2009 First Place Winner
CIP4 International Print Production Innovation Award for
Biggest improvement in quality production & customer responsiveness as a result of process automation

C. Maurer Druck und Verlag GmbH
Executive Summary:

The subject of the described JDF project is print buyer integration with the aim of improving quality and customer service. The objective is to ensure Service Level Agreements in the automotive industry for providing printed instruction manuals that have to be delivered just-in-time to the production belt. No car can leave the factory without an instruction manual, so it is of the utmost importance that the product is delivered on time, and at the highest quality.

C. Maurer is a commercial printer that currently employs 100 print professionals. The HIFLEX MIS system is used throughout the operation, while prepress and press departments contain Heidelberg equipment, totaling to 26 color units in formats 72 x 102 cm and 75 x 105 cm (XL).

‘Star Publishing’ is the global print buying agency for a leading car company from which several hundred orders are placed per year. The Car Company in question belongs to one of the largest corporations in the world and the car segment alone generates a yearly turnover of more than 50 billion Euros. Its cars stand for leading technology, top-quality interior, comfort, luxury and elegance.

The printed products within the car must match the level of quality of the car itself, so as not to diminish the car’s branded image. In order to accomplish this level of quality, Star Publishing manages the print jobs and ensures compliance of the Service Level Agreements.

The final car assembly for this company requires an operating Supply Chain Management System that is synchronized with perfect timing. JDF technology was viewed by both the auto manufacturer and Star Publishing as a means to increase visibility, reliability and the quality of processes. By utilizing automation these companies would be able to reduce unit costs without compromising the “Made in Germany” quality or branding.

JDF is used in the communication between Star Publishing and C. Maurer, as well as for C. Maurer’s own internal process workflow controls. HIFLEX MIS is JDF-connected with Heidelberg’s Prepress which is, in turn, PPF-linked to the presses (effectively forwarding HIFLEX’s initial JDF data in PPF format).

*Star Publishing’s states that their internal quality gates are 100% reliable. By means of JDF they make sure that information stays reliable up until it reaches the press.*
The implementation of the JDF workflow results in advantages for all involved partners:

- With the JDF link to Star Publishing, **C. Maurer** is now more closely integrated into the supply chain management of the premium class automobile company. This has a very important effect on customer retention. And through the JDF workflow, the process costs for Star Publishing’s order processing are decreased by approximately 20%.

- For **Star Publishing** the JDF workflow allows a perfect communication and assures significant time and cost savings that they state equals 30%. Additionally job tracking is better since C. Maurer’s customer responsiveness has increased.

- The **premium class automobile company** has better control and security of its supply chain management and the print jobs handled therein. The realization of shorter door-to-door times has become more and more important, a development that still continues and that can only be met with print industry standards like JDF.

Section I. Background — Please provide a description of the subject workflow environment and conditions prior to implementation:

The family run company C. Maurer was founded 150 years ago in Geislingen, Germany. Already in its 5th generation, Carl Otto Maurer has substantially grown his business and created a modern media company.

C. Maurer is one of the most successful medium-sized media companies in southern Germany, employing approximately 100 highly motivated individuals. They are ISO certified and print products at the highest quality standards for both the automotive and pharmaceutical industries. Production is completed on four Heidelberg offset presses: 72 x 102 cm and 75 x 105 cm (XL) with a total of 26 color units, plus three digital print systems (from Canon and Hewlett Packard). The post press department contains two Polar cutting machines, five Stahl folding machines and one Heidelberg saddlestitcher.
C. Maurer’s product portfolio includes catalogues, brochures, books, manuals, posters and annual reports. They offer services such as design, typesetting, distribution and packaging, as well as cross media services, consulting, database publishing and database programming. In digital printing, C. Maurer provides short-run (up to 600 copies), variable data printing and printing on demand.

C. Maurer is involved in the climate initiative of the German Printing and Media Association, whose goal is to decrease CO₂ emissions. So far, the company has renovated its roof and facade with an effective thermal insulation and has initiated a number of other approaches to power saving.

