

**Second Place Winner**  
**2007 Jürgen Schönhut Memorial CIPPI Award**  
Most Innovative use of Process Automation Technology in an Imple-  
mentation  
**Daimu Co., Ltd.**

**Testimonial**



Since our establishment in 1968, we have always thrived under the philosophy of “Integration between Sensitivity and Technology”. By always offering the highest-level of quality and technology to customers, we are also committed to maintaining the highest-level of operation and workflow process which is line with the global standard. We believe that by setting the standards, we can take our customers and Daimu to greater heights in the future.

- Kenichi Yasuhira -

## Detailed Application Information

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

### Company Profile

Daimu was established in 1968 started off its business as an pre-press company, located in the city of Osaka. Over the years, our services have expanded from pre-press to press to special scanning and data management. Our pre-press equipments includes Screen's Ritecontrol ver 2.01 ("Pre-press manager) and Trueflow 3 ver 4.01 (fully automated prepress production workflow) which was implemented in late 2006 and our offset presses have been renewed and are now equipped with Komori's LITHRONE S40 (4-color) since 2006 and a Komori LITHRONE S40 (7color with varnish) since 2007. Two sets of 8 pages CTP (PT-R8800II and PT-R8000) are working well with Trueflow workflow and plates from CTP, which are provided to the Komori Press. Both Komori presses are equipped with Komori K-Station, while together with Screen's Ritecontrol and Trueflow 3; all equipments are connected to the Olive PrintSapiens MIS via JDF / JMF.

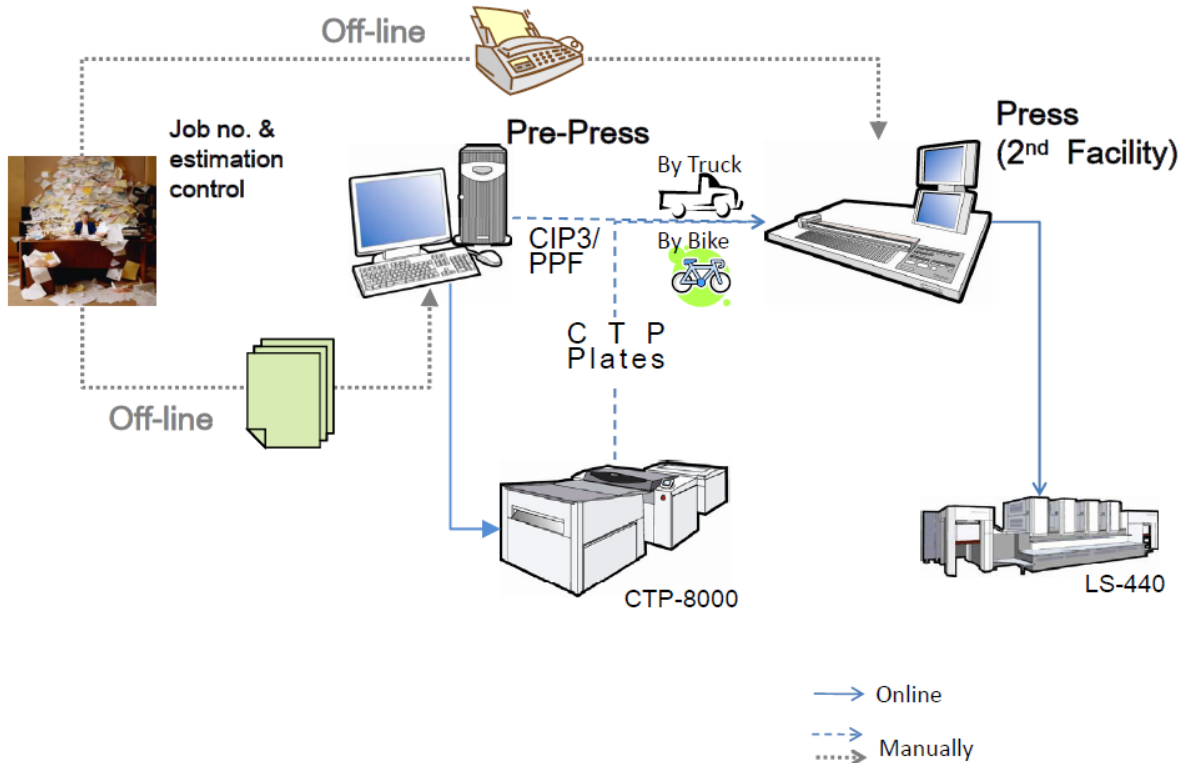
Currently, Daimu has grown to a workforce of 35 employees, with the majority of our business concentrated in central Osaka and the greater Kansai-area. We also have a subsidiary printing company in Thailand which was established in 1989 with the range of service covering pre-press, press and post-press. In the coming years, we hope to have a consolidated management system between Japan and Thailand, and implement JDF.



