

Welcome to the Machine: How and Why Workflow Automation Is Nothing to Fear

A White Paper

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Abstract

Workflow automation has the potential to help both print providers and print buyers boost productivity and save money, and yet it is one of the most under-utilized—and, in fact, most feared—software category today. Resistance to automation is understandable, but fundamentally illogical, and a well-designed automation solution that is scalable, flexible, and easy to configure and use can have innumerable benefits for a company of any size.

This white paper addresses the chief complaints and fears of those who resist automation solutions, and serves as an introduction to Enfocus' Switch workflow solution, which was designed and developed to specifically address these major concerns.

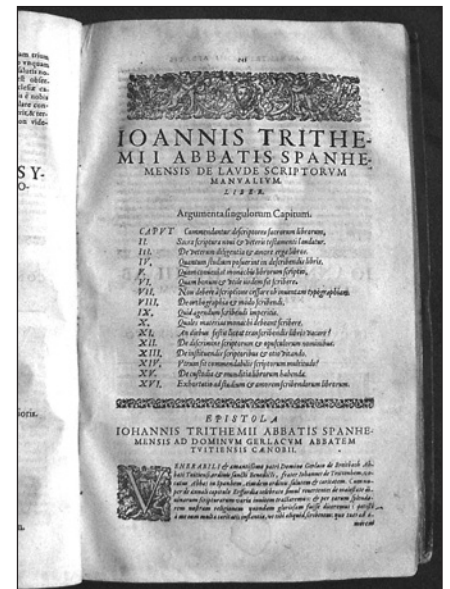
Introduction: A Fear As Old As Technology Itself

When people hear the term “automation,” a number of things shoot through their minds, some of them positive, but most of them negative. The concept of automation makes people a bit nervous for a number of reasons and on a variety of levels, so this white paper will attempt to address these concerns, as well as identify how Enfocus' approach to automation—via Switch—can allay the fears of graphic arts professionals, and demonstrate how it has many advantages for graphic arts companies of all shapes and sizes.

Here's a classic true story from the history of printing that illustrates the problem. The invention of the printing press in the mid-15th century automated the process of reproducing documents, replacing the earlier method that involved hand-copying by scribes, monks cloistered and scribbling away in *scriptoria*. As a result, when the printing press appeared, a wave of panic swept through the monasteries of Europe, and monks began looking for other things to bide their time. Some, however, decided to fight back. In the 1490s, a German abbot named Johannes Trithemius implored monks not to give up the art of manuscript copying, and wrote a treatise on the subject called *In Praise of Scribes*. He had a problem, though: he needed to quickly distribute a large number of copies of his treatise. You can see where this is going, but it's one of the great ironies of history: yes, Trithemius had to have a treatise called *In Praise of Scribes* printed on a printing press. Saved by automation!

As for the monks, they did okay. Many went into beer making. See? There's always a silver lining to every black cloud!

Each advance in technology has been accompanied by renewed fears of the consequences of automation. In late 17th- and early 18th-century Europe, textile factories began to install new mechanized looms that could automate much of the weaving process. Workers, fearful of losing their jobs, began to fight back, destroying many of these machines, inspired by a perhaps-apocryphal figure named Ned Ludd, from whom members of the movement took their name: the Luddites, a term that today refers to people who reject or are afraid of technology.*



* It has also been claimed that the word “sabotage” dates approximately from this same movement, where French workers supposedly hurled their wooden shoes—sabots—into the machinery. However, that etymology has turned out to be false.

And so on through the 19th and 20th centuries. In the 1960s, when computer technology was growing out of its infancy and was starting to be implemented in industrial settings, there was also a backlash based on fears of the consequences, of workers being replaced by machines. These fears even inspired a 1967 episode of the original *Star Trek* called “The Ultimate Computer” in which the intrepid Captain Kirk is himself replaced by a computer, with deadly consequences.

CGX Makes the Switch

Consolidated Graphics (CGX) is a network of more than 70 print and fulfillment facilities in both the U.S. and abroad. Dave Tecson is CGX’s Workflow and Automation Specialist and has been working with Switch for about

ConsolidatedGraphics

a year and a half. He has installed it in a handful of CGX’s companies to handle many of the repetitive, day-to-day tasks.

“One of the things I struggle with,” Tecson says, “is that they think I’m there to replace them with a computer, and that’s not the case.”

