ADF GOES MAINSTREAM

A Madison Advisors Technology Brief

August 2013

MADISON ADVISORS

TABLE OF CONTENTS

Executive Summary

Organizations face increased pressure from customers to deliver better customer communications. Traditional monochrome and line-mode bills have been replaced by color documents with graphics that reflect historical buying or usage patterns. Demand for multi-channel delivery has also increased. While roughly 25% of customers receive documents electronically, the rest receive the same documents in paper form.

Over the past decade large enterprises and service providers have built automated document factories (ADF) with the ability to manage and track the production of millions of printed documents per day. Traditionally cobbled together with components from multiple software vendors, these ADF solutions ensure the timely delivery of compliant customer communications.

Within the past few years, vendors have developed modular ADF solutions consisting of a core module and numerous optional components that organizations can implement over time to replace legacy solutions. New software interfaces, such as Web Services, enable programmers to extract data from legacy systems without re-writing the legacy code. As a result, most large organizations responsible for regulated document production utilize some form of an ADF.

Modular ADF solutions also benefit mid-sized companies. Smaller organizations lacking the budgets to acquire or implement enterprise software solutions that touch so many back office systems, now have the option to start small and implement only the ADF components required for their business needs. Mid-sized organizations receive the benefits of managed production and piece-level tracking without necessarily implementing high-speed cameras or multiple transformation tools.

New multi-channel ADF solutions centralize the management of print and electronic delivery channels. Over the past two decades, document operations have optimized traditional production systems to produce and deliver printed documents. E-mail delivery and web-based solutions have often been left to IT. As a result, these organizations have few tools to track document delivery across multiple channels and trigger delivery through a secondary channel when the preferred channel fails.

In this technical brief, Madison Advisors examines the current market state for ADF solutions, identifies key trends and provides best practices in the form of case studies for ADF implementation.

ADF Model

The ADF model consists of process controls and reporting policies that enable high volume document production operations to accurately manufacture and deliver printed and electronic documents. Specific implementations combine process automation software, documented manual processes and reporting systems to manage document production across its entire lifecycle.

The figure below depicts an ADF model encompassing the end-to-end production process, including file receipt, post-composition, print, insert, finishing, and delivery. The ADF Control Layer receives input and updates from various file and print servers, insertion systems, bar code scanners, and cameras.

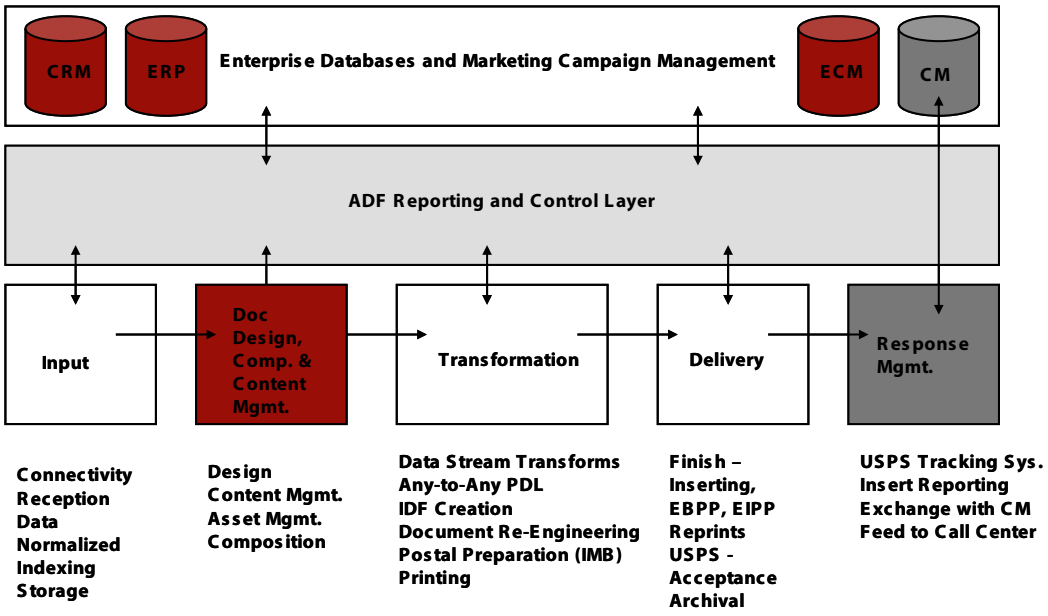

Figure 1 – Transactional ADF Model

Transactional document production generally starts with receipt of the data file from a mainframe channel, intranet file delivery, or client file transfer to an outsourced service provider. Separate piece counts, inserter control files, tray tag files, file metadata, and other documents may accompany the print file or may be generated by the ADF software once the print file has been received. High-volume transactional environments operate under tight service-level agreements that dictate the expected receipt of jobs and delivery into the mail stream of finished documents.