### Workflow prior to JDF Implementation

Until the end of 2006, Daimu's operations were facilitated at 2 separate locations which were located 1km apart. The HQ building facilitated the back-office and the pre-press department, while the 2<sup>nd</sup> facility housed the printing press and the delivery center. The pre-JDF workflow consisted mostly of manual labor and delivering and receiving information between the 2 facilities by truck or bicycle. This process had been going on for about 5 years, but as we increased our line of business, we realized that a change in our daily operation needed to take place.

**Workflow before JDF Implementation**



**Workflow prior to JDF was as follows;**

- After receiving an order from customers, the sales staff would input the job, estimation and pre-press management data into a stand-alone database and would retrieve a job number. They would then fill the information on a five page carbon copy production order sheet and pass it to the Business Administration Department for checking. They would then record the information into the production management database. Each of the single sheets is eventually distributed to all related departments.
- The job information was then given to a pre-press staff by hand, while the information to the press department was faxed, since the printing press was located at a different facility.
- Since pre-press and press also had individual production management sheets, received information was again manually entered into the respective management database. In addition, due to a non-networked environment, the CTP and PPF files had to be sent to the press by truck or bicycle to the printing press facility.
- Once the job information has been received at the press department, a production control sheet for press staff is prepared, while the ink-key preset data is manually converted.



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- After completion of the press, production information is recorded into the production management database. This information is processed into a report and is sent back to the Business Administration Dept for a management report.

### Issues prior to implementation of JDF:

#### Hand-written order sheets

- Since the order sheets were hand-written by different individuals, writing style preferences and amount of received information varied, resulting in poor quality of database. The database's main purpose was to distribute job tickets. In addition, the database did not have any connectivity to the accounting software. Although a small amount, we were able to save close to USD 1,500 through the elimination of the carbon-copy order sheets when JDF was implemented.

#### Separate workflow management data

- Separate workflow management sheets existed for pre-press (Domestic stand-alone software) and for press (Microsoft Excel). These management sheets had no connectivity, and hence the information had to be entered manually again.

#### No network connection

- Not having a connected network between the 2 facilities was an issue from a workflow aspect, since CTP plates and CIP3 files had to be hand-carried which resulted in time-consuming runs between the 2 facilities and miscommunication between staff.

#### Not knowing current status of jobs

- HQ staffs were not able to acknowledge the progress of the running press, while progress reports were entered into a separate management data sheet only at the printing facility.

#### No sufficient management reporting

- Logs of completed jobs were entered into the database; however they were not given to management at an up-to-date basis. This had lead to issues and delays in cost management and sales/customer information.



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**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:

We have envisioned in digitalizing our method of production and workflow for the past 20 years, and currently we are proud to say that our initial goal has been achieved. However, until 2 years ago we did not have any of our workflow as “digital” nor did we have a networked environment. By offering pre-press updated digital technology, we have created a steady customer base of print shops to advertising agencies through the years. While we have always committed to achieving a high –level of customer satisfaction, the communication and passing of data (original copy or press proof data) between the sales staff and customer, procurement officer and ordering staff, process/schedule planner, pre-press and press department was all getting complicated and cumbersome since exchange of information was done verbally, by hand-delivering order sheet or by fax. This situation prevented us from having a streamlined workflow, while we were not able to adequately grasp the cost figures and other general indicators. As a result, we were not able to improve customer satisfaction and were getting ourselves into an undesirable circle.

