JDF: Here and Now

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Summary

The Job Definition Format (JDF) initiative, started by the Cooperation for the Integration of Processes in Prepress, Press and Postpress (CIP4) is an initiative in the printing industry that cannot be ignored. Understanding JDF and grasping the benefits is essential for any business looking to endure the rapidly changing environment of the print industry. JDF will leave no section of the industry untouched, from giant press manufacturers to tiny quick-print shops.

The purpose of this report is to give professionals in the print industry an analysis of just why it cannot be ignored and how JDF fits in with their business. The purpose of this report is not to explain the bits and pieces of JDF. It is written to give a no-nonsense view of what JDF is, who is using it now, and what it can do for the smallest print shop to the largest manufacturer.
**Introduction**

*Purpose:*

The focus of this report is specifically on the printing and publishing industry, but many of the points will reflect a broader significance that applies to many different industries. This approach will not be academic or technical. The goal of this report is to provide a simple and concise analysis of the problems facing the print industry and describe how JDF can help solve printing problems. JDF is an agreement between printing and publishing organizations on how job information is organized and exchanged. The impact of this agreement and what it means for the printing industry is very important to understand.

*Scope:*

This report will give a summary of general trends within the printing industry in order to identify specific problem areas that JDF intends to address. Out of this summary, the reasons for CIP4 and the JDF initiative will become apparent. This report will give a brief introduction to the technology behind JDF and suggest ways in which a print business can begin to learn and implement JDF.

*Methodology:*

JDF and the technologies used in its development are all fairly new. The JDF initiative was launched in 2000, therefore, no books have been published on specifically JDF. There is a considerable amount of research and published material on XML, a technology that makes JDF possible, and relevant materials were collected from printed sources in that case. Otherwise, most information on JDF was collected from online sources.
Conclusion

Constant technological improvements are placing demands on the print industry that its traditional workflow and equipment cannot meet. JDF is the most comprehensive attempt to date, that attempts to bridge the gap between traditional and newer, automated workflows. JDF offers a wide variety of solutions in every area in the production chain and is slowly being implemented across the printing industry.

JDF will be a major factor in the near future for any print business, small or large. Therefore, any business who expects to grow in the near future will have to have a plan for integrating JDF into their current workflow with an eye towards future automation. Because JDF is an open-source technology, research and testing is affordable and within reach of any business, regardless of budget constraints. The combination of industry demands and affordability make JDF integration a reality and an urgent necessity.


**Recommendations**

JDF is an ambitious project. There is no doubt about that. Many of the problems of traditional production methods are also problems for JDF implementation. JDF itself is a strategic initiative and many of the companies that would benefit from JDF cannot afford to invest in upgraded equipment, training and support. It is also true that the JDF initiative is being pushed mostly by Publishing Vendors, not manufacturers. However, the long-term effect of not knowing or implementing JDF could be disaster.

Many of the great features of JDF, like integration of Management Information Systems (MIS) and production do not necessarily apply to smaller PSP’s or print shops at first glance. However, a broader look at the future of the print industry reveals a different picture. The same “islands of automation” that exist within a company’s workflow also exist between publishing businesses along the supply chain. Instead of 3 to 4 large companies managing a print job from creation to fulfillment, imagine a string of 20, highly efficient, highly specialized, companies seamlessly passing information between each other. Now imagine that one of those 20 companies is not equipped or ready for the kind of communication the other 19 demand. The risk of not preparing for a JDF world is evident. JDF is being implemented in the publishing world right now. Large and small businesses alike have to be ready for the changes ahead. However, there are some steps that a company can take in the short term to get a handle on JDF and how it may affect its future.

A recent report by print industry consulting firm, CAP Ventures, suggests some steps for “Creating a Path to JDF:”

1. **Educate yourself.** Seminars and trade shows featuring JDF and CIP4 are a good place to start. There is a lot of misinformation about JDF in the industry. Nothing clears up misconceptions and confusion better than a live demonstration of JDF interoperability.

2. **Develop a JDF Strategy.** There is more to thinking about JDF than merely looking at job tickets and workflow. Moving towards automation may be a huge technological step or it may be a strategic shift in existing processes. Knowing which parts of JDF and automation are most important to your business will dictate what kind of JDF support is most cost-effective and important for both long-term and short-term goals (i.e. internal production efficiency, connection with customers/partners, or equipment automation).
3. **Make JDF compliance a prerequisite for any new investments.** Even if your company does not have a long-term JDF strategy or think your business is not ready for JDF, making sure the capabilities are built-in to your workflow are key to surviving a fast-changing environment. JDF support is uneven and sporadic, but it is up to you to find out the intentions of your partners and equipment manufacturers with respect to JDF compliance and future plans.