Organizations rely on their ADF to manage, track, and provide reporting on each step in the document production process to ensure a zero-defect process. The ADF oversees the disparate, heterogeneous hardware systems – providing details on how a job is to be produced and collecting data on the progress of each production step.

The ADF reduces the cost of compliance with regulatory and corporate standards by systematically recording the activities performed on each document. ADF reports provide proof of production and delivery, enable root cause analysis of production issues, and collect statistical data for process improvement. The ADF provides an organization with the data it needs to identify and change manual processes that may result in errors. In addition, these process logs can be used as evidence of mailing in court to demonstrate process control and legal mail delivery to the USPS.

A closed-loop ADF ensures the production and delivery of one and only one of each transactional document. Closed-loop production systems can automatically reprint damaged documents that have been removed from the production process, such as when an envelope has been mutilated on the inserter. By tracking each job, an ADF also prohibits operators from erroneously printing the same job twice.

The figure below depicts a closed-loop ADF implementation. The dark green arrows represent the normal production job workflow from receipt of job, through print and insertion to delivery. Hand scanners tied to the central ADF server provide job status as each equipment and station operator checks in and checks out the job. The ADF collects a listing of damaged items and routes the reprint list back into a print server for printing. Large numbers of reprints can be cycled back into the production process, while low volumes can be sent to office printers and processed manually.

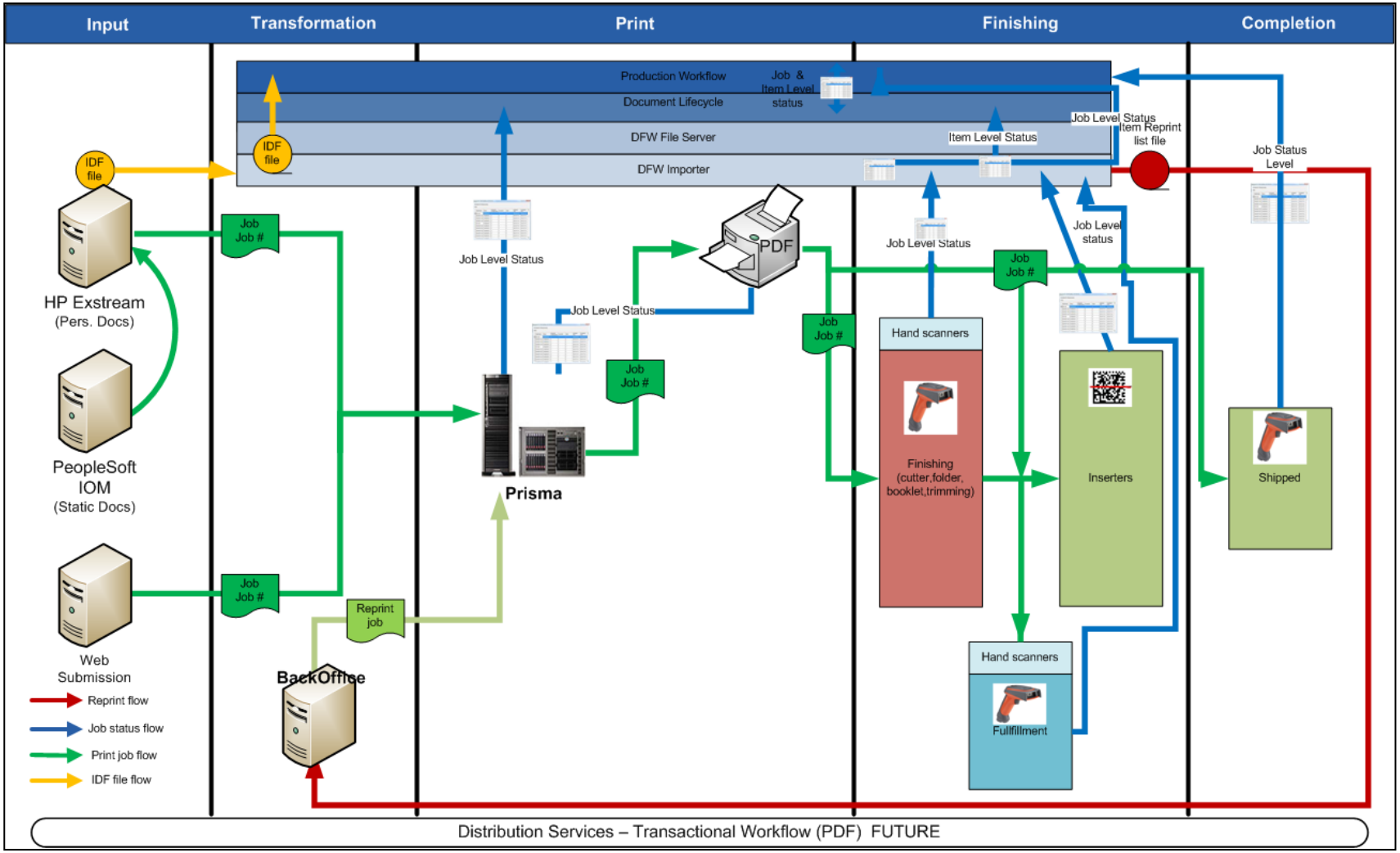

Figure 2 – Closed-loop ADF Implementation (Source: Sefas Technologies)