In order to break-out from this state, we decided to implement an MIS which would optimize our overall operations and pave the way for a reform. During our analysis, we found that the printing in Japan (including our own) has some unique process which is un-common to the rest of the world. However we needed to define a process which would take us in a new direction and have our operations in line with global standards. In order to achieve our final goal of having a CIM environment and reinnovate our business, we believed that JDF was necessary.

Overall goals

- By implementing a JDF workflow, reduce human errors.
- Set color quality standard and process monitoring system
- Report up-to-date sales/job progress and customer information to management
- Control accurate accounting and finance data
- Continue providing the high-quality products to customers.



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

For 5 years, we had been using non-networked, single-platform domestic software which handled only general information. It did not help in getting up to date detailed information which was necessary for managing job status and making quick management decisions. We had to work with separate database and multiple software for all our purpose, and no potential of having it as a connected network.

Although we wanted to quickly move forward in automating the workflow, having all employees to understand this concept and change their working patterns would have some issues and time to adjust. We wanted the new workflow and system to...

- Limit the confusion during the transfer to a new workflow.
- Continue the “good” that came out from the former workflow and eliminate the “bad”.
- Receive up to date information and data for management purposes
- Adapt the style and need of our operations but live up to the global standard of automated workflow.

### **Decision for implementing the necessary systems**

#### MIS

- Through the course of 4 months, we have traveled to many trade shows and received individual presentations from various MIS companies (including non-JDF base MIS software); however most of the software could not satisfy all of the conditions which were required from our company.
- We had already heard of the reputation, high quality and performance of PrintSapiens. After receiving a software demo presentation in March 2005, we knew right away that this would be the perfect fit to our company.

With the vision of implementing a full JDF operated workflow, we began our implementation phase of PrintSapiens MIS from April 2005. During this time, we were still contemplating the strategy of integrating the 2 separate facilities. The move to integrate the facilities was decided in early-2006 therefore we quickly moved to have a full JDF workflow once we started operations after integration.