Automating parts of the workflow with Enfocus Switch has freed up prepress personnel to concentrate on the more craft-related aspects of their jobs, such as trapping and other tasks that require skill and expertise, rather than laborious tasks like renaming hundreds or thousands of files. “In one company, they saved 350 man hours a month,” Tecson says.

Some of the specific tasks he has Switch perform include packaging InDesign files, exporting PDFs out to InDesign files, running them through PitStop Server for preflighting, and automating reports to indicate whether there are fonts missing, incorrect color spaces, and other errors. He has also been integrating Switch into Web-to-print workflows, to automate production files that contain XML-based metadata.

Tecson says he was attracted to Switch by its ease of use. “I’m not a programmer by any means,” he says. “I took C++ in school and I think that was my grade.”

“The big challenge [to automation] is deciding what people do on a day-to-day basis,” Tecson says.

Anyone today harboring a fear of automation is not alone, and is part of a tradition that dates back centuries. But just as in the days of yesteryear, those fears are largely unfounded. In fact, the various processes of automation have had net positive effects on labor and on society.

The old fears and some new fears persist today, especially in the graphic arts. After all, it may seem, what is there *not* to be afraid of? Wasn’t an entire lucrative industry—the photographic color separation business that thrived throughout the 1960s, ’70s, and ’80s—essentially wiped out by a single command in Photoshop? Yes and no, but graphic arts software offered far more advantages to imaging professionals, even former color separators, that had a great number of net benefits to the industry. In fact, data obtained and analyzed by WhatTheyThink’s Economics and Research Center showed that, thanks to graphic arts software and the automation that lowered the barrier to entry into graphic design and production, the industry weathered the 1990–1991 U.S. recession far better than other segments of the economy, adding more jobs and creating more new businesses than other industry segments.

Fighting back against the perceived drawbacks of automation are like fighting back against the inexorable march of technology itself. Of far greater benefit is to understand the new paradigm and how to make automation a friend and ally, not an enemy.

That’s what the rest of this white paper will be about.

What Do We Mean By “Automation”?

Later in this report, we will look at the specific implementation of Enfocus’ Switch solution, but for now, what we mean by “automation” is creating a graphic arts workflow that performs some action or combination of actions on production files—either document layouts, PDFs, images, or other file types—more or less automatically. This can include tasks such as sending notification or confirmation e-mails to customers; automatically routing files from FTP, Web-to-print, or e-mail inboxes to specific production servers; performing image-editing functions such as resizing or color correction; preflighting; interacting with MIS and ERP systems or even other third-party workflow systems; and so forth.

With automated workflows like Switch, a lot of the “grunt work” involved in file preparation and prepress can be eliminated. We’ll look at this in more detail later in this report, but for now, that will suffice as a quick definition of automation.

You can see where those specific automated processes—and the general idea of automation itself—can instill no small degree of fear in graphic arts professionals. But as with the historical examples of

automation we looked at earlier, they are largely unfounded—or have net benefits for these same graphic arts professionals.

Let's look at the top 10 complaints about automation and see why they are generally unfounded.

Complaints About Automation

Complaint #1 "I'll Lose My Job"

Remember the Luddites? Their fear was that the new automated looms would eliminate the need for skilled textile workers. Graphic arts automation engenders the same fear, and without warrant.

The British have a wonderful, passive-aggressive term for getting fired or laid off: being "made redundant." Merriam-Webster defines "redundant" as, "exceeding what is necessary or normal; superfluous." So if you are made redundant, your presence is unnecessary, you are superfluous. That's the biggest fear of automation, too, isn't it, that any given worker will be "redundant." The hardware or software can do the job much more quickly and cheaply so the human isn't required. Right?

Not necessarily. Think about this. You are a graphic designer working on a large (say, 56-page) catalog. You have literally hundreds of product images, all of which need to be resized and converted to CMYK before they can be placed in the layout file. There are two ways of accomplishing this: you can manually open each image and make the necessary corrections—and repeat this hundreds of times—or you can use the batch processing commands in the Adobe Creative Suite, automating the process and preventing your retinas from falling out of your eyes.

As anyone who has ever done repetitive batch editing of images can tell you, it is mind-numbing and hardly an intellectual challenge for a graphic designer—and, in fact, takes time away from more important tasks, such as actual graphic design or taking on new clients and projects. It's far more efficient to have software handle the brainless, repetitive tasks. Someone still needs to oversee the process and fix those images that the software may have mishandled.

