

# Understanding JDF

*Any number of white papers exists on JDF (Job Definition Format). In fact just about every technology provider who has anything to do with print has published a white paper on the subject. Why? Because JDF is the door opener to the future. It is the key enabler of the Graphic Enterprise—the new print communications paradigm where technologies converge to deliver a seamless flow of processing data. And technology providers want you to know that their systems, or software, or broadband technology is ready for the Graphic Enterprise.*

## The Graphic Enterprise

The Graphic Enterprise is the culmination of the evolution of print—where technology takes its rightful place to create a continuous, uninterrupted flow of data that begins with project creation and ends with its delivery. That is not to say that technology will not continue to improve and advance, but not in such dramatic steps as this. The Graphic Enterprise represents a true paradigm shift—made possible by JDF technology. And there is no escaping it. The Graphic Enterprise will replace the current manufacturing model as surely as motorways replaced dirt roads. That is why your understanding of JDF and how it will change business is so important.

The drivers of the Graphic Enterprise extend beyond JDF technology. In other words, we are not going to change the way we work simply because we can. Economic and competitive pressures also generate the need. Consolidating printing companies, for example, need to merge technology. Clients need to get their projects to market faster, they want shorter runs more frequently, and they want to work with printing companies who can efficiently handle the entire project, which may include repurposing, personalisation and fulfilment.

The easiest way to picture the Graphic Enterprise is to imagine dropping a project file into a digital funnel at one end of the workflow then finding it bound and finished at the other end—in a literature rack, at a trade show or in the client's hands. Sound like science fiction? JDF is one of the technologies that is bringing this vision to reality.

## It's all about Connectivity

Simply put, JDF is all about connectivity –connecting systems, departments, partners and clients– all in one location or at multiple sites across a region or around the world.

It is important to note that in JDF terms, connectivity does not simply mean that systems are linked one to another, nor does it refer to the software drivers that send data to specific output systems. JDF connectivity means that all

systems understand each other's instructions, exchange data and provide feedback. JDF gives the appearance that all your equipment and software was developed and built by a single source.

Why do you want competing systems to connect? For one thing, so that you don't have to throw out the old to work with the new. For example, you install Agfa's new workflow automation software but you still want to make use of your non-Agfa CtP system. More importantly, having competing systems that communicate seamlessly, puts you in the driver's seat. Now you can choose the system that best fits your needs without every having to worry if it will work within your existing workflow. And, if your systems could communicate with another printer's, the two of you could partner as if you were one high-efficiency operation. You'd be able to accept larger or more complex projects.

Why do you want departments to connect? If prepress can tell press and postpress what to do automatically and reliably, then you don't have to. And if all those tasks can be tracked, with information fed back to MIS, you will know exactly how long it took to do what, and why. MIS will then be able to create accurate estimating models, so you won't lose money anymore on guesstimates. In addition, once your sales or customer service reps enter client and project data, it will never have to be entered again unless something changes. The customer profile, along with the client's preferences will follow the project all the way to completion, so the original intent is never compromised and instructions will never fall through the cracks.

Why do you want to connect with partners? Because if you could connect seamlessly with another printer or finisher, you'd never have to turn down a job that's too big for your operation. And think how convenient it would be for you and how expedient it would be for your client if your shipping company knew where a project had to go by when, the minute you entered the data into the system.

Why do you want to connect with clients? Because building strong customer relationships has never been more important. JDF connectivity will give you the power to service customers on a higher level. It will allow you to initiate highly efficient online client collaboration. It will also allow you to produce more than print a job. You'll be able to handle the entire project from start to delivery.

There is one catch. For all of these people and systems to connect with each other they have to speak a common language –JDF– and understand how to implement the instructions they are given—JDF again.

## A Technical Primer

JDF is an XML (eXtensible Markup Language) standard or specification. So to understand JDF, you need to understand XML. A markup is a tag or a code that identifies information. For example, if you saw the words "Delilah (dog) is dangerous" the parenthesis or "tag" would tell you that Delilah was referring to an animal and not the biblical vixen. It could also tell you

that Delilah is a Doberman Pincher and must always be handled a certain way. In print production, tags such as trapping and approval attached to a page would provide instructions for trapping and tell you that the page needs to be approved before final processing. It could even have instructions where or to whom to send for approval. In this way, when the page is ready it can be sent automatically to the client for approval.

“Extensible” means XML tags are unlimited. You can add as many tags as you like. In addition, you can supplement them with other files to further define and extend the instructions. This is why you can apply content to a template for a webpage and for print. Both will look different but the elements of the content will go into their proper place. XML understands the difference between text and graphics and treats them accordingly.

