



# JDF FOR SMALL PRE-PRESS SITES

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## Introduction

Over the last few years, it has become commonplace to see white papers and magazine articles that discuss how JDF, the Job Definition Format from CIP4, will transform the way that printed products are created.

JDF provides a mechanism to carry structured collections of data and instructions about a print job. It can include a whole spectrum of information, ranging from how a job should look as a final, printed, finished piece; to the detailed configuration of the processing steps required to produce that final result; and to the customer details and delivery address. In other words, it's a replacement for the traditional paper job bag that has been used in many companies for years, but providing a number of advantages:

- The job ticket is machine readable, which means that equipment can access the information directly without requiring intervention or re-keying by staff. This saves time by allowing faster turn-round, and, under some circumstances, reduced waste.
- The formatting is standardized. This means that it can be used to configure and control software and equipment from a wide variety of vendors, allowing more open selection of products for integration.
- It's digital. That means that the data can be shared quickly between multiple readers at the same time, both in-house and remotely.
- Automatic transmission and updating of the job ticket means that more data can be recorded more easily, allowing more complete analysis by smart accounting and MIS systems.
- That same automatic transmission and updating means that transcription errors are avoided.

**JDF is an electronic replacement for the traditional job bag. Its implementation in small pre-press sites can produce a return on investment proportionate to fixed and variable costs not unlike that achieved in a large company.**

## Large and small print sites

Taking all of these into account, it's hardly surprising that many descriptions of a JDF-enabled workflow attempt to show the most complex interactions possible. That certainly makes for the most impressive demonstrations, and the highest absolute savings. The larger the system, the more time and money might be saved by introducing JDF-based systems.

Unfortunately that approach has sometimes given the impression that only large print sites, with many staff and a full MIS system (including shop-floor data collection and direct links to press consoles), can benefit from introducing JDF. While the absolute savings provided by JDF in small sites may themselves be smaller, that definitely does not mean that they are insignificant. In many cases the return on investment as a proportion of fixed and variable costs will be just as great as could be achieved in a large company.

Whatever the size of company, if you can answer “Yes” to one or more of the following, then it’s likely that JDF could improve your bottom line:

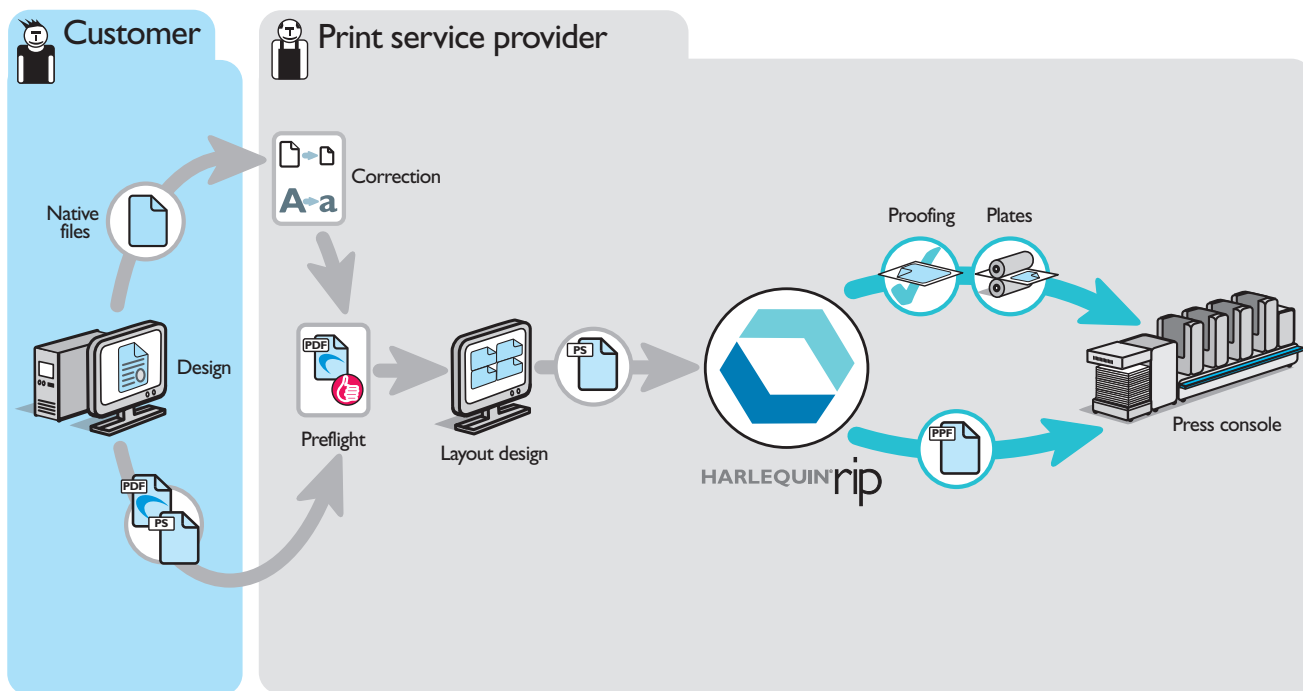
- Does your equipment wait on staff to perform simple steps that do not require decision-making?
- Do staff errors in performing those simple steps create significant waste?
- Does your choice of one piece of equipment limit your choice of others because of lack of interoperability?