As we all know, there are forces at work, in the economy in general and in the graphic arts industry in particular, that are driving job loss and employment issues, but automation is not one of them. Lack of demand for printed products is a far bigger challenge for graphic arts companies than automating the process of creating those printed products. And no one seems to be all that afraid of the Internet! (Well, some people are...)

The economic recession (which began in 2008) and the "print recession" (which began around 1998 when electronic distribution began to substantially supplant demand for print) have created business challenges for graphic arts companies, and one of the solutions to those challenges has been to boost productivity and efficiency. So, in print shops, prepress equipment and presses are more automated than ever, allowing more jobs to be processed and printed faster, boosting company throughput, and allowing more work to be taken on by the company.

Graphic design firms have to take on as much work as they can, as more and more "graphic design" can be done by potential customers themselves using desktop software like Microsoft Word. (A terrifying concept, but it happens.) So these graphic designers need to work longer and longer hours to handle the excess work they have to take on in order to stay in business. Automation is one potential solution to easing this workload. Automation in the graphic arts doesn't increase unemployment, but it does boost productivity.

After all, whether you are a commercial printer or a graphic designer, which has a greater impact on employment: increased productivity or going out of business?

Complaint #2 "I Can't Afford It"

That's always the standard reaction to any new technology, especially where automation is concerned. We know how tight budgets are today, but without actually knowing what workflow automation costs, how

can one categorically rule it out as prohibitively expensive? Ah, yes, but even if it *eventually* pays itself off, that could take years, couldn't it?

Not necessarily. Some types of automation are actually free. If you have Adobe Bridge, part of the Creative Suite, there are many batch processing commands that can perform automated processing of folders of images, from resizing, to color space changes, etc. But even for-pay automation solutions, like Enfocus' Switch, are modular, and Switch starts at US\$1,900, which is not an exorbitant investment. How long would it take to recoup? It depends on the firm, of course, but every increase in throughput—the number of jobs that can be sent through a shop—means that the shop can handle x number of additional jobs. So the idea behind workflow automation is to leave the grunt work to the software, speed jobs through the system, and leave the humans free to take on additional design work and do more of what it is they love to do: design stuff. At the same time, being able to take on more work means more revenue for the shop. Improving customer service is also an important concept; competition can be fierce, which means you want your customers to return to you, so you need to offer more services. Can a shop get at least \$1,900 more work? Having the capacity to add a single new client or project has probably already paid for the automation software.

At the same time, automation—or at least Enfocus' iteration of it—helps protect the investment that shops have already made. That is, shops can use the software they already have been using—the Adobe Creative Suite, QuarkXPress, other workflow systems, whatever. There is no need to replace all (or really any) of the elements in a workflow; Switch integrates with a wide variety of third-party applications, so there is no need to completely overhaul one's production workflow.

Complaint #3 "I Don't Have Time to Set It Up"

It's true, setting up any kind of automated process takes an initial investment of not just money, but time. There's no denying that. But as with any kind of initial investment, the goal is to make your investment back severalfold at some point down the line. (The exception to that rule may be real estate, but thankfully we're not talking about that in this paper!)

The analogy, familiar to any graphic designer, is to style sheets in Adobe InDesign or QuarkXPress. These are ways of defining the typographic specifications—typeface, point size, alignment, etc.—for all the different bits of text in a document. So if you have text that serves as a primary heading, you can create a

The Economist Economizes

The Economist is a nearly 170-year-old London-based weekly magazine with a circulation of nearly 1.5 million. The publication is printed in five different countries, which offers many challenges to the prepress workflow, and tight deadlines leave little room for error.


 The Economist logo, featuring the words "The Economist" in white serif font on a red rectangular background.

Robert Banbury, *The Economist's* Production Project Development Specialist, says he was attracted to Enfocus Switch because of its ability to integrate with the production workflow systems the company already has in place. "After considering all available automation systems at the time, our decision to choose Enfocus Switch was influenced in part by its ability to integrate with third-party applications, giving us the choice of some of the best available technology then and into the future; and also the easy-to-follow graphical user interface," Banbury says.

Switch is used to automate repetitive tasks in the editorial and advertising workflows, such as moving and duplicating files, repurposing PDF pages and images, preflighting, and document FTPing.

Initially, Switch was set up solely to handle advertising proofing and preflighting, but over time Banbury and his colleagues have added more and more functionality, giving an increasing number of tasks over to Switch, creating flows connecting Adobe Creative Suite applications and callas pdfToolbox server.