In this application the workflow with a key account customer is described. This key account customer is ‘Star Publishing’, a global publishing agency.

**STAR PUBLISHING**

*With the management model “House of Media,” Star Publishing successfully rises to the challenge of the growing demands of its customers in modern media production.*

*This concept covers all areas, from idea development to distribution. All processes are optimized, separated in particular floors, and then described and visualized. Each floor contains a workflow process that is controlled via web-based software solutions. Existing and new systems can be combined, where quality management is improved and partners are fully trained with this new concept. This sets “an extended benchmark”, saving significant amounts of time and money.*

*Web link: www.star-publishing.com*

Star Publishing’s core business is the consultancy, management and production of all media publications, advertising material, POS material and multimedia, for businesses operating nationally and internationally.

Production technologies are changing much more rapidly than they did ten years ago. The demands of different languages, target audiences, in addition to new international safety and environmental standards, are just some of the requirements that must be met. These requirements are becoming much more sophisticated and extensive. Simultaneously, time and cost pressure is increasing. As an experienced partner in the field of media production, Star Publishing optimizes the production process and reduces costs and error rates. They ensure optimal
compatibility of existing systems, improvements in quality management procedures and the training of service partners.

Using a web-based portal and management solutions developed specifically for media production, Star Publishing facilitates the coordination and monitoring of every stage in the process, from the first draft to the final delivery. Of particular interest to international companies is the fact that participants throughout the entire process chain can be coordinated, making Star Publishing the premier partner for global publishing.

SITUATION PRIOR TO JDF IMPLEMENTATION

The situation at C. Maurer prior to the implementation can be characterized as the typical workflow of commercial printers who don’t utilize JDF. All orders were placed via fax or email and printing data was provided by means of FTP data transfer. A paper printout of the job was forwarded to the CTP department and then on to the press room as soon as the job was ready for print. Customer and product data had to be re-typed into the appropriate production systems (Prinect Prepress Manager (former Printready) and Prinect Press Center for presses). All internal production was organized by a paper-printed job ticket, which resulted in manual order creation inside the prepress and press departments. More than 4,000 jobs were handled in this way each year.

Situation regarding the customer Star Publishing

C. Maurer manually prepared several hundred jobs per year for their key account, Star Publishing. Job information was entered by hand several times into different production systems throughout the C. Maurer Company (Heidelberg Prinect Prepress Manager Prepress and Prinect Press Center for presses). This data was received via email or fax and often resulted in time consuming and error prone data processing.

The feedback of production status was awkward and more difficult in the paper-based workflow. Job specifications could have easily been mistyped in one of the many MIS or production systems. The variety of orders received from Star Publishing was constantly increasing each year, while time-to-delivery was steadily decreasing. C. Maurer required a workflow that provided automated communication processes without errors or loss of time.

Media production has to respond to the global markets as well as the shorter product life cycles. In this respect, it is essential to optimize the entire chain of production and the accompanying communication processes. Standardized print products, such as the instruction manuals produced, have to be manufactured on short notice for ad-hoc delivery. The classical processing workflow had reached its performance limits in the C. Maurer print company.

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:

The objective of the JDF implementation lies in the supply chain workflow that was initiated by the well-known, German premium class automobile company. In order to keep the Car Company as a customer, their requirements had to be met. The described JDF project was initiated to comply with their stipulations.
The Car Company in question belongs to one of the largest corporations in the world. It generates a yearly turnover of more than 50 billion Euros in the car segment alone. Their brand stands for leading technology, top-quality interior, comfort, luxury and elegance. The quality level provided in the produced cars must be represented by all of its suppliers as well, in order to maintain the Car Company’s overall image.

A perfect operating Supply Chain Management is required for the final car assembly. In order to avoid high inventory levels, all necessary components have to be delivered just-in-time to the production line. The demand for the respective logistics is tremendous as missing parts would result in production standstill. **Without the manual that is printed at C. Maurer, the Car Company is missing an essential piece of their product and car delivery becomes impossible.**

Based on the huge variety of car models and their periodically updated instruction manuals, more than 6,000 various publications are produced each year. Fewer copies are needed for every manual printed, but there is an increase in the number of total print jobs. In order to handle print media, the Car Company requires a media agency to manage and produce all of their publications.