### Layout-driven workflows

It is common for small prepress companies to use an imposition design program as the “control panel” for their complete workflow. With a RIP providing in-RIP trapping, separation, and high quality screening, such a production line can provide a highly efficient approach to output.

Traditionally, knowledgeable staff have usually been required to prepare incoming files, by preflighting; opening files in their native design application; making the necessary adjustments to enable files to print well and then generating PostScript®.

An imposition operator, frequently also involved in other aspects of job planning as well as scheduling the press room and bindery, will then select an existing imposition layout or create a new one and flow pages through it.



A typical layout-driven workflow in a small prepress company, uses the imposition design program as the ‘control panel’ for the complete workflow.

The job that leaves the imposition design program is normally a PostScript file including all the pages already fully imposed. Control information that request the RIP produce in-RIP separations with specific spot colours, or specifying the halftone screening to be used can often be embedded within that PostScript stream, depending on the capabilities of the imposition design program in use.

Whether it's driving a proofer, film-setter, plate-setter or some combination of those, the RIP tends to be almost completely unattended. An operator will normally only touch it on relatively rare occasions, such as to check calibration curves, or to disable output while loading new media.

## The impact of PDF

The advent of PDF brings both advantages and disadvantages for this kind of workflow.

The PDF/X standards based on PDF, in conjunction with inexpensive and easily available preflight and validation tools, mean that it is much easier to educate a print buyer into being able to supply print-ready files. They also allow relatively cheap automation of pre-flight at the service provider themselves.

This can enable the service provider to significantly reduce the required investment in customer education and in their own job preparation department, or to increase throughput using the same staffing levels.