"Automation has removed many manually repetitive tasks from users, freeing them to concentrate on other important matters, and enabling them to meet critical deadlines." Banbury says. "Lead times have been improved together with a reduction in errors."

style sheet for “Heading,” and simply apply it with a mouse-click or a single keyboard shortcut to every bit of text that is a heading. Same with “subheads,” or “body text,” or any other text in the document. These style sheets take time to set up, but once they are created, *they save a lot of time* later in the workflow, especially if the client decides s/he doesn’t like the typeface used for the body text and it needs to be changed throughout the document. (Because that *never* happens!) With style sheets, you just make the change in one place and it’s automatically applied throughout the document. (Bear in mind that a human will still be needed to address any type reflow that may have occurred, but that’s a far less onerous task than changing a font 50 times.)

Workflow automation operates on the same basic principle. It takes some amount of time to set up and get functioning efficiently, but once it is set up, it eventually saves time.

With automation schemes like Switch, the workflow can be implemented gradually so that certain bits can be set up at one given time and, depending upon the workload of the shop, other portions of the workflow can be set up at a more convenient time, like when a major project is finished and there is a bit of downtime. So you can still get the benefits of automation, but in piecemeal, incremental fashion, if you prefer.

Complaint #4 “I’m Committed to Overhauling My Whole Shop”

While it’s true that an entire shop *could* be automated, and that there is the potential for a variation on Parkinson’s Law to come into effect—“Automation expands so as to encompass the amount things there are to automate,” perhaps—there is no reason why it has to be so. A good automation scheme should not take on the properties of The Blob, expanding out of control and absorbing all of one’s processes. The goal should be to automate those processes that make sense to automate. If, at some point down the road, it makes sense to automate the entire shop, then that can be effected one logical step at a time. When you build a brick wall, you assemble it slowly, brick by brick, rather than heave it up in one go. So, too, with automation.

Complaint #5 “It’s Disruptive”

Well, yes, but when you think about it, what *isn’t* disruptive? How much productive time is lost just upgrading your computer’s operating system, and then seeing how many things stop working? Upgrading software in general can be disruptive even when technically everything is functioning normally—learning the new and revised features in programs like InDesign or Photoshop™ takes time and energy away from productive work, but the new versions of these programs have features and benefits that, in all likelihood, make that downtime “productive downtime.” Again, it’s an investment, but an educational one. You’re learning new skills and features that will enhance your productivity down the road.

The same is true with workflow automation. Yes, it’s modestly disruptive *at first*, but it’s “productive disruption.” And once it’s in place, the shop can go back to normal—well, normal except that now the shop is more productive.

Complaint #6 “It’s Too Rigid and Unforgiving”

Perhaps the emblematic example of how unforgiving automation can be is the classic episode of *I Love Lucy*, where Lucy gets a job as a candy wrapper on the assembly line at a chocolate factory. The finished chocolates start coming out of the machine faster than Lucy can handle them so, to not appear to be getting behind, she begins having to hide and then eat the chocolates. It’s a funny scene, a classic of TV comedy, but only a slight exaggeration of one of the chief complaints about automation: we become slaves to the machine.

That doesn’t have to be the case at all. Any automation system worth its salt will allow some degree of flexibility to better conform to individual users’ needs.

* Way back when, in 1993, this writer took a class in Photoshop at New York University, learning version 2.5. On literally the last day of class, the instructor came in and announced, “Version 3.0 is out—and everything is different!” Keeping up with software upgrades can be a Sisyphean task.

Graphic professionals are no strangers to rigid structural parameters. The physical printed page is nothing *but* a rigid structure. You have x number of 8-1/2 x 11 inch pages (or whatever your page size is) to work with and that's it. That's a pretty inflexible structure, but graphic designers and printers excel at applying creative solutions to presenting all the required content within those very strict parameters. Such is the creativity of graphic artists that they scarcely perceive the physical page as a rigid structure at all.*

That said, there is no reason why an automation system needs to be rigid and inflexible at all. It depends on how effectively it is set up, and how well it is designed to serve the *user's* needs, not its own. The Switch approach favors the former; its modular approach allows users to assemble and configure it in whatever fashion best serves their needs. The software is the slave to the humans, not the reverse.

Complaint #7 "It's Too Complicated"

As humans, we have an innate tendency to ascribe inscrutable complexity to anything we don't readily understand, despite the fact that most of us handle pretty complex processes quite handily. Buying a house, raising kids, figuring out health insurance schemes, picking the least Byzantine cellphone plan, and all the other activities that comprise our daily lives are really quite complex when you look them from the outside. And yet, we manage to handle them with various degrees of aplomb. In comparison, computer software is really not all that hard to figure out.

