

Honorable Mention
2007 Jürgen Schönhut Memorial CIPPI Award
**Achieving an Exceptional Level of Automation, from
Customer Order to Distribution, in Digital Printing**
R/T Associates

Section I. Background

RT Associates opened its doors in 1982 as a specialist in typesetting. Over the years, evolving from typesetter to desktop publisher to on-Demand printer and finally to marketing services specialist, RT has transformed to stay abreast of changing technology. Currently, RT's digital shop has two HP Indigo 5000s and one Duplo DC-645. Digital jobs are also routed to one of two Polar cutters. In 2001 they added web-to-print capabilities via Saepio's Agilis Marketing Suite Storefront.

While RT's customer facing greatly improved through the addition of Saepio AMS, order processing was largely manual. Designated RT employees would receive hundreds of e-mails each week, one per order. Each order was manually downloaded from AMS, imposed by the prepress team and placed on a file-share. Jobs moved through this prepress process as paper job tickets in a physical job jacket. Once printed and manually finished the job would proceed to the shipping and fulfillment area where the staff would read instructions from the paper ticket and re-key the delivery instructions into the shipper's on-line system to generate shipments and labels.

Once the shipment left the plant each tracking number was manually keyed into AMS which sent an e-mail to the customer. Orders were taking as much as four days to fulfill and RT had signed contracts that would see their volume double over the next 12 months.

Section II. Objectives

The objectives were

1. To automate the prepress process for AMS orders to remove any employee intervention prior to the press. As these jobs were coming from managed content in AMS it was not necessary to pre-flight the content files. It was desired that no one at RT would need to do anything for an order to move from the point where the customer checked out of their web cart to the point where an imposed PDF was at the press, ripped and ready to print.
2. To automate finishing – cutting and creasing – of all AMS jobs by automatically programming finishing machines. The Duplo DC-645 had already been purchased. The DC-645 cuts, slits and creases in a single pass. With additional modules it can score and perforate. The polar cutters are both programmable and with the addition of Compucut can accept JDF cutting instructions.
3. To automate shipping – interaction with the shipping carriers; production of labels and transmission of tracking data to AMS. The shipping process was causing a particular bottle-neck. Manual repetitive tasks, especially manually keying the address for each package was a problem. Orders were becoming more complex. For example an order might include 1000 each (total) of three printed items and 5 off-the-shelf non-printed items going to 5 different addresses in quantities of 300 of each to two addresses, 150 of each to two others and 100 of each to the last. This results in 3 different shipment sizes and weights, making the processing of such an order non-trivial. Such orders were becoming increasingly more common.

Section III. Methodology

With the new contracts already in place the volume increase was imminent and the need for the automation solution immediate. Saepio was already making modifications and customizations to AMS which was focused on the customer experience rather than on production. On recommendation from Duplo, Objective Advantage was brought in to discuss automating the workflow. As RT was a beta-site for the HP Indigo Production Manager (HP IPM), a newly JDF-enabled rip and Digital Front End (DFE) for the Indigo presses, HP was also consulted. At the time, HP was also working with Objective Advantage to test a JDF interface between Objective Advantage’s OASymbio and the HP IPM.

OASymbio Server is a production workflow management system that leverages JDF to communicate with digital press, plate-setters and JDF-enabled finishing systems from various vendors. Objective Advantage also supplies development and integration services to turn the various connectable systems into a working solution. Objective Advantage performed a site analysis and made a proposal for an integrated workflow solution.

Section IV. Implementation Story

Integration work started in February 2006. Modifications were made by Saepio to the AMS to add the ability to pass the web cart to OASymbio when the customer completes checkout. Objective Advantage started building client software for the shipping/fulfillment staff. RT’s Alex Rosario and Mike Wagner of Objective Advantage coordinated the integration process and communication between the various vendors involved.

OASymbio is deployed in two parts, a desktop and separate server. The desktop system was deployed immediately in February and RT employees started using it to create workflows. The training for OASymbio desktop was provided by remote desktop sharing sessions over the Internet and employees were able to call in separately with questions and establish the desktop sharing link as required.

The AMS modification was deployed in June 2006 and the OASymbio solution was delivered in July. Deployment was scheduled on a Sunday morning while the plant was closed and Objective Advantage staff members were scheduled to remain on-hand during Monday in case of problems. However, the deployment was completed without problem by Sunday lunchtime.

Section V. Resulting Workflow/Processes

— A description of the resulting workflow, including any applicable workflow or process diagrams.