#### Pre-press

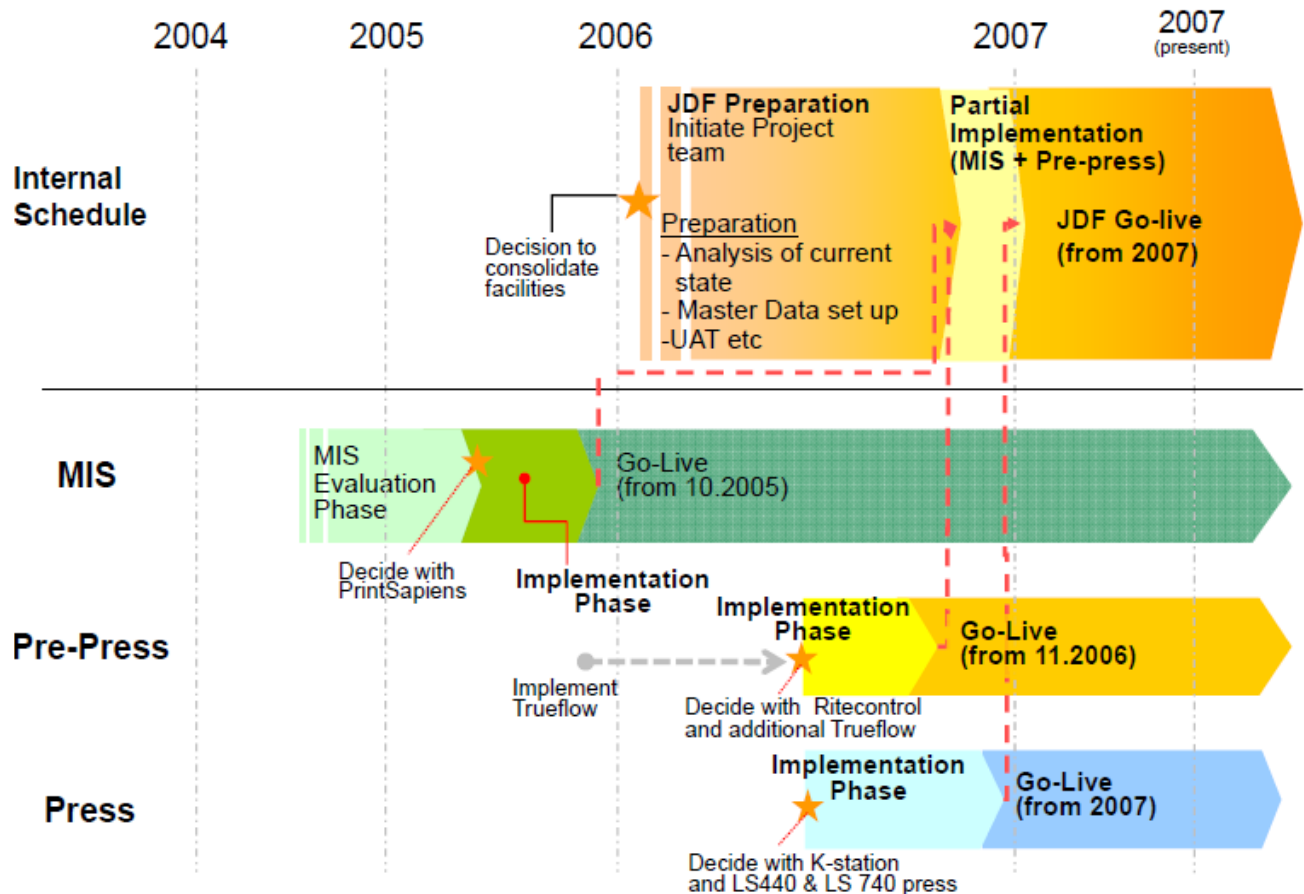
Ever since we started the pre-press business, we had been using SCREEN products and software. Our staff has always been satisfied and did not want any changes to the current stress-free operations. We had already installed the first Trueflow in late 2005 and when we decided to implement JDF, we added a second Trueflow3 (ver 4.01) with the Ritecontrol (ver 2.01) system. This has been in operation since Nov. 2006 and had initial compatibility with PrintSapiens.

#### Press

In 2004, we installed a 4-color LITHRONE S40 (LS-440) printing press for our production. However, with the integration of the facilities, we decided to go with two presses which were initial LS-440 and new 7-color LITHRONE S40 (LS-740). At the same time, since we wanted both presses to have the same quality and standards for printing, we decided to replace the initial LS-440 with an updated model which would also be compatible with JDF. In order to have a networked JDF environment for the Komori presses, we implemented the K-station software.