ADF functionality continues to expand and mature. The latest ADF model, ADF 3.0, extends the process control and tracking to cover electronic document production and delivery. Organizations increasingly produce e-mails, HTML web output, text messages, and specialized electronic formats for archives or digital mail boxes based on customer delivery preferences. When a recipient has un-deliverable or unopened e-mail, the ADF responds by producing a secondary notification or defaulting to a printed document. In much the same way as an ADF triggers the creation of a reprint, its automated processes respond to feedback from e-mail delivery servers to request data from customer relationship management (CRM) systems for a customer's preferred secondary communications channel.

The ADF 3.0 model accommodates new delivery channels including digital mailbox solutions, such as Zumbox and Doxo, which allow consumers to sign up to have documents from multiple mailers delivered to a centralized, cloud-based repository. An ADF monitors the delivery and verifies receipt of the documents.

The ADF tracks and records the delivery status of each document. If document delivery is called into question, an organization can produce a record verifying the document's creation and proving its delivery to the USPS or electronic address.

ADF Vendors

A large number of vendors provide complete solutions or components for the dynamic ADF market. Although the market has undergone some consolidation in recent years, the emergence of ADF 3.0 expanded opportunities for vendors adept at managing electronic communications. New vendors, such as Doxee and SendGrid, bring much needed digital delivery tools that can be integrated into existing ADF implementations.

The table below lists the leading vendors in the ADF software market. These vendors provide software solutions intended to serve as the central management platform for an ADF implementation. These and other vendors provide additional software components that complement a core ADF implementation by addressing specific steps in the document lifecycle.

Vendor	Primary Product	Primary Market Presence
Bell+Howell	JETVision	North America
Bowe Systec	BoweOne Production Management	Europe
Compart	DocBridge Pilot	Europe
Crawford Technologies	PRO Production Manager	North America
Doxee	Enterprise Communication Platform	Europe
GMC	PrintNet Process Automation	Europe
Gunther	Champion	North America
HP Exstream	HP Output Server	North America
ISIS	WebControl ADF	North America
Kern	MailFactory Manager	Europe
Nearstar	DataServer	North America
Océ / Canon	PRISMA production	North America / Europe
Pitney Bowes	DFWorks Production Workflow	North America
Ricoh	Process Director	North America
Sefas	Producer	Europe
Solimar	Print Director Enterprise	North America
Transformations	Uluro	North America
Xerox	Output Manager	North America

Table 1 – ADF Software Vendors

Best Practices for ADF Implementation

Successful ADF implementations take work. Print operations consist of multiple, complex manufacturing processes that may or may not be easily automated. An ADF builds on repeatable process steps, which must be well-defined and result in quality output before they can be automated. Madison Advisors has found that organizations must first document existing processes, exceptions, and performance metrics before reviewing solutions.

Madison Advisors has found that initial implementations often work better if the organization starts small. The new generation of software solutions enables organizations to implement an ADF architecture in discreet components without having to manage the entire production process. By first developing a long-term output strategy that examines the current state of the existing operation and collects input from key stakeholders, organizations can determine which processes to keep and which to outsource or discontinue.

The ADF model allows organizations to build from the center out to the ends of the process. Starting with print management, file-based insertion, and job-level tracking, operations can manage and track the core components of the production process and capture performance data. Organizations need to identify which processes would benefit the most from ADF automation and implement solutions that address high volume operations first.

It may not be beneficial to automate all processes. Organizations may find that some manual processes represent such small volumes or require highly specialized equipment that it is more cost-effective to leave the existing process in place. Manual processes should be linked to the ADF through barcode scanners or vision systems.

Not all operations require every component in the ADF model. Madison Advisors recommends using the output strategy as a roadmap to dictate the development of the ADF. Organizations can build on the initial architecture by evaluating and budgeting for additional ADF modules, such as post-composition and piece-level tracking over time. Benchmarking operational efficiency against peers in the industry enables operations managers to refresh ADF components when necessary.

On the shop floor, shared performance analytics create a culture of process improvement. Since an ADF can provide the real-time status of daily production, Madison Advisors has seen operations display the color-coded status of each daily job on large white boards or video displays so that everyone can see how their work impacts the overall success of the operation.