The Car Company only deals with Star Publishing and has worked out a Service Level Agreement (SLA) with them. It records a common understanding about services, priorities, responsibilities, guarantees and warranties. The SLA specifies the levels of availability, serviceability, performance, operation, billing, or other attributes of the service. For example, the SLA between the Car Company and Star Publishing defines the product delivery terms: four days after order placement for digital jobs and ten days after order placement for offset jobs.

It is Star Publishing’s mission to ensure the adherence of the SLA towards contracted printing houses, like C. Maurer, and to train service partners in a continuous effort to improve their overall workflow process. Both the Car Company and Star Publishing perceived JDF technology as a means to increase visibility, reliability and quality of processes. A more effective workflow was essential to push automation and achieve competitive pricing without compromising the quality of their printed product.

C. Maurer has implemented JDF because it is the best way to reduce their costs while maintaining their “Made in Germany” branded quality. Human error and door-to-door time are also sufficiently reduced due to JDF integration. There is no better alternative for the level of workflow efficiencies and cost savings that C. Maurer required.
In summary C. Maurer had the following objectives:
  - Improve quality and customer service
  - More accurate feedback from production
  - Decreased production time
  - Reduced errors in customer communications
  - Improved quality in order processing
  - Reduced risk of errors in production
  - Retain the “Made in Germany” quality to remain competitive

Section III. Methodology — Please provide a description of the process of selecting a solution, including alternatives and deciding factors:

The customer-supplier relationship between C. Maurer, Star Publishing, and the Premium Class Automobile Company has existed for many years. The process of quality assurance has gradually increased and balanced as the relationship between these companies has developed.

C. Maurer implemented HIFLEX MIS in July 2003. This MIS was selected over competing vendor’s products because HIFLEX was the most experienced company when it came to JDF technology. They had already completed several real-life JDF implementations, which included integration into the prepress and press departments of multiple companies. HIFLEX promised high-end JDF technology as well as a professional approach to the networking project.

The need to automate communication processes became more and more important, and it was a logical choice to bring HIFLEX, Heidelberg, and Star Publishing together. The benefits and efficiencies created by the partnerships between these companies have been so positive that a change has never even been considered.

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:

1. Implementation of the Hiflex MIS

Implementation of the HIFLEX MIS started in July 2003. The first modules to be configured were HIFLEX Estimate and HIFLEX Order Book. These sections of the HIFLEX MIS include job costing, invoicing, and document management. After those modules were successfully added, HIFLEX Scheduling and HIFLEX Material Management were configured and put into operation.

2. Implementation of the JDF interface between Hiflex and Prinect Prepress Manager

Implementation of the JDF interface between HIFLEX and Heidelberg Prepress was completed in July 2008. Imposition layouts are prepared in the process of pre-estimation in HIFLEX, which sends full JDF stripping data to Prinect Prepress Manager.
For example the following data out of HIFLEX’ JDF is processed by Prinect Prepress Manager: customer name, customer number, contact person, phone number, customer address, job title, print run, delivery date, product type, product format, number of pages, name of colors, sheet dimensions, JDF fold type, paper type and weight.

3. Improvement of the CIP3 interface between Prinect Prepress Manager and DataControl (presses)

The printing presses at C. Maurer have been receiving CIP3 color profiles for ink key settings for years already. With the implementation of the JDF interface between Hiflex and Prinect Prepress Manager the data available in Prinect Prepress Manager prepress has been much improved. When data still had to be manually keyed into Prinect Prepress Manager, the quality of the data was quite poor. Only head data was provided (e.g. customer names were abbreviated or wrong because the name of the final customer was provided instead of the agency’s). CIP3 data from the Prinect Prepress Manager are online transferred from the Prinect Prepress Manager through the Prinect Prepress Interface to Prinect Press Center (Prinect CP2000 Center). So since the Hiflex- Prinect Prepress Manager JDF interface was in place, (July 2008) the data sent to the presses was greatly improved.