Orders are placed by the customer on the Saepio AMS. The customer chooses stock artwork, such as brochures, postcards, flyers etc. and can make certain controlled modifications, such as changing contact details or an event date for example. The resulting PDF is proofed and approved online by the customer. The customer then provides delivery instructions which can be simple bulk shipping of the entire order or as complex as the example given above. When the customer completes checkout the order is forwarded directly into OASymbio by AMS.

OASymbio uses workflow definitions – a combination of layout template, stock selection, press and finishing system choice – to automatically

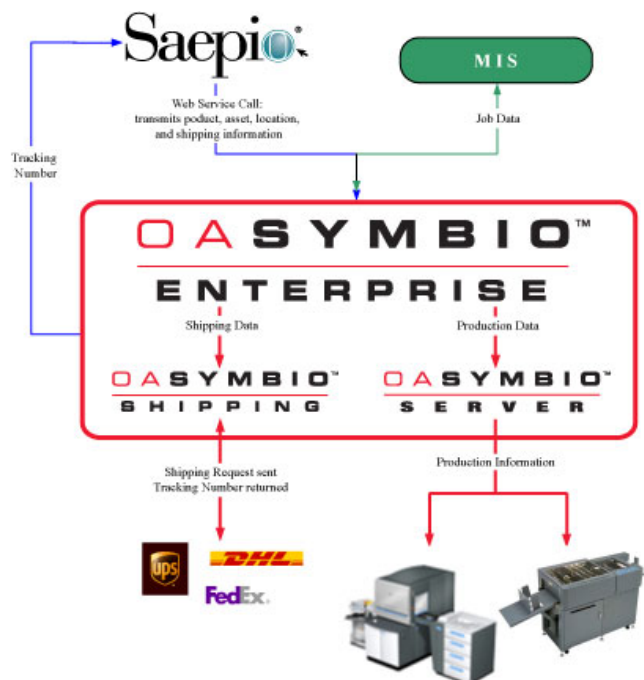


Figure 1: OASymbio workflow

impose the PDF and submit the job to the press. OASymbio creates an imposed PDF that is the same size as the paper stock. Thus if the sheet is 12in x 18in the PDF is also 12in x 18in. This removes any possibility of error when locating the image on the sheet at the press. Non-printable margins, such as those to accommodate the gripper bar are allowed for in OASymbio and no image or marks are allowed to fall into those areas.

At the same time that the image is imposed onto the sheet, OASymbio calculates a cutting and creasing program for the Duplo-DC645. This is transmitted with a preview image to the DC-645 JDF Connector, a DFE running on a PC next to the machine. When the operator brings a stack of sheets from the press to the DC-645 they match the Job ID, printed in a slug mark on the waste area of the sheet, to the job waiting in a queue on the DFE. The screen shows a preview image of the sheet oriented correctly in the input bin of the machine. The operator loads the sheets, presses start and the machine is programmed and runs the job.

