invented by IBM for mainframe environments, AFP is a hardware and software architecture and a language that describes text and graphics. Also known as AFPDS (Advanced Function Presentation Data Stream).

Authoring tool A software application used to create text or images, or to define layouts for documents.

Bitmap graphic A format for describing graphics that uses a collection of tiny dots, called "pixels," that together form a pattern. "Raster" graphics is another name for bitmap graphics.

Component caching Storing a component temporarily in computer memory, called "cache." Cache is used for temporary storage of data that are frequently accessed or recently accessed. The next time the data are required, the computer checks the cache first, greatly speeding up retrieval. When VDP components are cached, they can be quickly retrieved for printing. When the components are stored in their RIPed form, printing performance is improved because the components do not have to be RIPed again.

Component In VDP, an element such as text, graphic, or photograph that is printed on a page.

Conditional processing Changing the composition of a page, including text, images, and layout, based on pre-specified rules or conditions.

Copy fitting Fitting a block of copy into the space allotted for it in a document. Also called "text fitting."

CRM (Customer Relationship Management) Both a strategy and a set of technologies for coordinating all points of contact between a business and customers. Encompasses sales, marketing, customer service, field support, and other functions.

Data mining Searching large volumes of data for information relevant to a specific purpose, for instance, looking for customers of a certain age group interested in buying luxury cars among a database of all car buyers.

Direct mail Mail, usually advertising, marketing, and promotional in nature, which is sent directly to the recipient.

EPS (Encapsulated PostScript) A standard file format using the PostScript language for importing and exporting graphics and formatted text. Many page layout, word-processing, and illustration applications can create (export) and use (import) EPS files.

Fiery FreeForm A variable-data-printing technology that works with variable data printing solutions from EFI. It allows data that is used many times in a variable data printing job to be RIPed just once, enabling print engines to run at or near rated speed.

Imposition Grouping and arranging pages for efficient printing on larger sheets of paper, taking into account the need to cut and bind the pages after printing.

IPDS (Intelligent Printer Data Streams) Invented by IBM, this is a language used to identify, monitor, and control the functions of certain kinds of printers used in mainframe environments.

JDF (Job Definition Format) An upcoming XML-based industry standard designed to simplify information exchange among different graphic arts applications and systems, including Web-based systems. To that end JDF builds on and extends beyond pre-existing partial solutions, such as CIP3's Print Production Format (PPF) and Adobe Systems Incorporated's Portable Job Ticket Format (PJTF). It also enables integration of commercial and planning applications into the technical workflow.

PS (PostScript) A page-description language invented by Adobe that is used for describing the text and graphics in documents.

Metacode A language that describes text and graphics understood by many Xerox printers.

One-to-one marketing (1:1 marketing, 1-2-1 marketing) Marketing to customers individually. This marketing process identifies individual customers, recognizes differences among them, personalizes communications to each, and monitors responses.

Overset A print situation in which the type does not fit in the space allotted for it in a page layout.

Page caching Storing a page in computer memory, called “cache.” Cache is used for temporary storage of data that are frequently accessed or recently accessed. The next time the data is required, the computer checks the cache first, greatly speeding up retrieval. In VDP, all the static elements of a job may be processed once and the pages cached. These pages are retrieved quickly from cache, and do not have to be processed again when they are merged with variable elements during printing.

PCL (Printer Control Language) Invented by Hewlett-Packard Company for its printers, PCL is a page-description language.

PDF (Portable Document Format) A file format invented by Adobe Systems to describe text and graphics in documents.

PDL (Page Description Language) A computer language that describes a page for printing. Printers and RIPs understand page-description languages. Examples include AFP (invented by IBM), PCL (invented by Hewlett-Packard), PDF (invented by Adobe), and PostScript (also invented by Adobe).

Personalization software Software that enables the user to create personalized communications, or variable data printing. See “variable data printing.”

Personalization Making a document personal; customizing a document by using text and images that appeal to an individual consumer.

Plug-in A software module that “plugs in” to an application and adds features to the application.

PODi The Digital Printing Initiative. PODi, formerly known as the Print On Demand Initiative, is a not-for-profit multi-vendor initiative working to develop the market for digital printing.

PPML (Personalized Print Markup Language) An XML-based language for variable data printing. Developed by PODi, PPML makes variable-data jobs print faster by allowing a printer to store text elements and graphic elements and re-use them as needed. PPML is a non-vendor specific language and is therefore considered to be an open industry standard.

PPML/VDX (Personalized Print Markup Language/Variable Data Exchange)

PPML/VDX is a subset of PPML that allows electronic-publishing software to use PDF files as containers for packaging the information needed to produce variable data printing.

Rasterization The process of converting code that describes text and graphics into the format that is understood by a printer's "print engine" to print them on a page.

Realizable page PODi's term for an 8.5" x 11" (or A4) single-sided page.

RIP (Raster Image Processor) A device or software program that converts page-description language code to a format understood by the print engine so it can print pages.

SVG (Scalable Vector Graphics) A graphics language based on XML that includes instructions for drawing a graphic by designating coordinates and drawing lines or geometric shapes in relation to the coordinates.

Text fitting See "copy fitting."

Transactional printing Printing records of transactions, usually records of economic activities between a customer and a business.

Variable Data Printing (VDP) Digital technology that links print engines to databases that contain the content for printed documents in order to print pages that vary in content.

Vector graphic A format for describing graphics through instructions for drawing the graphic by designating coordinates and drawing lines or geometric shapes in relation to the coordinates. Vector graphics can be scaled—that is, enlarged or shrunk—because the instructions for drawing them remain the same.

VIPP (Variable data Intelligent PostScript Printware) VIPP, invented by Xerox, is a page-description language (PDL) designed especially for printing variable data documents.

VPS (Variable Print Specification) A VDP language from Creo.

XML (Extensible Markup Language) A programming language developed by the World Wide Web Consortium that allows Web developers to create customized tags that organize and deliver content more efficiently. It contains a set of rules for building other markup languages.

References

- **Applications Market Model** Market Sizing for the Print Industry, March 2000, PODi
- <http://www.citationsoftware.com/faq.htm>



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