

How

Laser Forms Technology

Morphed into **Document
Management**

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This is the second article in a series discussing document management solutions, which are deployed to archive and manage electronic documents. The first article, which appeared in the last issue of Spectrum, looked at the “why” question.

In this article, we look at the technological advances that laser forms software tools have taken over the last decade and the surrounding environment that created or influenced some of the milestones. By understanding some of the underlying technology in these packages, we think you’ll see there’s a good case for putting a laser forms based document archiving and management solution on your radar screen.

1994

Laser

The laser printer revolution is underway. The move away from impact printing for many applications becomes prevalent and predominant due to the falling price curve on laser technology. UnForm 1.0 is released.

Unix Pipe

“One of the most important commands in Unix,” per various industry gurus.

The Unix operating system pipe construct, represented with the | character, is the root-level technology at work in at least several popular laser forms products, including UnForm.

The pipe command is used to connect the output from one command and send it as input to another command. A Unix pipe allows output redirection — the intercepting of a text stream to a printer from a software application. Once intercepted, the text stream can be embedded with attributes for fonting, bolding, box drawing, shading, etc. The Unix pipe construct then redirects the resulting enhanced output to the spooler or device at the other end of the pipeline. What used to be the preprinted elements of a form background can now be added to the text stream dynamically and output to laser printers on plain paper.

Windows Post-Printing

In the Windows world, where the Unix pipe construct is not available, this meant that other technology was required to drive the same model. For applications, this meant that the underlying programming language an application was written in sometimes controlled the feasibility of interfacing with particular laser form software products. SDSI's laser forms tool worked well in Windows application programming environments where post-printing executables were made available to the printer configuration mechanism of an application.



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Rule Files

SDSI adopts a rule file model for the command repository which establishes the attributes and processing rules to be applied to text streams. The model makes a command set available to define form enhancements available inside of a simple text file delineated by rule sets which apply to the specific types of form or report documents coming through the print stream. Text analysis applied as a result of a DETECT command at the top of each rule set provide for a very simple to implement single or multi-line command set correlation of text documents with their corresponding enhancing and processing commands. This rule file/rule set model is very much like an .ini file construct in its labeled divisions and accessibility via simple text editors.

The above three technologies — the Unix pipe command, Windows post-printing executable, and the rule file model — form the base foundation for a system which integrates two software applications. The first is the driving application, which is programmed to produce forms and reports. The second is a software tool that seamlessly attaches itself to the application's output text streams and then morphs them into a graphically-enhanced document or presentation-quality report for printing on a laser device.

That's the beginning of the evolution.

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1996

Fax

Electronic faxing software becomes widely embraced as an alternative to postal mail delivery for transaction-oriented trade documents. The APIs of most popular faxing packages provide a command line interface for passing a graphics file to a faxing server — a soft-

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What did
 smart forms
 capability
 give you?
 More control.
 Control over
 what you do to
 forms and
 what you do
 with forms.



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ware application that provides transparent access to electronic modems.

Because of the Unix pipe — and because faxing system clients have a command line API and many faxing server support the laser file format PCL — laser forms products can easily make the transition to offer access to electronic faxing software.

Smart Forms

Forms processing is evolving to become smarter. SDSI's concept of smart forms, incorporates a whole programming language which can be accessed inside of delineated blocks of code with predetermined processing sequences within a form rule set within the easy to edit and maintain rule file.

What did smart forms capability give you? More control. Control over what you do to forms and what you do with forms. The do to forms could include things like looping through document text lines while matching patterns, applying conditional logic so that you can mark form text elements lines for special treatment. The do with forms might include things like sending a copy of the document to a different device or destination — again based on conditional logic that has access to specific text contained in the text stream — or detecting inside of a larger print job when a recipient entity ID changes which is going to affect where the document is delivered to.

Together But Separate, And Horizontal

Some disparate but related things began to evolve both separately and together inside of a single software tool — the software that prepares and formats documents prior to delivery and the technology that actually delivers documents.

This same analogy can apply to an important and parallel aspect of inte-

grating software tools. Both the preparing of documents and the delivering of documents are not programmed into the driving application. They are connected to it via an independent intermediary software tool — a horizontal application that supports and, in a sense, undergirds the vertical application it is interfaced with.

This is the beginning of a client/server model. In the case of laser forms, the driving application is insulated from the complexity of the preparing and delivering of the documents. It is free to evolve on its own track, concentrating on other areas of expertise and other disciplines.

1999

Internet, E-mail, And PDF

The internet revolution is in full swing. Service providers and e-mail are now ubiquitous. Adobe's PDF standard for document creation and its policy of making the reader component a free download drives the trend toward what is frequently a lower cost alternative to faxing trade documents.

SDSI and other laser forms providers respond. SDSI adds a driver option to its API for the creation of PDF files. This allows the enhancement rule file to create either a PCL file for laser printing or faxing or a PDF file for e-mailing and/or retention in a file system. E-mail commands and functions are added to the rule file syntax to interface with an electronic mail server using the PDF format for document files to be attached to e-mails. PDF represents what will become a universal format making it a more desirable format for retention on the host or network file system, providing a simple form of archiving.

Throughout the late 1990s and into Y2K and beyond, smart forms capabilities also continue to evolve with new features and enhancements. This is happening throughout the forms generation software product niche.