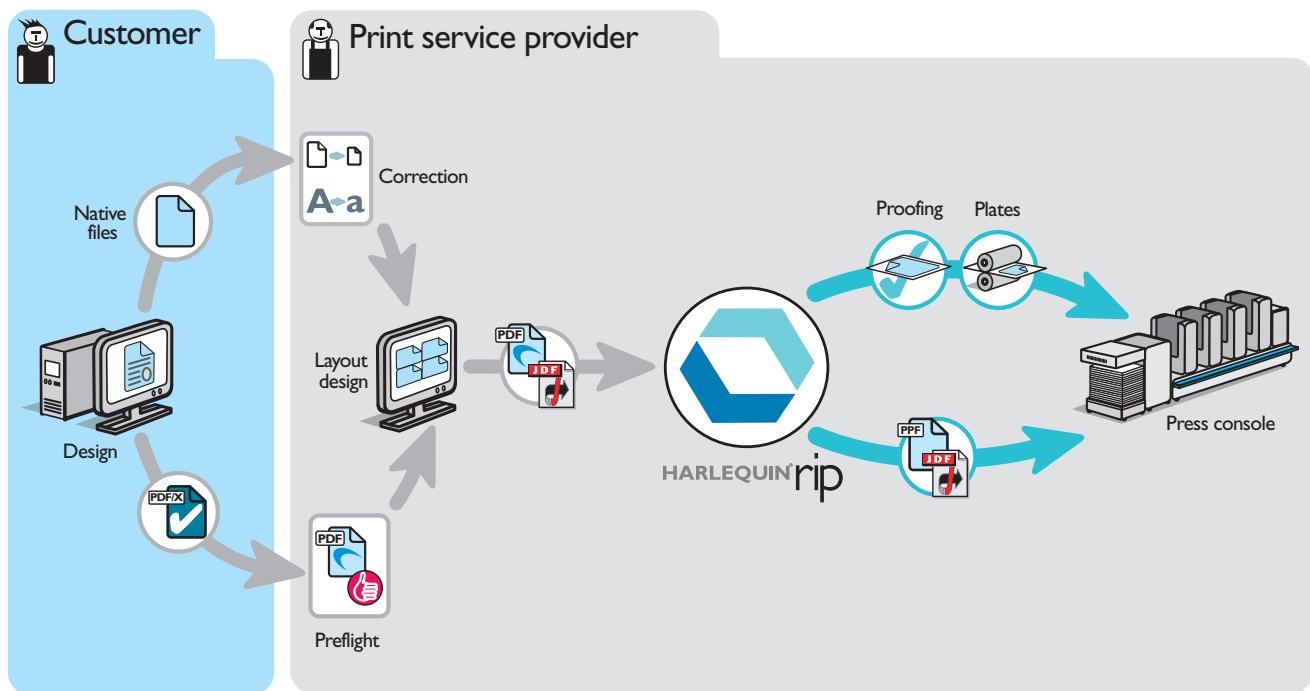
But PDF cannot carry the same process control commands to request that the RIP performs screening or in-RIP separation in specific ways that PostScript did. PJTF (the Portable Job Ticket Format) appears to have been intended for this kind of use, but was not widely implemented, and those implementations where it is available are mainly designed for larger print sites than described here. It also suffers from a serious lack of interoperability between those systems that are available.

That means either that the jobs must usually be converted to PostScript once they have passed through the imposition program, or that control over which separations to produce must be moved to the RIP. A conversion to PostScript can be problematic with some modern PDF files, leading to occasional bad output caused by issues with fonts or with PDF 1.4 transparency.

Many imposition programs can be configured to generate imposed PDF files rather than PostScript, but this then may require that in-RIP separation, etc., be controlled at the RIP. As a result, it may require more operators to be trained in RIP configuration, often taking skilled (and expensive) operators away from the workstation where they provide most value: the imposition design stage. There can also be occasional problems when generating such imposed PDF files, for instance when different pages have been generated by different designers with different versions of the same font.

## How JDF affects this approach

JDF provides a method of associating complete control data for prepress processing with a PDF file. The print service provider can therefore preflight files and retain them in exactly the same form as when they were supplied by the print buyer until they are RIPed. This reduces the possibility of problems arising from file format conversion or creation of imposed PDF, and makes responsibility for any problems that do arise more clear-cut.



JDF provides a method of associating complete control data for prepress processing with a PDF file. It allows functionality beyond that offered by the PostScript-based layout-driven workflow.

Unlike process control data in a PostScript file, which is accessed by a RIP reading the PostScript, the JDF process control is outside the PDF file, and is read directly, as JDF. This again means that no changes need be made to the customer-supplied file. It also means that a file may be processed multiple times for different purposes (e.g. for proofing and plate-setting) without requiring multiple copies of the graphical content to be retained. Content files can be very large, so this can represent a significant saving in disk space.

While many prepress processes can be controlled through standard PostScript control codes (e.g. trapping and some aspects of screening and separation). The fine detail of such control can often only be achieved by the use of PostScript language commands that are specific to individual products, making interoperability difficult. JDF includes a standard vocabulary that covers far more than the PostScript language does.

