2012 CIPPI Award-Winning Case Study

Druckerei Köller + Nowak GmbH

*Winner*

Most innovative use of process automation technology in an implementation
Application Outline

Executive Summary — Include an Executive Summary of no more than two pages which includes:

Köller+Nowak (K+N) is a full-service commercial printer with 21 employees and a total turnover of about 3m EUR (4.2m USD). The JDF implementation includes the Hiflex MIS Solution, Kodak Prinergy Prepress Workflow as well as Heidelberg’s Pressroom Manager. The JDF implementation at K+N is the first to utilize Cloud Computing, making it the first “JDF Cloud Network” ever established. It’s a vision of the printing industry’s JDF automated future.

Left diagram: The starting point of the project was the implementation of the HP Hiflex MIS Solution in 2002 with its core modules for estimate and order processing, shipping, costing and billing (no JDF/CIP3).

Right diagram: The complete implementation resulted in the JDF connectivity of MIS, Prepress, Press and Web-to-Print, as well as the transition of this JDF network to Cloud Computing:

PREPRESS: HP Hiflex MIS Solution-Kodak JDF interface features automatic job creation, archiving and re-archiving, booking of material consumption and cost center times, tracking of page statuses and work types (chargeable and non-chargeable corrections) for internal quality management, accurate costing and invoicing.

WEB-TO-PRINT: Since 2006 K+N has been a supplier to PrintPlaza AG, a B2C web-to-print specialized cooperation of printers, active in various countries. With each order entry from PrintPlaza there is also a JDF file sent to the HP Hiflex MIS system, resulting in the automatic creation of a new job. The HP Hiflex MIS Solution then adds K+N specific information and passes the data via JDF to Kodak Prinergy.

PRESS: Heidelberg’s Pressroom Manager is CIP3 linked via Kodak’s Prepress. Most of the print process relevant information was before provided to Kodak via JDF from HP Hiflex MIS Solution like job and customer data, sheet name and format, name of colors, etc. Kodak passes this information together with PPF files to Heidelberg. During peak times HP Hiflex MIS Solutionscheduling application is used and makes a direct JDF connection to the Pressroom Manager.

JDF CLOUD NETWORK: The final implementation step was the transition of the MIS and JDF network to Cloud Computing. The objectives where a reduction of Total Costs of Ownership (TCO) with more time to focus on the key business and less IT administration, increased flexibility with system access from everywhere via internet, a more scalable system performance and an increase of Quality of Service (QoS) by outsourcing quality assurance and quality control to the Cloud service provider.
Section I. Background — Please provide a description of the subject workflow environment and conditions prior to implementation:

Köller+Nowak (K+N) are a full-service printer with 20 employees and a total turnover of about 3m EUR (4.2m USD).

The prepress department at K+N features a CTP platesetter that has been controlled by Kodak’s Prinergy Workflow since December 2003 and networked since April 2005. In the press department, a five color Heidelberg XL 75-5-PC and a five color SM 52 produce high quality products. FM screening is used by default on these presses to create superior quality printed pieces. Finishing capabilities include cutting, folding and saddle stitching. Standard products for K+N include typical commercial items, folding boxes in small and medium quantities, and mailing products which are handled in-house by an integrated letter shop. All of K+N’s printing follows PSO standards and all jobs, including proofs, are produced according to ISO norm 12647-2. K+N are FSC certified, manufacturing products with eco-friendly energy and using inks that are free of mineral oil. They also offer climate neutral production to their customers.

K+N have been using HP Hiflex MIS Solution for order management (estimating, costing, invoicing) since early 2002. The system was implemented to objectively measure costs and performance and was especially useful in identifying problem areas and monitoring increases in efficiency as the company evolved.

In 2002 they established their first Web-to-Print portals and are now running approximately 40 different customized B2B portals for their customers. 95% of K+N’s customers use one or more functions of the K+N web-to-print offerings.

In 2005 K+N established a bi-directional JDF link between HP Hiflex MIS Solution and Kodak Prinergy Prepress Workflow System. The following year they became supplier to the production network PrintPlaza, a B2C web-to-print specialized conglomeration of printers, which is active in a variety of countries.