Moving the quality decisions from line operators to management facilitates a zero-defect operation. For example, Madison Advisors has found that a touch-and-toss policy for inserter jams removes the temptation for inserter operators to try and fix damaged packages when pages or inserts may have fallen out or collated with other packages. In some cases, operations remove the damaged piece, the package before, and the one after to avoid contamination.

These operations use a robust automated reprint process with piece-level data provided to the ADF to quickly re-create items.

The industry refers to inserts printed inline with the primary print file as onserts. For some applications, Madison Advisors has seen onserts provide organizations with an opportunity to target customers with customized promotions and notifications while minimizing processing and materials handling. Current document composition systems support rules-based creation of additional pages in a print file including variable data, which cannot easily be added to pre-printed inserts.

Madison Advisors has recently worked with a number of organizations that are implementing white paper workflows. A white paper workflow leverages modern document composition software, high-speed color inkjet printers and ADF technology to eliminate the use of pre-printed forms. With a white paper workflow, the operation loads blank paper on the printer which prints the base form, transactional data, and onserts if available in a single pass. By implementing a white paper workflow, organizations reduce inventory management and warehousing issues, reduce labor costs, eliminate a potential production error of having documents printed on the wrong form, and streamline operations.

IN SUMMARY

The ADF model has matured and will continue to develop. The original ADF model supported print, insertion, and mail services. With greater demand for electronic channels, the model has expanded. But at its core, the goal remains the same, to eliminate errors and accurately deliver every document to its intended recipient in a timely manner. Organizations that design and execute an output strategy can expect to have an ADF as the centerpiece for zero-defect transactional print production.

New technologies, such as Web Services and Cloud Computing Platforms, enabled vendors to develop modular ADF solutions. Organizations now have the flexibility to implement ADF components over time and migrate production practices to meet customer and regulatory demands without a stark transition from the legacy environment.

ADF implementations require planning and input from the document owners in the organization's lines of business. An enterprise output strategy, built with input from the lines of business, technology groups, and operations will provide a roadmap for implementing ADF technology, where appropriate, and modifying production processes to address near- and long-term requirements.

APPENDIX A - STUDY AUTHORS

Kemal Carr, President

B.B.A., Management Information Systems, University of Wisconsin-Madison, Wisconsin
M.B.A. Candidate, Marketing/Management, Texas Christian University, Fort Worth, Texas

Since founding Madison Advisors in 2001, Carr has built the company into a highly respected, independent analyst firm that provides project-based, vendor-neutral research and advisory services designed to assist clients with technology selection and business process decisions. Carr also acts as a principal analyst for Madison Advisors and leads the research and analysis efforts for Madison's ongoing market studies.

Carr is regularly engaged by leading output technology publications to write about key industry issues such as the impact of TransPromo and Multi-Channel delivery, advancements in communication technologies, and electronic document presentment. His articles have been published in The Wall Street Journal, Document, Digital Publishing Solutions, and Mailing Systems Technology. He is also a frequent speaker at trade events, including Graph Expo, Xplor's Global conference, NPES/PRIMIR Industry Summit, and DOCUMENT's Strategy Forum.

Prior to forming Madison Advisors, Carr held senior technical research and management positions at Doculabs, Fidelity Investments and Price Waterhouse.

Richard Huff

B.S., Mechanical Engineering, University of Illinois at Champaign-Urbana

Richard Huff joined Madison Advisors in 2002 as a principal analyst. Huff's expertise spans content management, publishing systems, digital printers, and electronic document delivery systems, including EOMS and EBPP. Huff assists clients with enterprise document strategies, product selection, and market development initiatives. Huff has authored articles for numerous industry publications, including *Document*, *Digital Publishing Solutions*, *High Volume Printing*, and *The Xplorer*.

Prior to Madison Advisors, Huff spent eight years at Uarco, Inc., a manufacturer of customized business forms and label products.

APPENDIX B - ABOUT MADISON ADVISORS

Madison Advisors exists to advance the print and electronic communications objectives of Fortune 1000 companies. Madison Advisors specializes in offering context-specific guidance for a range of content delivery strategies, particularly those addressing enterprise output technologies and customer communications.

Madison Advisors offers services and expertise primarily through short-term, high-impact consulting services. With no-nonsense, quick engagements (measurable in days or weeks, not months), Madison Advisors directly helps our clients achieve very hard and specific return on investment (ROI) related to their print and electronic communications initiatives.

Madison Advisors' analysts are dedicated to technology and market research that is delivered through short-term project engagements as well as articles, publications, and presentations. We specialize in customer communication technologies including enterprise output management, content management, customer relationship management, e-billing, and infrastructure technology.

For more information about Madison Advisors, visit our web site – www.Madison-Advisors.com.