These steps are obviously not the final word on preparing a business for JDF. However, they are a good start for the industry professional that is thinking about JDF and its relationship to his or her company.
**Discussion**

**Internal Problems Plague the Industry**

The printing industry, like any other, moves forward not because of the good will or genius of the individual participants, but because of its own internal contradictions. Constant innovation and progress is the manifestation of tensions between the constant drive for making profits via competition and the limitations of the current physical processes and technologies that drive production. In other words, to stay in business a company has to constantly improve to keep up with the competition while at the same time is constrained by the limitations of the equipment and technology it owns. This is not a new concept by any stretch. What has changed is that the process technology has surpassed the technology of the equipment.

CTP, digital file exchange, in-line measurement, and advances in proofing technologies have produced improved productivity in print media publishing and production in the last few years. Yet production managers and print and publishing IT managers are being pushed to find still more ways to cut costs, improve productivity, and provide processes that are increasingly agile and enable shorter turn-around times. (Harvey, pg. 2).

Put another way, the innovations in print queue and job-handling technology is making demands on the equipment that it can barely meet. The potential in the process technologies, like cluster printing, information management systems (MIS), and distributed printing proposes the capability to do things that digital printers and conventional presses can not handle yet. This conflict manifests itself in little battles: Information Technology vs. Printers, Service Providers vs. Manufacturers, software vs. hardware. Many of these battles are a regular feature of life in the print plants around the world. So what is the basic issue at hand?

On one side are the companies that make printers and presses, like Xerox and Heidelberg, want to make front-to-end proprietary systems. Especially in a depressed economy, these giants need to cut costs and maintain their bottom line. So the push for them is complete scan-to-print reprographic systems that do not and will not communicate with competing products. For example, if you want the top of the line digital printer, you are forced to buy the not-so-great scanner and document feeder, the mediocre RIP interface and a choice of only a couple RIPS. On the other side are the print service providers that wants faster turn around times, diverse print handling, robust document handling software. So the print industry sees a demand for shorter run lengths and more complex jobs. This applies all the
way up to the high-volume level where pre-press and CTP systems, while automated in their own right, do not share information or communicate on more than a basic level. Steve Hallberg from “Newspapers & Technology Magazine” describes the resulting situation best:

“Most production facilities enjoy some level of automation, but current systems rarely have the ability to talk with one another. The result: islands of automation [see diagram 1 below], each of which may improve your production process, but which lack the means to mesh with rival and disparate systems to improve workflow” (Steve Hallberg, N&T Special).

![Diagram 1](Baily, Martin. CIP4 & JDF: Why This Alphabet Soup Matters)

**XML and Communication**

What is needed to overcome the problems in the print industry is a way to integrate current equipment and information systems into a more effective workflow with an eye towards the future. When the time comes to upgrade equipment, automation must be the focus. This is what the Job Definition Format, or JDF, and its “parent language”, XML, is all about.

So what is JDF? JDF is an “application” of XML. This begs the question, what is XML? “Simply put, XML is a means for representing and describing data. The language allows you to define markup tags that can be wrapped around data in order to describe it…” (M. Floyd, 2000). This term “markup tags” is significant. Many industry people refer to XML as a language. This, while being technically accurate, is deceptively vague. XML stands for eXtensible Markup Language. It’s right in the name. Another popular markup language is HTML. A markup language is not like your traditional computer programming languages. It is not meant to process, manipulate, or create data, although in combination
with other processes, it may serve those functions. By itself, a markup language simply adds “tags” around data that can give it meaning and structure.

For the purpose of this report, an explanation of why XML is the best language to use for the dilemma in the printing industry is not necessary. However, there are a couple features that are important to know about.

1. XML is an open-source language, meaning it is not owned or licensed by any for-profit corporation and the tools to develop and edit the language itself are free. JDF is a sub-language of XML. In other words, if XML were a generic dog, JDF would be a specific breed of dog.

2. XML is extensible. In other words, “XML is a markup language for creating other markup languages” (E. Castro, 2001).

In short, the overall benefit of XML, compared to other markup languages like HTML, is that it “allows anybody to create their own information, mark it up in the way that makes the most sense to them, and send it to anyone else absolutely free” (Livingston, 2002). However, there are some obvious problems with this open architecture. It is conceivable for each printer to make up his or her own XML job ticket language with his or her own set of rules. In fact, this has been traditionally the way proprietary systems work, with each company running on its own language among its own products. This is where CIP4 and JDF come in.