Look around your home or office and all the contrivances of modern life and think about how complex most of these things are, and yet that complexity does not deter us from using any of them. The computer, the smartphone, the automobile, the coffee maker—these items and more are remarkably complex (if you were trapped on a desert island, how many of the conveniences in your life—including clothes—could you actually manage to re-manufacture yourself?), and yet we don't have any difficulty pushing a button and getting these items to work. We don't need to know how the microwave works to nuke a burrito—and we don't even have to know that "nuke" is a completely inaccurate word to use to refer to microwave cooking. As long as the burrito is cooked, who cares how complex a microwave oven is?

Likewise, automation software is a complex product, but the *interface* doesn't need to be difficult. The computer code that makes it all work is the complicated bit, but all that is as invisible to the end user as the manufacturing process that put his or her car together. Yes, we need to learn how to drive a car, but that's far less complex than actually assembling a car. Learning how to set up and utilize a workflow automation system is far less complex than creating one from scratch. And any good software developer makes the learning

Prescribing Automation

GlaxoSmithKline is a global leader in the pharmaceutical industry. Based in Verona, Italy, the company's Artwork & Pack Design department oversees the prepress of folding boxes and leaflets, and also acts as a link between the parent company and its printers and converters. The Verona facility alone handles hundreds of PDF files a month—and when combined with other production facilities in the UK, India, and elsewhere in Italy, the number of PDF files can increase by an order of magnitude. The challenge for GSK, as it is for any consumer products company, is ensuring that all files are accurate and consistent.



Andrea Corsi, Artwork & Pack Design Technical Developer, was attracted to the component of Enfocus Switch that lets users build advanced workflows, as well as Enfocus PitStop Server for high-volume PDF preflighting and proofing.

"Every day, graphic operators have to manage lots of repetitive tasks that require extreme care to avoid mistakes," says Corsi. "The Enfocus tools allow them to automate most of these tasks, greatly reducing the opportunity for human error. The real benefits are derived from a huge improvement in the workflow itself. Costs are reduced and the process is much more efficient, as couriering draft paper copies approved by GlaxoSmithKline are replaced by sending certified PDFs through FTP."

The company's printers also noticed improved consistency in the files they received.

"Working in a more standardized and automated way, and following precise procedures, is saving us a lot of time," says Corsi. "This is not only because we now work faster, but also because we work more efficient. The files are moving quickly in the workflow and operator intervention is rarely needed as standard PDFs are generated in the same manner for all operators."

* Anyone who has ever done Web design knows intimately just how rigid and inflexible HTML can be—and yet look at how bewilderingly creative many Web designers are.

curve for users as simple as possible. If you can use a computer and any run of the mill graphic arts program, you can learn to use Switch.**

Complaint #8 “We’re a Small Shop; Automation is for the Big Guys”

As was said earlier, any decent workflow system should be scalable. After all, just because clothing comes in plus-sizes doesn’t mean that thin people shouldn’t wear shirts. Small companies have more modest production requirements than larger shops, so it makes little sense for them to implement the same solution.

In fact, it may even make *more* sense for small shops to automate their workflow processes. Given that small shops don’t have the resources or the number of employees as larger companies means that they need to do more with less, to be more productive. If a company has only one or two production employees, which is more effective: having them waste hours manually editing files and doing repetitive tasks, or automating those tasks and letting them get on with processing additional jobs?

Complaint #9 “I Don’t Want to Give the Computer Complete Control of My Shop”

Let’s be clear. It’s not like “The Ultimate Computer” episode of *Star Trek* where the machine takes over the ship, will not relinquish control, and starts destroying the rest of Starfleet. I doubt anyone really has that fear, but there is a certain understandable trepidation over ceding control of one’s production processes. However sophisticated software gets, there are some things—many things—that will never be automatable, nor should they be. Graphic design is and shall always be a product of human creativity, and no computer can replace that; the human factor will always be a factor. Automating certain repetitive tasks processes does not take human creativity out of the picture. In fact, the idea behind automation is to allow more time for creativity. The idea is to automate only what is automatable—not everything under the sun.

Complaint #10 “I Don’t Know; It Just Seems Like It’s Just a Big Black Box”

There is always the concern that any automated workflow lacks transparency, that you’re not quite sure what is going on inside it. Files go into this “black box,” they come out the other side, and what happens in between could involve magic elves as far as anyone knows.