In 2010 K+N invested in a new Heidelberg press (the aforementioned XL 75-5-PC) and they began to outsource their various web-to-print portals to a data center in order to cut the costs of managing these systems. By utilizing HP Hiflex MIS Solution’s open API interface, which runs on XML/SOAP, K+N was able to maintain the connection to their MIS system and automate the order processing of incoming web-to-print orders. The result was a reduction in cost and resources needed to manage the web-to-print systems, while maintaining the same high level automation.

Having experienced the benefits of outsourcing their web-to-print servers, K+N began to examine options for outsourcing their entire IT infrastructure. This was especially appealing to K+N because they are a relatively small printer, making it difficult and expensive to maintain the hardware necessary to run their JDF connected network internally. The required investments in hardware, data storage, backup systems, a secure infrastructure, and accommodations for a server room were cost prohibitive.

K+N was not willing to dismantle its already established JDF automated workflow, so they created a plan to go forward with IT outsourcing while maintaining their current work processes. The solution was moving to “The Cloud” – using offsite servers to host their software, making their systems available anywhere in the world while keeping costs to a minimum.
Section II. Objectives — Please provide a description of the printer, publisher or prepress service’s goal and motivation, including any quantities criteria upon which the goals were established:

There were three clear goals for expanding the JDF network at K+N while moving it to the Cloud:

- Increase the **level of JDF automation** by adding the printing department to the JDF network. Prepress integration had already proved to be very profitable, but due to the high hourly rates in printing, every minute gained through streamlined automation would mean significant monetary savings. The benefits defined in case studies by other printer’s who had already made the JDF connection to their press department, helped convince K+N to take this next step.

- Reduction of **Total Costs of Ownership (TCO)** inflicted in the maintenance of all solutions incorporated in their IT infrastructure including: Web-to-Print systems, MIS system, Microsoft Word (used by HP Hiflex MIS Solution for documents generation), Microsoft Excel (used by HP Hiflex MIS Solution for job ticket), Samba network services (used by HP Hiflex for file share services between server and clients as well as Kodak prepress), remote shell daemon for application control between server and client, backup software, PDF print drivers on client computers, startup batch files for network mounting, Windows client workstation settings, etc.

  Other costs that had a significant weight on the TCO included infrastructure costs like a climate system and other necessities for a server room, backup systems, security systems, data storage, etc.

- Increase of **Quality of Service (QoS)** since quality assurance and quality control is continuously monitored and assured by the Cloud service provider, K+N and its users do not need to be burdened by these tasks.

- Cost reduction and flexibility
- Greatest level of autonomy, allowing employees to work from anywhere at any time
- Any computer becomes a terminal to their business with the highest level of production automation behind it
- A return to focus on the actual business and a reduction in IT administration costs
- More scalable
- More secure
- More reliable
Section III. Methodology — Please provide a description of the process of selecting a solution, including alternatives and deciding factors:

Methodology of Selecting Solution Part I:

As already mentioned, K+N was using a bi-directional JDF link between their HP Hiflex MIS Solution and their Kodak Prinergy Prepress Workflow System as of 2005.

Since this time, K+N had invested in new, JDF-compliant pressroom equipment from Heidelberg, who has been a supplier to K+N since 1977. The new press was ultimately purchased due to its overall performance and its JDF capabilities, which was at the top of the list of criteria that K+N required in order to meet their goal of expanding the automated workflow into a new department. The press was purchased with the guarantee that all licenses required for JDF networking were included in the delivery.

Methodology of Selecting Solution Part II:

During the same time K+N wanted to continue to outsource their IT systems, which they had begun to do in 2010 by outsourcing their web-to-print servers. They were attracted to this idea because of the clear advantages of performance, security and availability that are accessible via professional hosting services in data centers.

When their MIS supplier, HP Hiflex, announced the availability of MIS Cloud Computing technology with their new system’s release, K+N identified the benefits that this new configuration would have to their end goals, and made the decision to implement the new system.

K+N identifies two areas that would need to be addressed while making the switch: their Kodak workflow needed to stay JDF connected to the MIS in the Cloud, and the Heidelberg pressroom had to be added to this new “JDF Cloud Network.” Essentially their goal was to maintain the functionality of the current MIS-Prepress connection while also adding the Press department to the automated portion of their workflow.
Section IV. Implementation Story — Please provide a description of the implementation effort including timeline, participants, critical path/milestones, obstacles overcome (if any), training and testing:

Manual Connection

Integrated or Automated Connection

Fig. 1: Workflow after the implementation of HP Hiflex MIS Solution system in 2002 with its core modules for estimating and order processing, shipping, costing and billing.