**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:

### JDF Implementation Overall Schedule



#### 1. Implementation of PrintSapiens MIS

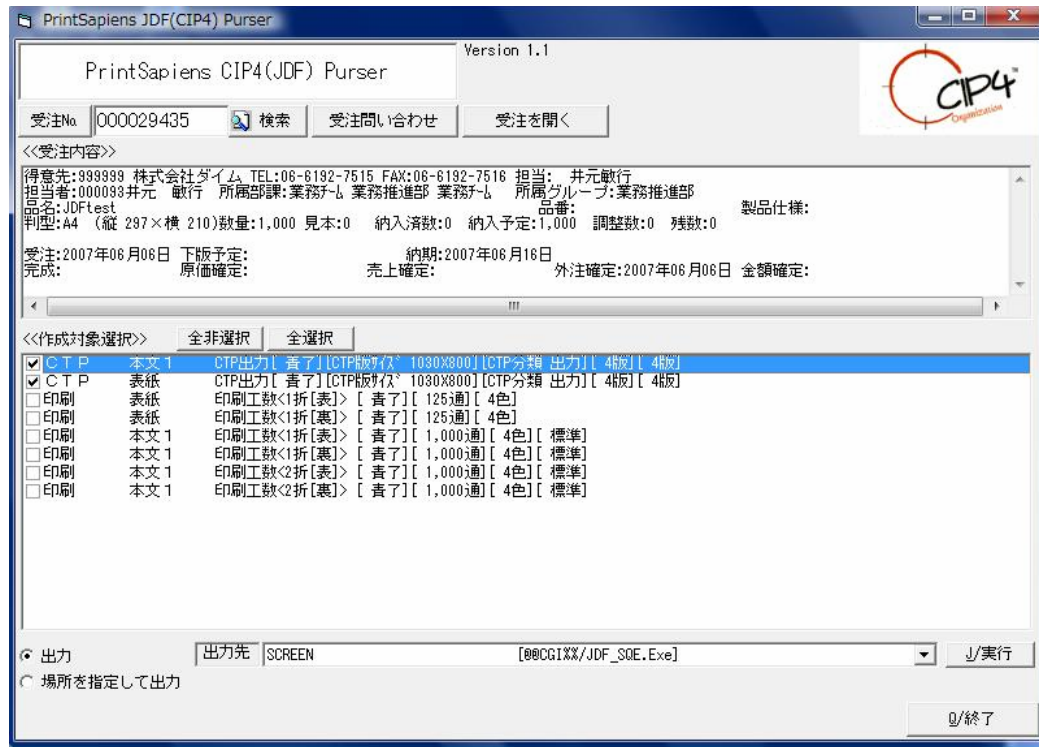
**Started: April, 2005**

Once we decided to implement the MIS, we quickly worked with Olive to start the process, since this process could get started even if everything else (Pre-press, Press) was not in place. The implementation project started in May with the initial phase of data collection and discussing formulas for estimations and received orders. We then focused on sales, billing, orders and account payables. The user acceptance test and collecting production related data was performed simultaneously.

Since our business started off in pre-press, we take special measures and have set standards for printing at the highest quality. Therefore, for the majority of orders we receive, we have numerous counts of press proof in our workflow (as it is common in many Japanese printers). Up until this point, we had a manual procedure of logging the press proof on a control sheet and calculating estimations. We asked Olive to come up with a solution on how to better manage the countless press proofs (estimation and job-orders).

Olive had a system where the numerous press proofs could be determined as “1 estimation and 1 job” and have it linked to the original job, making it easier to manage costs and operation.

With this key function intact, the MIS system was in full operation from October 2005.



Creating job on PrintSapiens

## 2. Implementation of SCREEN Prepress and JDF connectivity

**Start: February 2007**

**JDF-Specification Version 1.2, Communication method: HTTP,  
SCREEN :Trueflow3 (v.4.01) with Ritecontrol ver2.01,Olive PrintSapiens**