4. Implementation of the JDF interface between Hiflex and Star Publishing’s Sprint

The implementation of JDF data exchange between Star Publishing’s Sprint and C. Maurer’s Hiflex started in September 2008. It required configuration and testing at Star Publishing as well as Hiflex. Currently the JDF is send via FTP but transfer will be changed to https protocol. The JDF file currently contains job name, customer and contact data, delivery date and time, quantity,
definition of product parts, final size, color separations, paper and path to layout data that has already been uploaded.

5. Plans for the future

The further development into a bidirectional workflow based on PrintTalk is the next step to make the whole process more transparent. Bidirectional means, that not only a JDF with job information will be committed, but a permanent feedback on the business workflow. This information will be converted into Star Publishing’s web-based workflow system. Another important step will be the export and archiving of color measurement protocols registered in production which will permit a faster error analysis in case of quality complaints.

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.

Three parties are involved in the workflow that resulted from this JDF implementation: the print company C. Maurer, the advertising agency Star Publishing and a premium class automobile company as the customer.
The final workflow is based on JDF, whereas JDF is used in the inter-company communication between Star Publishing and C. Maurer as well as in the internal process steering within C. Maurer: Hiflex MIS is JDF-connected with Heidelberg’s Prepress and the prepress is PPF-linked to the presses (in effect forwarding Hiflex’s initial JDF data in PPF format).

Bidirectional Workflow
1. Inquiry
2. Quote
3. Order
4. Order confirmation
5. Status feedback
6. Delivery
7. Payroll
8. Final report (Quality feedback)
a) Each vehicle that the Car Company produces must leave the factory with a detailed manual. Print data is defined by the Car Company, but inquiries and quotes for the respective print jobs are not required because all prices are fixed in the SLA.

Star Publishing provides the technical communication between its own company and the Car Company through a web-based system developed on dot.net.

This workflow system collects data from the customer and automatically saves it in their media database. Integrated preflight software checks the incoming files to verify that they are faultless and print-ready. The workflow suite also includes media asset management, purchasing, quality control and registration on arrival of delivered goods, as well as supply chain management for just-in-time delivery to the assembly hall.

One module to be highlighted in the JDF workflow of Star Publishing is called “Sprint.” If the preflight check is successful, all data is approved for print production in the Sprint system.

Workflow system “Sprint” shows all publications and all operations of the involved parties in a general survey.
b) “Sprint organizes the print layout data into an integrated media asset management system. Specifications of the print job like number of copies, page size and colors used are created in the “Sprint Planning and Procurement Module”. After print approval, data transfer is initiated and sent into C. Maurer’s prepress server.

At order placement, Star Publishing sends a JDF file via FTP to a hot folder on Maurer’s server. The JDF file contains the path of the already transferred print layout data, the job title, print run, price, delivery date and time, purchase order number, product group as well as delivery addresses with their respective quantities.

The responsible employee receives an automatic email notification about the new JDF file. As soon as he presses the “JDF Import” button for this new job in HIFLEX, all relevant data is transferred from the JDF file into the HIFLEX Order Book.

Screenshot of Hiflex Order Book showing the JDF import functionality. Click on the button “JDF Import” and the red framed areas are automatically filled.
In the Hiflex Order Book internal data, which is not sent, can be added. Most important in that respect is the connection between a valid production plan (estimate). It contains sheet layouts and JDF fold type information to be passed on the Prinect Prepress Manager as well as press and finishing operations. Because it’s only Maurer’s decision which equipment will be used for the production this information cannot be included in the JDF file from Star Publishing. But Maurer’s decision is supported by information from the JDF file. Based on the product data from the JDF and the parameters of the machines, HIFLEX MIS automatically generates an estimate simultaneously to the JDF import for the relevant order.