Implementation took 5 months and required extensive preparation; especially for the estimate module and the accumulation all of the data that is required for accurate estimating.

Benefits included an enter-once-use-many system, which stored data and allowed it to be easily accessed across all modules. The HP Hiflex MIS Solution Super CSR functionality also drastically increased the effectiveness of employees by allowing them to complete more work in less time by utilizing the functions of the MIS.

Prepress, press and post press were not directly connected, but costing information was manually entered into HP Hiflex’s Shop Floor Data Collection terminals.

Fig. 2: K+N also began their first eProcurement-Web-to-Print portals in 2002.

Today K+N runs approximately 40 different customized B2B portals for their customers. 95% of K+N’s customers use one or more functions of the K+N web-to-print offerings.

Since K+N was one of the first adaptors of Web-to-Print there was a considerable amount of Research and Development necessary to develop the required functionalities with their system partner HP Hiflex, and those efforts continued throughout 2003.

Utilized functions include: online job tracking for customers, job related file transfer, print approval process, personalization of documents like business cards, as well as online stock inventory.

Benefits of the web-to-print implementation included increases in automation as a result of the hands off approach to web orders, as well as customer loyalty due to the customized storefronts.
Fig. 3: Kodak’s prepress was JDF linked with HP HiFlex MIS Solution in 2005 and the following year the web-to-print system became JDF-compliant.

The HP HiFlex-Kodak JDF interface features automatic job create, archiving and re-archiving, automated booking of material consumption and cost center times, tracking of work types (non-chargeable and chargeable corrections) for internal quality management, accurate costing and invoicing. Additionally the CSR can see the file status and thumbnails of pages in HP HiFlex.

A semi-automatic CIP3 interface to the pressroom was established and although it needed two converter steps to be readable at the press it was already great for the make-ready.

As of 2006 K+N have been a supplier to the production network of PrintPlaza AG, a B2C web-to-print specialist active in various countries. Every order entered from PrintPlaza includes a JDF file, which is sent to the K+N HP HiFlex system, where a job is created. Consequently, HP HiFlex adds K+N specific information and passes the data via JDF to Kodak. A CIP3 interface between Kodak and the pressroom was realized

Fig. 4: In 2010 K+N invested in a new JDF-compliant printing press from Heidelberg which was added to the JDF network.

With this purchase, Heidelberg’s Pressroom Manager (required for JDF networking) was included. Pressroom Manager now has a direct CIP3 interface to Kodak and the job data originally send from HP HiFlex MIS Solution to Kodak is enriched with PPF profiles in prepress and then send to the Pressroom Manager.

When K+N is flooded with work, HP HiFlex Scheduling comes into play. During these times when the workload is heaviest, the Scheduling system acts as the JDF controller for the pressroom, sending and receiving JDF information to and from the Heidelberg system.

Thanks to the efficient use of preset data, there is a considerable reduction in make-ready time and waste at the press.

The final implementation step was the transition of the MIS and JDF network to Cloud Computing. A major step in this process was the switch from MS Office to OpenOffice, which HP HiFlex uses in its new MIS Cloud Computing Release. The settings for bi-directional “JDF Cloud networking” were also a challenge. This last step took approximately 3 months, completing in mid June, 2011. Please see the next chapter for additional details.
Section V. Resulting Workflow/Processes — A description of the resulting workflow, including any applicable workflow or process diagrams. **At a minimum this must include two workflow diagrams:** both the starting workflow (prior to the implementation being described in the application) and the final workflow. Interim phases of workflow may be diagramed, but are optional.

For the starting workflow please see figure 1 (page 8).

The resulting workflow is visualized below (Fig. 5).

The HP Hiflex MIS Solution was outsourced to a data center and K+N switched from their home-based MIS into Software-as-a-Service (SaaS) usage with a monthly rental fee, **making their JDF installation the first “JDF Cloud workflow” ever established.**

- **Requirements**

  The login to the system is accomplished via a web-browser with the following software requirements:

  - Google Chrome
  - HIFLEX Browser Plug-In
  - Exceed-on-Demand
  - Acrobat Reader

  Login can be established on any operating system (Windows, Macintosh, Linux) and 3G internet speed is sufficient.