Windows Virtual Port Monitors

On the Windows technology side, the development of products known as virtual port monitors accelerates the penetration of some laser forms products into the Windows technology marketplace. A virtual port monitor can be configured as a printer in Windows so that output can be captured and processed before sending it back to a physical or electronic device. This fits the model of the original integration methodology used with most forms packages.


2003

Archiving

Outside of the laser forms package marketplace, file and document archiving systems are in the process of flowing downstream into the small and medium-sized business market segment. Prior to this, in many cases, the prohibitive cost — and sometimes complexity — of imaging solutions and other integrated software solutions positioned true document management systems outside of the realm of feasibility for non-enterprise level users.

During this time, SDSI releases a new product called sdStor, a text document archiving tool with technology similar to the laser forms technology model. Market feedback on this approach eventually leads to a more integrated approach — one which uses SDSI's native enhancement technology and archives both text and PDF copies of documents within the same processing cycle as laser printing and other document delivery functions.


A number of users express a strong preference for products that provided the next logical step — the ability to capture, store, and access related graphic images of signature copies of the parent trade document. While solutions existed to accomplish the capturing of the related images, there was not a good



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way to correlate or index those external images with the text source documents being archived.

2004, 2005

Client/Server

With the trend towards interoperability between Unix, Linux, and Windows operating systems firmly established,

client/server architecture is introduced into laser forms products, including SDSI's UnForm. Smart forms technology also continues to evolve and SDSI introduces the sub-job process to its stable of code-block functions.

The client/server architecture separates the client API from underlying forms

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generation server processing. This allows server to reside on one CPU and clients to reside on the same or other workstations in a local or wide area network environment.

Sub-Job Processing

Evolving smart forms concepts lead to the development of what is known as sub-job processing. A print job can spawn any number of new forms jobs. This new functionality is most frequently used to process individual documents separately for electronic delivery from inside of a large multi-document print run job stream.

Sub-jobs — implemented in coding as a small set of tight, parameterized internal functions — drastically reduced the amount of code necessary for more advanced document delivery applica-

tions and more complex forms processing requirements. This enabled integrators of all sizes to leverage their investment in technology expertise for the benefit of their client base or organization.

TCP/IP Printing

TCP/IP printing to virtual printer ports by this time is built directly into some forms packages, making the integrator's implementation process more efficient.

2006, 2007

After the above review of direct and parallel technology developments and their influence on the design of laser forms and electronic delivery software, we reach the point where the direction that other forms packages on the market

might take is unknown to us. SDSI's direction with UnForm, however, is very clear.

Document Management

In late August 2006, SDSI released UnForm 7.0, with its new Document Archiving and Management and Image Manager components. These two new components move UnForm into the markets as full document management solution.

What we call a full document management solution is one that captures, stores, retrieves, manages, and delivers documents and document images. In addition to the new components, many other new features were added, including:

- support for Postscript to drive newer and more economically priced laser printers,
- a Windows support server for additional OS interoperability which includes MS-FAX, ODBC, and dynamic image conversion support, and

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Description: Ruggedized PicoDot Polyalized Retro Laser					
3		\$0.00		\$0.00	YES

- almost 50 new rule-file code-block functions.

The evolved laser and electronic delivery and the new document management components come together as an integrated and integrate-able software tool, which:

- Allows customizable and configurable laser, e-mail, and FAX output;
- Stores enhanced PDF and text copies of forms through direct integration with applications;
- Stores documents in a robust, scalable, encrypted, and secure repository with rich indexing features;
- Allows enhanced drill-down and search retrieval capabilities accessible to any workstation on a network inside a universal browser;
- Captures external images from scanners or file systems with barcode and OCR recognition features;
- Automates the process of document property metadata tagging of external images, followed by automated upload to archive libraries; and
- Matches both internally generated documents and external images with

parent or related documents in the archive.

A Missing Link?

That's the evolution. But there's a small, but significant aspect not yet mentioned. It relates directly to the logic of why it makes so much sense for a laser forms package to morph itself into this new arena. There's one important relationship missing from the above trek through the morphing process.

It is what the laser form software tool acts on that is the key to understanding the important synergies that can be gained by approaching document management the way UnForm does.

Every byte of textual data in the print stream which is intercepted for the purpose of enhancing, printing, delivering, and now archiving is available to the archiving process of the server for establishing document property metadata.

Document property metadata is the indexes, categories, titles, dates, keywords, and links associated with the document in the archive. This is the data you need to have associated with every document so that you can make it easy for the user or the application to retrieve it or find it; to make it easy to

match up a related internal or external document with it; or even to aid in the design of a work flow system where documents move through different status categories.

Every byte of textual data in the print stream is available. Furthermore, this also includes external data — through ODBC/SQL select queries or indexed lookups from CSV files — when the data is not in the print stream, as long as the key to the data is.

This is what distinguishes UnForm from other document management solutions. It can be placed at the heart of where the raw data is originally generated by the application, when it is being generated the first time around. In the process, you end up nailing various birds with one stone.

That's the inherent logic in choosing a document management solution that is evolved from a laser forms package.

We invite you to visit SDSI'S website, www.synergetic-data.com, for more information. And be sure to check out the News Pages section. The second quarter 2007 lead article on document management has a good overview and links to multiple SDSI resources. [is](#)

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