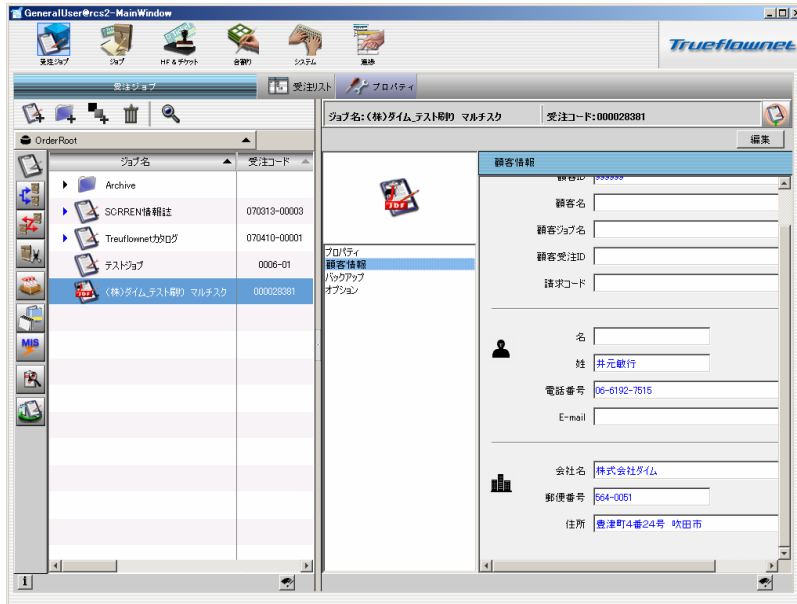
The job created by PrintSapiens is received by Ritecontrol (via JDF) and processes the job for Trueflow automatically. PrintSapiens transmits much information (order number, order description, customer name and address, contact person, etc.) and technical data (job parts such as cover/content, production plan, number of pages, inks, etc.) with actual screen shown in screens 1 and 2. The “Job Create” task also includes the correct assignment of the prepress job in: Trueflow3 with Ritecontrol ver2.0 to the customer order number in the MIS. PrintSapiens monitors the prepress operations provided by: Trueflow3 with Ritecontrol ver2.0

Actual data from Trueflow (number of outputted plates, sheets used for proof, production time etc) is fed back to the MIS once the job is finished.

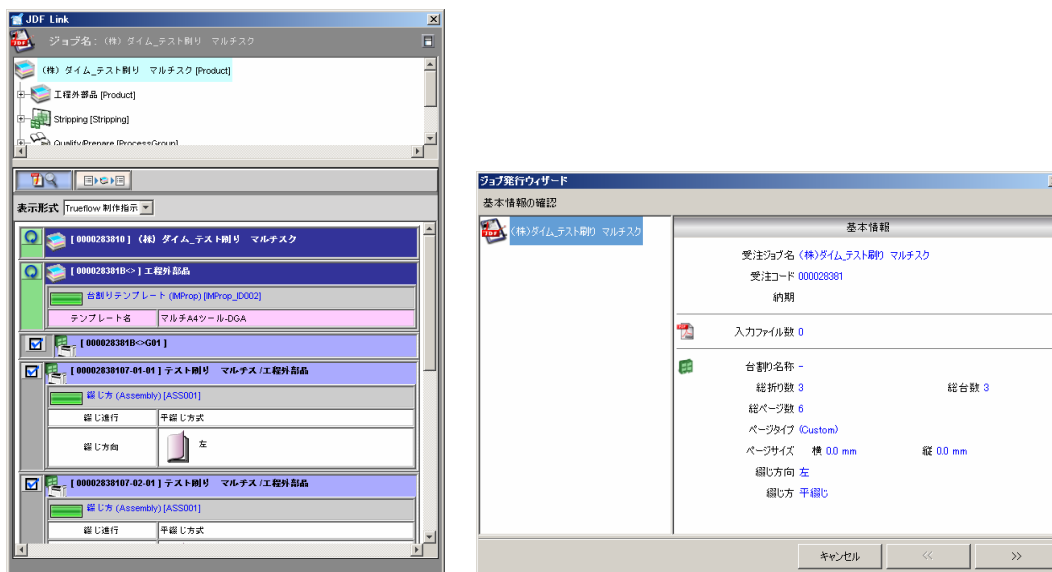
JDF is exported from the MIS to Ritecontrol and creates a new job for the release of final plates. This will be the same procedure as in the revised proof workflow. Usually for repeated press proofs, it inherits the

parts where there is a need for revision from the initial press proofs. Therefore performing press proof jobs with a completely new number may be a cause of accidents.

