

Job Visualization and Control in the Merging Worlds of Digital and Traditional Printing

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Abstract

Digital Production Printing has enabled print jobs to be created more quickly and with greater customization and control than possible with traditional printing. However, the complexities of file types, color management, and numerous workflow stages including preflight, trapping and imposition have made it difficult for digital copy shops to move upstream to handle more complex jobs. EFI has developed a breakthrough workflow technology, Velocity™ OneFlow™, that introduces new levels of job visualization and control ideally suited to the merging worlds of digital and traditional printing.

Introduction

Historically, preparing data to be printed on a traditional printing press was a time-consuming process requiring the use of highly skilled specialists. Today, since it is impractical for highly skilled professionals to monitor each step in the pre-press process, a new step is added to preflight the digital file. Though this step has significantly improved the efficiency of the process, it is made even more efficient by visually identifying the offending objects in the original file or optionally correcting them automatically. The same is true for other stages of pre-press processing including trapping, imposition, RIPping and screening. Clearly, the more visual feedback that is made possible at each stage, the more likely errors will be caught earlier. In addition, these stages can be automated where possible and the entire process made simple to create, control and visualize.

Build Me a Workflow

The process of managing jobs from receipt to print is controlled via the definition of a workflow. An easy way to create such a workflow is to graphically identify the key processing steps and link them together in a logical sequence. The OneFlow system uses drag-and-drop icons that represent each stage of the workflow, such as file conversion, preflight, trapping, imposition, RIPping, viewing (or soft-proofing), approval and output to both proofer and platesetter as shown in Figure 1.

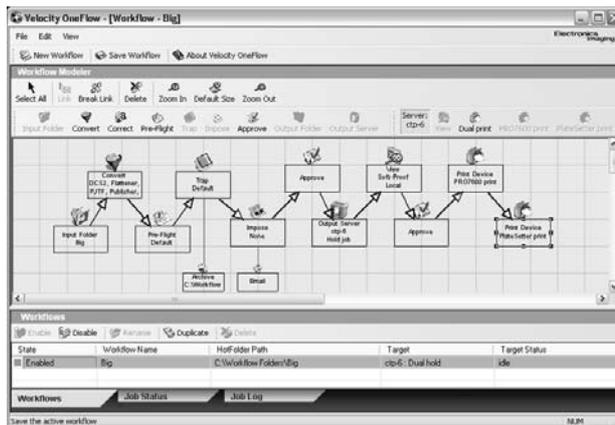


Figure 1. OneFlow visual workflow.

Process stages have options that are managed by clicking on the appropriate icon. Each process can also archive a copy of the file at that point and E-mail notification of completion of the stage. After file conversion, the rest of the workflow is entirely based on the PDF file format.

Show Me the Error

Though a preflight report identifying errors and warnings is useful, it is even more useful and efficient to be able to automatically correct common errors or to be able to easily identify offending objects causing the error. Figure 2 illustrates how an error of having an RGB image included in the file is more readily resolved by hyper-linking the error message to the actual offending image.

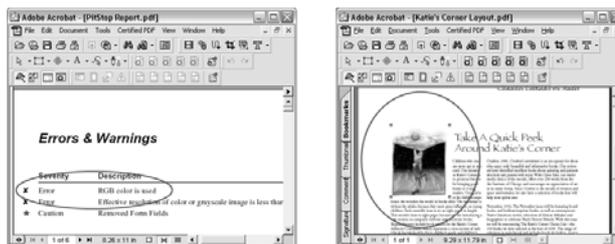


Figure 2. Preflight report with hyperlink to object with error.

The OneFlow system includes components from 3rd party vendors and is an open, modular system whose capabilities can be expanded easily. For example, the hyper-link shown above in Figure 2 and the use of automated correction scripts are features in the Enfocus Pitstop plug-in to Adobe Acrobat. These 3rd party applications are seamlessly connected and tightly integrated to OneFlow.

Where's the Trap?