Automated workflows are not magic, there are few elves involved, and they’re not all that mysterious. In fact, with Switch, it’s pretty easy to see exactly what is happening at any given moment in the workflow, both schematically and textually.

Criteria for Automation

Based on these foregoing complaints, we can draw up a simple list of criteria that any effective automation system must address:

- It must be scalable and adapt to any size company—or even the same company as that company itself grows.
- It must be flexible and configurable based on the needs of the company at any given moment.
- It must be simple, easy to configure, and easy to use.
- It must be affordable.
- It must be transparent.
- It must be open and flexible and “play nice” with a company’s existing software and hardware, as well as support myriad file formats.
- It must provide a demonstrable and measurable increase in productivity and job quality.

* And, hey, they are even working on developing self-driving cars, making this an even better analogy.

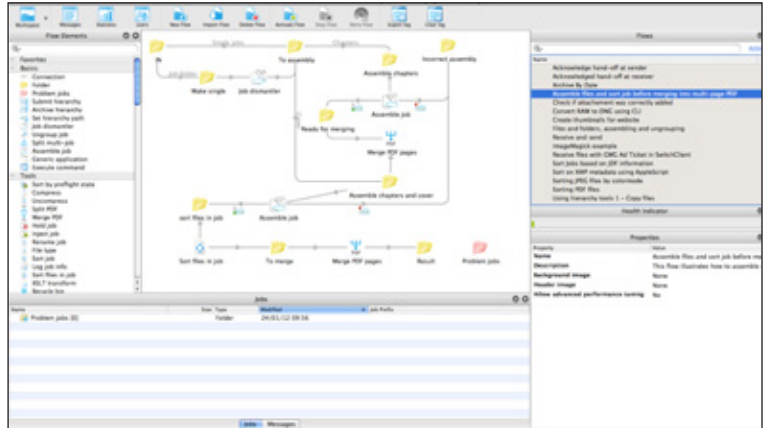
- It must allow manual intervention where necessary.
- It must only automate what is automatable.
- It must not conquer the world.

Okay, the last one may not be an issue, but we should cover all our bases.

Enfocus Switch

Enfocus Switch is a workflow tool that has been designed to specifically address all the foregoing complaints and requirements of workflow automation. Switch allows print buyers and print providers to automate repetitive or mind-numbing tasks so that users can get on with the more stringent—or fun, perhaps—demands of production and running their businesses. What can be automated? It's really up to the individual user, but some things that Switch can automate include:

- Downloading files from FTP servers or e-mail inboxes and routing them where they need to go.
- Sending notification or confirmation e-mails to customers.
- Sorting files by file type, metadata, and conditions.
- Splitting or merging PDFs.
- Converting native layout documents to print-ready PDFs
- Integrating with third-party software for image enhancement, imposition, color management, proofing, etc.
- Preflighting and fixing files.
- Automating Web-to-print job receiving and verification.



Switch is configured and controlled via a simple visual interface and drag-and-drop tools. The hallmark of the product is that it is completely open, and can handle just about any file type created in any application, which means that shops don't have to replace anything they have already invested in. Switch also links to a company's existing MIS or ERP system. And third-party plug-ins to Switch can add even more functionality, standardizing processes and output from other applications, such as Adobe Creative Suite tools.

SwitchClient is a communication tool that can be used in conjunction with Switch to further keep the human factor in the automation process by letting users to submit files together with metadata or job ticket information. It then prompts the human operator for instructions on what to do with files that require attention, such as a failed preflight.

It also bears mentioning that Switch won a 2011 Intertech Technology Award.

Much more about Switch, including a free trial, and an introduction to the Crossroads community of users can be found at <http://www.enfocus.com/en/products/switch>.

So...Welcome to the Machine

Automation is not the enemy, just as it wasn't to our old friend Johannes Trithemius when he needed to get his treatise mass-produced. Having collaborated with many graphic designers over the years, I always find it shocking how many don't even avail themselves of style sheets or the batch processing tools in Adobe Bridge, and waste hours upon hours manually reformatting images and text. Likewise, it's just as shocking to realize the extent to which resistance to automation results in many lost hours of more productive—and more satisfying—work. We ignore all these conveniences at our, and our businesses', peril.



This white paper was sponsored by Enfocus. For more information about Enfocus' Switch product family please visit www.enfocus.com/en/products/switch.