- **First login / client installation**

  With the first login the user has to set a username and password for the firewall so that a secure, tunneled connection is established.

  The system then detects that the browser plug-in needs to be installed. It is downloaded and installs with one click. Next, the system detects if it is missing the Exceed-on-Demand client software and downloads it if necessary. After an 8 MB download, the client software installs by simply clicking on the “accept terms” and “next” buttons. The user does not need to configure any settings. The system will then recommend the download and installation of Acrobat reader (not mandatory) if it is not yet installed.

- **All following logins / halt and resume**

  When opening the MIS webpage, the system asks for username and password (independent of the firewall). Once entered, the browser reveals the MIS desktop and the application is launched.

  An active session can be halted and resumed at any time. Halting a session will close all session windows at once. Resuming a session can be accomplished on a separate computer (even with a different operating system) and all halted windows will appear as they were arranged in the previous session.
- Workflow with Kodak’s Prinergy

With the HP Hiflex MIS Solution now in the Cloud, the JDF interface with Kodak has not stopped working. It still features the same bi-directional functionality as before: automatic job create, archiving and re-archiving of jobs, automated booking of material consumption and cost center times, tracking of work types (like chargeable and non-chargeable corrections) for internal quality management, accurate costing and invoicing. In the Cloud Computed MIS K+N can still – from any computer in the world – see page status and thumbnails from Prinergy, material consumption (proof and plate), booked costs and chargeable corrections (displayed in red).

Workflow with PrintPlaza’s Web-to-Print jobs

Every web-acquired order sent from the PrintPlaza web-to-print system includes a JDF file with the relevant product and job specifications. This data is used to schedule jobs for production via a JDF file. These “JDF Web2Print Jobs” are loaded with a JDF import feature to the HP Hiflex Cloud system, and from there, are provided to Kodak (see previous paragraph).

Workflow with Heidelberg’s Pressroom Manager

Heidelberg’s Pressroom Manager has a direct CIP3 link with Kodak’s Prepress. Most of the print process relevant information is originally provided from the MIS Cloud via JDF to Kodak (job and customer data, sheet name, sheet format, etc.) so that the same data has not to be provided a second time in Kodak but can be reused for Heidelberg.

During peak times, HP Hiflex’s scheduling application within the Cloud takes the lead and acts as the JDF controller for the Heidelberg pressroom, making a direct JDF connection to the Pressroom Manager.
Section VI. Optional Detail — Innovation — Please Provide a description of the innovative aspect of the process and an argument for why this is unique and new, with a comparison to traditional alternatives and a description of the primary benefit the innovative aspect of the new process.

The established JDF workflow used at K+N is the first “JDF Cloud Network” ever established.

Cloud computing is the current revolution in IT services and its influence is only expected to expand:

Experton Group has forecasted that the German cloud computing market will have an average annual growth of 48% for the next five years. Other sources predict that the global cloud computing market is expected to grow almost 30% per year in the next five years.

http://professional.wsj.com/article/TPDMEUR00020101007e6a700061.html

There are many benefits to following the cloud computing model:

- Service levels are dramatically improved as Cloud Computing is closely associated with the “Quality as a Service” concepts of service providers.
- Organizations can reduce their operational costs by utilizing cloud computing without investing in hardware.
- IT administration is dramatically reduced since hardware and software are outsourced.
- Due to the pooling effect of the Cloud, general energy costs are reduced by about 30%.
- It provides increased mobility so users can work from anywhere in the world.
- More data can be stored and the system is as fast as the user needs because of the scalable nature of Cloud Computing.
- Organizations can share and access their resources remotely.

These are just some of the common benefits that companies receive by utilizing Cloud Computing.

Today Cloud Computing is used by many private and government organizations. It is a concept that is spreading quickly across all industries; whether they are consultant services, energy & power, telecom, finance & banking companies or any other service provider. Companies using Cloud Computing are able to minimize their costs and drastically increase productivity.

Until now Cloud Computing has never been released at an Enterprise level within the printing industry, but K+N was able to quickly implement the change and reap its benefits.

K+N have experienced the described “JDF Cloud network” and believe it is a vision of the printing industry’s JDF automated future. They are a pioneer in Cloud Computing for the print industry and believe that this technology will be the next big step for automated printers looking to reduce costs and increase productivity.