Once the internal production plan has been added and the order is saved, relevant JDF job data is forwarded to Heidelberg’s Prinect Prepress Manager prepress system.

c) Prinect Prepress Manager has all order and customer related information for processing the job and also receives the path to layout print data within the Hiflex JDF file. Data processed via JDF includes customer name, customer number, contact person, phone number, customer address, job title, print run, delivery date, product type, product format, number of pages, name of colors, sheet dimensions, JDF fold type, paper type and weight.

d) Prinect Prepress Manager forwards CIP3 job data and color profiles to scheduled printing press. Due to the JDF networking a lot of data that was previously not entered is now available in Prinect Prepress Manager. The data transfer is automated, therefore correct and extensive. Prinect Prepress Manager makes the very same data available for the presses via PPF format.

e) All shop floor operations are reported to the Hiflex MIS using the shop floor data collection system. This allows up-to-the-minute feedback on production status also for not JDF compliant equipment. This is the basis for further PrintTalk business workflow communication between Hiflex MIS and Star Publishing.
Section VI. Improvement in Quality and Customer Service

- Improvement in Quality and Customer Service — Please provide quantitative evidence of improvements in product quality, production feedback and analysis, and quality control as well as data and/or testimonials providing evidence of improved customer service, which may include improved delivery times, fewer errors in production or communications, better customer communications and production reporting and so forth.

“I do not agree”, states Carl Otto Maurer, CEO of C. Maurer. “I do not agree, that the printing ‘industry’ is often mocked as being too much handcraft instead of industry. We have proven otherwise. The industry that is widely respected as the most process optimized industry is automobile. They have invented belt-production, robot automation, just-in-time delivery and supply chain management. And now, with the help of our industry standard JDF, we have managed to link ourselves into their highly automated supply processes. I ask everyone to acknowledge what we have accomplished in our industry using JDF.”

The implementation of the JDF workflow has resulted in advantages for all involved partners:

- With the JDF link to Star Publishing C. Maurer is now more closely integrated into the supply chain management of the premium class automobile company. This has a very important effect on customer retention. The costs of Star Publishing’s order processing have decreased by approximately 20% because of the new JDF workflow.
- For Star Publishing, the JDF workflow allows perfect communication and results in a significant time and cost savings of approximately 30%. Additionally, job tracking has improved because C. Maurer’s customer responsiveness has increased.
- The premium class automobile company has better control of its supply chain management and the print jobs handled therein. The achievement of shorter door-to-door times is becoming more and more important, and is a development that can only be accomplished with print industry standards like JDF.

Ramona Kaden, CEO of Star Publishing states: “Errors are avoided before the expensive production process begins. Only 100% ready-to-print files and specifications are transmitted to production. By using JDF communication, the sources of errors are almost completely eliminated. This has an effect on: (1.) time: more orders are processed in a shorter time, and lead time is significantly reduced, (2.) visibility: IT systems of different partners are talking to each other, which leads to better job tracking across company borders, (3.) process workflow: everything melds together, and the involved parties are efficiently connected”
Further statements of Star Publishing regarding the JDF workflow are:

(A.) Job preparation and production control towards final customer
Interfaces to content management systems with integrated pre-flight provide various types of data which can be combined for the print layout, and then checked and refined for the JDF workflow. The quality gates that must be passed before JDF data is released help to avoid additional costs in the printing house. Reductions in process costs of up to 30% have been attained.

(B.) Job preparation in the printing house
Through JDF, the job specifications are automatically loaded into the HIFLEX MIS. Reductions in process costs of up to 20% have been attained.

(C.) Quality of processes
Internal quality gates are 100% reliable. By means of JDF, we make sure that they stay reliable while moving from system to system; right up until it is printed on press.

(D.) Product quality
The target is a zero percent error rate. Strategy is an integrated, continuous standardization and industrialization. The use of standards like JDF is extremely important in reaching these goals.

(E.) Quality of Reporting and Controlling
The examination of individual processes results in reliable reporting and the ability to view the quality and costs of those processes. The networking of different partners and their involved IT systems lays the foundation for detailed reporting.