But in order for multiple vendor systems to “interoperate<sup>1</sup>”, they must use the same tags—speak a universal language, if you will. This is what JDF does. It provides standard tags so that all systems and MIS functions speak print fluently. JDF is then integrated into workflow software, project management systems and other system drivers.

Providing an industry standard requires an independent organisation. That is the job of CIP4 (International Cooperation for the Integration of Processes in Prepress, Press and Postpress). CIP4 was founded in 1995 (as CIP3) as an initiative of graphic arts vendors. Today CIP4 comprises more than 235 members with 20 working groups. Its primary goal is to develop vendor-independent international standards to extend connectivity beyond production to include business processes, client collaboration and job delivery. To make JDF a truly vendor-neutral data exchange standard it is necessary to work out specific Interoperability Conformance Specification (ICS) and perform Interoperability Testing—so that all systems use the same definition format. This, too, is the charter of CIP4 ([www.cip4.org](http://www.cip4.org)).

JDF goes beyond XML in that it includes validation schema. This enables and automates processes such as preflighting. It also allows for a selection of a networking protocol and methods of exchange. It automates online transactions and data exchange.

All told, JDF is the key technology driver of the evolved workflow—the Graphic Enterprise.

## JDF in Action

A good way to understand how JDF works is to imagine an intelligent mobile robot that moves information, project components and instructions back and forth to the appropriate systems, departments and remote locations. Remember though that we are talking about JDF-enabled systems, and not JDF all by itself. JDF is not a product but the language that enables this kind of robotics or automation, if you will.

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<sup>1</sup> Interoperability is the term used by CIP4 as well as W3C (World Wide Web Consortium, developers of XML) to describe the ability of one system to operate with another seamlessly.

It is also important to note that JDF gets much of its mobility from JMF (Job Messaging Format), a subset of JDF. While JDF describes the project and gives the specific commands to execute the job, JMF provides the means for parallel processes, such as production and administration, to communicate. As its name suggests, it is the JDF messenger. It relays information about the progress of JDF jobs and gives MIS the active ability to query devices about processing status. JDF and JMF work hand in hand to automate online transactions and data exchange. Think of JDF as the brains of the robot and JMF is its legs.

It starts with the client. When a sales person or customer service rep enters specifications for a project, the JDF robot captures that information. When files are received, it understands, not just what needs to be done, but what is required in order to do the job properly. If a font is missing, it will automatically alert the client or designer.

When JDF system finishes validating the project components and the process is ready to begin, it sends the data to all departments and partners that will participate in the execution and delivery of the project. It also attaches the data to the project files and adds information for how the project needs to be executed.

Because this is no ordinary robot, but an intelligent interactive agent, it assists the workflow software in searching out which systems within the organisation are free and assigns the job to the appropriate system.

As the project travels through the workflow, the JDF system logs all processing data and sends that information back to MIS. That information can be used for cost purposes and to track the status of the job.

If a system is hung up for some reason, the robot races back to recognised users and alerts them of a problem.

A JDF-enabled system knows when a job is ready for approval. It takes the pages and transports them through the approval process—via the internet, or the clients' preferred delivery system. It can even send a message to a mobile phone.

JDF also enables data replication. That is, while it is alerting a user about a problem or sending pages for approval, it transmits the same information to MIS (via JMF) for job-logging purposes.

The JDF robot has a secure transport system. It knows exactly who to send data to—who has permission to check job status, provide approvals or stop and start processes. Only those people can intervene in the process.

Among its duties is to pass instructions along to the press, which would include process control, ink-key settings, laminating and folding instructions, depending on the presses capabilities—which the JDF robot would have made note of and entered into the process.

If the system knows that the job is distributed over two or more print sites, it takes all the data that has been entered to date, travels with the files and executes processes automatically at the remote sites. It can take into consideration all the equipment located at the remote location. The JDF robot eliminates the need to re-enter or rework data. The JDF shuttle also sends shipping instructions to all respective distribution companies.

Think of the JDF robot as the ultimate customer service rep. It knows how clients and partners like to receive information. It knows what protocol or type of network they use and delivers information accordingly.

## **JDF Today**

Not all of the functions described above are ready today. However, many of them are and it will not be long before all of them are written into the software that controls the Graphic Enterprise.

All JDF-powered systems have the capacity to enable the Graphic Enterprise. However, the process of building the Graphic Enterprise does not stand on the shoulders of the technology providers alone. Printing companies and partners need to be part of the process. They need to partner with the vendors to carve the path to the future. ♦