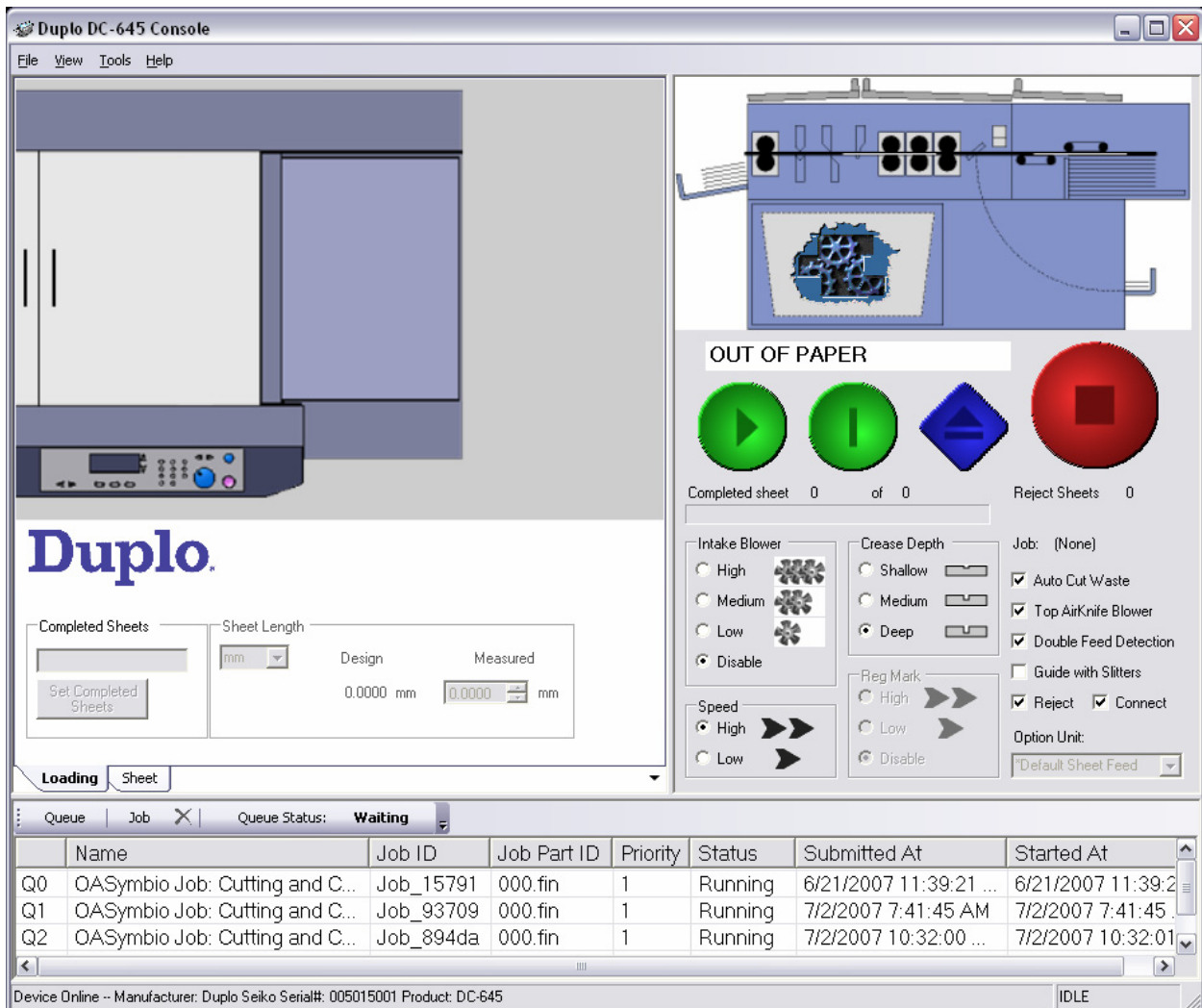


Figure 2: Screen shot of the DC-645 console queue.



It was decided that for the first phase the addition of cut marks by OASymbio was adequate for jobs going to the cutter, although this decision is currently being reviewed as phase 2 begins.

Upon completion of finishing a paper slip is placed on top of the finished material. This slip is automatically produced from a laser printer when the job goes to press. Some basic job identification is included on the slip along with a bar code representing the order number for the job. The operator of the fulfillment station scans the barcode which displays all of the order fulfillment information. A pick list is automatically printed identifying other jobs and non-print fulfillment items that for part of the order. Once these have been assembled and scanned into the station packing sheets are automatically printed.

The operator packs each box according to the packing sheet and weighs it. The weight is the only data item entered by the shipping operator. The shipments are automatically generated and transmitted to the appropriate carrier, FedEx or UPS, shipping labels are printed. The operator puts the label on the box and stacks it. Instead of figuring out the complex shipment amounts and manually generating the shipments the operator follows simple instructions, one box at a time, and the system takes care of the details. The tracking numbers are automatically sent from OASymbio to AMS and the user gets an e-mail that their shipment(s) are on the way.

Section VI. Biggest improvement in efficiency and customer responsiveness as a result of process automation

Two quantitative indicators of the efficiency improvement have been identified:

- Prior to installation of the new solution, orders for the largest customer on the AMS were taking up to four days from order to shipment. In the first month after the installation all orders for that customer either went out the same day or at the latest first thing the next morning. This level of rapid turn-around has been maintained since.
- A large new customer, with whom a contract had been signed when the project commenced, started ordering right as the installation was completed. As a result of this, and other new customers, the volume of work through the digital shop has almost doubled. As a result of the markedly increased efficiency brought by the workflow solution no new production staff members have been added. The owner estimates that a minimum of *five* additional production staff would have been required without the solution.

Feedback from existing customers indicates that the turn-around time improvements are greatly appreciated. Customers added since installation expect that this level of customer service is not normal and therefore are not tempted to compare prices with other suppliers as they value the immediacy they get from RT's rapid turn-around. Prepress personnel are able to concentrate on more challenging jobs now that the routine layout of AMS jobs is no longer their concern. Shipping operators particularly enjoy not having to hand type UPS and FedEx tracking numbers into AMS.

Investment:

Saepio AMS modifications:	\$10,000
OASymbio Software and PC hardware:	\$85,000
Objective Advantage development & integration	<u>\$20,000</u>
Total	\$115,000

Savings:

Annual Labor & Benefits: 5 x \$45,000 (average)	\$225,000
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Return on Investment: **6 months**