CIP4 and Standards

According to James Harvey, the executive director of CIP4, JDF is essentially “an agreement between printing and publishing organizations on how job information is organized and exchanged” (Harvey, CIP4.org). JDF is a group of tags that all the vendors and participants in CIP4 have agreed will sufficiently describe any part of a print job, from document creation to job finishing. This set of rules or “schema”, is a limitation on what information is carried along with a print job so estimating systems, accounting systems, RIP interfaces, and print engines written to manage and process JDF know what type of information to expect.

To look at it another way, lets assume that in the short term, it is profitable for each manufacturer to make a custom suite of products that work on their own custom language. However, the long-term perspective of the industry, the demand by Print Service Providers (PSPs) for more complex jobs with faster turnaround time, pushes this workflow to its limit. CIP4 has formed out of the need to overcome these limits. Industry standardization is the key to this initiative. Driven specifically by the higher demands for automation and communication among different parts of the print workflow, CIP4 is a
forum where a standard set of rules can be developed with the participation of vendors, PSPs, and manufacturers in order to make a widely accepted and useful standard.

JDF (and XML, its parent) are open source and extensible, so it is free to develop and it is dynamic enough to allow each portion of the workflow to work in everything it needs within one standard, for all to share. CIP4 is the body that oversees and encourages the development and approval of this standard. Although the process for defining the rules of JDF is an ongoing process, most of the major development has already been done. Specification version 1.1 has been out for around a year and version 1.2 is in the final review and approval process.

**JDF**

“JDF is a comprehensive XML-based file format/proposed industry standard for end-to-end job ticket specifications combined with a message description standard and message interchange protocol” (JDF F.A.Q., CIP4).

Among the technical jargon of the above definition are some key terms and concepts that speak to the heart of the matter. ‘JDF is comprehensive’ and this doesn’t mean just that it covers a wide area. When the specification says its ‘comprehensive’ it really means comprehensive. The specification for the new JDF version 1.2 is 912 pages long! The above definition mentions that JDF is an ‘end-to-end job ticket specification’ with a couple other features like ‘message description’ and ‘a message interchange protocol.’ For print professionals, JDF is commonly thought of as a “job ticket” language. JDF does have a robust job ticket, however, it is different than other job ticket languages and programs. JDF is an ‘end-to-end’ job ticket. It aims to include all data that could be relevant throughout the life cycle of a job. A sample of what a JDF file looks like is shown on the following page in figure 2.

Traditionally, the job ticket contained estimating information, some prepress information, and various random details depending on the job ticket program. A core of attributes existed that all printers, estimators, prepress and even designers must know, but earlier job ticket languages and program suites were bogged down with proprietary, workflow specific information. This extra data prevented sharing of information among different workflows. This, in turn, prevented the job ticket data from being shared among estimating systems, print engines, and other asset management systems.

This is where JDF shines. In addition to job ticket info, JDF defines ‘a message description standard and message interchange protocol.’ In layman’s terms this means that JDF has defined a way for different machines and systems to talk to each other. So not only is job ticket information moving through the workflow with a print job, it can be communicated across numerous devices and systems, without converting the information into a multitude of different, proprietary languages. In a complete, JDF-enabled workflow, each piece of the workflow puzzle can communicate, in a common and industry standardized messaging language, all of the info each particular piece needs to do its job and ultimately,
<JDF ID="6" Type="ProcessGroup" JobID="250055" Status="Waiting" Version="1.1"
DescriptiveName="Package Inserts K+C+M+Y 1 Sid">
  <CustomerInfo CustomerID="GraphExp">
    <Company OrganizationName="Graph Expo">
      <Contact ContactTypes="Customer">
        <Person FamilyName="John Swenson"/>
        <Address City="Chicago" Street="2301 South lake Shore Drive “ State="IL" PostalCode="60616"/>
        <ComChannel Locator="" ChannelType="Phone"/>
        <ComChannel Locator="" ChannelType="Fax"/>
        <ComChannel Locator="" ChannelType="Email"/>
      </Contact>
    </Company>
  </CustomerInfo>
  <AuditPool>
    <Created Author="Joe Demo [AgentName=None] [AgentVersion=None]" TimeStamp="2003-04-18T11:11:57-05:00"/>
  </AuditPool>
  <JDF ID="1" Type="ConventionalPrinting" JobPartID="1" Status="Waiting" DescriptiveName="1/2 pages/1 out/One side - Package Inserts">
    <ResourceLinkPool>
      ProductType="PrintedSheet" SourceSheet="1" DescriptiveName="Waste of 1/2 pages/1 (information deleted for security and simplicity)"
    </ResourceLinkPool>
  </JDF>
</JDF>

figure 2
Sources