JDF therefore allows functionality beyond that offered by the PostScript-based layout-driven workflow to be combined with the increased robustness and ease of use and the reduced resource requirements of PDF.

As a bonus, printing from the imposition design program using JDF is very fast. Anecdotal evidence suggests that something around three quarters of the time a job spends being actively worked on in prepress using current tools is simply waiting for it to be converted to PostScript and sent to the RIP. The creation of the JDF for a typical job will usually take less than a second; it's usually only a few kB. Imposition design programs also create a PDF file representing the marks on each sheet, including control strips and register marks, but those, too, are very simple and take only a handful of seconds to create. Instead of waiting minutes before the workstation can be used again, the next job on that workstation can be started almost immediately. The print service provider can therefore reduce investment in workstations and staff because their time can be used more productively.

## Global Graphics' implementations

Here at Global Graphics we recognise that a proportion of our products are installed in smaller print and prepress sites, and that the layout-driven workflows described in this white paper are used by many of our customers.

An important part of our product planning for the Harlequin JDF Enabler for the Harlequin® RIP has therefore been to open partnerships with many vendors producing imposition design tools that can generate JDF. Over many months of testing we've obviously made sure that the Harlequin JDF-enabled Harlequin RIP can read the job tickets produced by these tools. Perhaps even more importantly, we've also analysed the workflows that might be built around each combination of products, and have worked with these other vendors to ensure that those run as smoothly and as efficiently as possible.

Most of the imposition design tools generate JDF that requests the software receiving that file to perform the JDF Imposition process and nothing else. A natural step for us was to assume that a job wouldn't be sent to a Harlequin RIP unless it was also to be interpreted, rendered, and possibly output to a proofer or plate-setter. If the RIP receives a JDF file that only requests imposition it therefore performs the complete RIPing process, including in-RIP imposition, using a standard Harlequin page setup (configuration) defined using the standard RIP user interface.

The result? In order to trigger output of plates or proofs from a Harlequin RIP, it is only necessary to save a JDF file from any one of a number of popular imposition design programs and production management tools into a hot folder:

- Dynagram Dynastrip
- Kodak (formerly Creo) Preps
- OneVision Speedflow Impose
- DALiM MiSTRAL
- Agfa :Delano
- Agfa Apogee X
- Lithotechnics Metrix
- Esko-Graphics Plato
- Mitsubishi Paper Mills Facilis



The Harlequin JDF Enabler for the Harlequin RIP can be used in many other ways as well; on a larger site it will allow complete control by systems that produce more complex JDF than the typical imposition design program.

Whether you're working in a large installation or a small one, the Harlequin RIP will perform to the high standards that you have come to expect.

A considerable amount of experience was gained during this analysis, and our testing of connectivity between imposition design tools and the JDF-Enabled Harlequin RIP. As a result Global Graphics representatives championed the development of an "interoperability conformance specification" or ICS within CIP4 to assist vendors in ensuring that their products will work together as easily, as predictably and as robustly as possible. This has now been published as the "Layout Creator to Imposition" or "LayCrImp" ICS. The combination of the Harlequin RIP, Genesis Release (7.1) with the JDF Enabler 2.0 has been designed for compliance with that ICS.

## More information

More information on the JDF-enabled Harlequin RIP can be found at [www.globalgraphics.com](http://www.globalgraphics.com)

Global Graphics supplies its JDF enabled Harlequin RIP through original equipment manufacturers and systems integrators. A list of these can also be found at [www.globalgraphics.com](http://www.globalgraphics.com)

More data on JDF and on the CIP4 organization is available at [www.cip4.org](http://www.cip4.org)



The Harlequin RIP Genesis Release (v.7.1) was the first product to be officially JDF certified by CIP4 following testing by the Printing Industries of America./Graphic Arts Technical Foundation, against the Layout Creator to Imposition ICS and Base ICS.



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