Trapping is a function that is normally done automatically whenever possible, but some jobs require special trapping needs. It is easier and more flexible to perform the trapping prior to RIPPING so that the results of the trapping are visually verified.



Figure 3. View of file with (exaggerated) traps and with traps turned off (showing pre-trapped file).

The OneFlow system uses Adobe PDF Trapping to be able to quickly trap the PDF file and to show the file before and after trapping with a single click as shown in Figure 3.

Which Way Is Up?

The use of modern electronic imposition packages has sometimes made it more difficult to figure out what an imposed job will actually look like. In Figure 4, we see how the OneFlow system shows the actual job contents in an imposition template so one can be sure that it is correct.

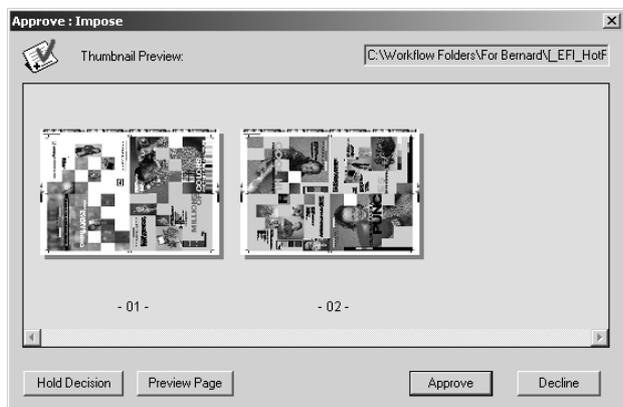


Figure 4. Imposition preview.

The imposition templates may be based on the Portable Job Ticket Format (PJTF) or on EFI's DocBuilder Pro format that is familiar to users of Fiery™ RIPs connected to digital production printers. The entire workflow is also designed internally using XML to readily support JDF job ticketing.

Let's See the Dots

The only sure way to know exactly what will get printed is to look at the post-RIPPed file. Unfortunately, viewing such files with fast navigation and zooming has been difficult since they tend to be quite large. A 4-up imposed sheet is roughly 1.5 GB of screened CMYK data at 2540 DPI. The OneFlow system is able to view such files with extreme responsiveness.

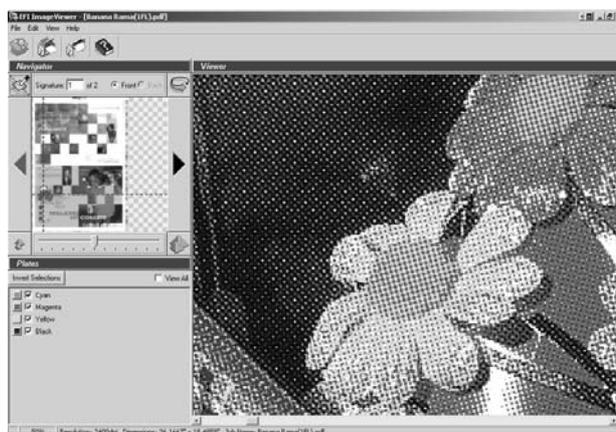


Figure 5. Viewer showing screens.

The viewer is able to zoom in to see individual spots as well as zooming out to see the halftone dot structure (Figure 5) and can show moiré, if present. It can also zoom out further to view a color-accurate contone image to be used for soft-proofing.

Conclusion

Visualization and automation of a job through all pre-press stages has become critical in order to correct errors early. The merging of traditional and digital printing makes it necessary for workflow systems to support both to protect the customer's investment. EFI's Velocity OneFlow workflow system meets these requirements in an open-architecture, PDF-based package.

Biography

Richard Falk received his AB degree in Physical Sciences and his MBA from the University of California at Berkeley in 1981 and 1983, respectively. He went to work in the graphic arts industry for SuperMac Technology, and subsequently Radius, Inc., Splash Technology and Electronics for Imaging. Mr. Falk contributed numerous firsts in features and quality of color digital printing originally for dye sublimation printers and subsequently for digital color copiers.