Together with Screen, we have just implemented an automated process for press proofing where multiple press proofs can be acknowledged as 1 job. This function was very important to us since most of our work requires press proof while it is a common operation in the Japanese printing workflow. In addition, we are also working on a function to easily conduct partial amendments and reproduce repeat jobs



Screen 1: JDF coming from PrintSapiens to Ritecontrol and creating job



Screen 2: Display of Job Ticket and transforming job from PrintSapiens to Trueflow

### 3. Implementation of K-Station, Komori Press and JDF connectivity

**Start: January 2007**

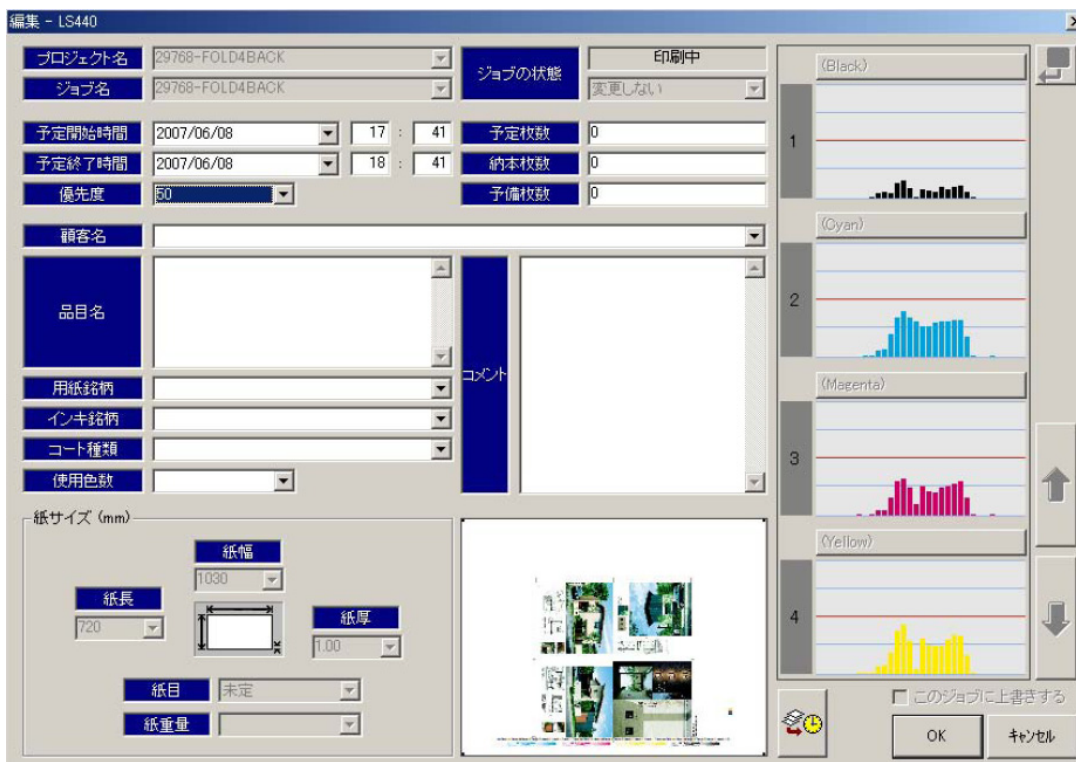
Implementation of the JDF (version 1.2) connectivity between the MIS and the K-Station (version 2.12B) system for the Komori presses. An automatic 'Job Create' is performed in K-Station. The K-Station's control systems receive job information (e.g. customer name, job number, product description) and relevant printing parameters (format, paper, run length, number of plates and inks) via JDF from the PrintSapiens MIS (which acts as the JDF controller).

Job scheduling is controlled through the Olive PrintSapiens application.

JMF feedback from Komori K-Station is fed into the MIS. Production data such as progress on the job, good sheets and waste, speed, status of the printing press (e.g. idle, set up, production in progress) is automatically transferred into PrintSapiens.

K-Station receives the JMF from Screen Prepress for the assignment of PPF files generated in Screen Trueflow3, and then the PCC converts PPF file automatically. After that, it sends the converted ink profile data to the K-station of the press linked with JDF-created job (from PrintSapiens).

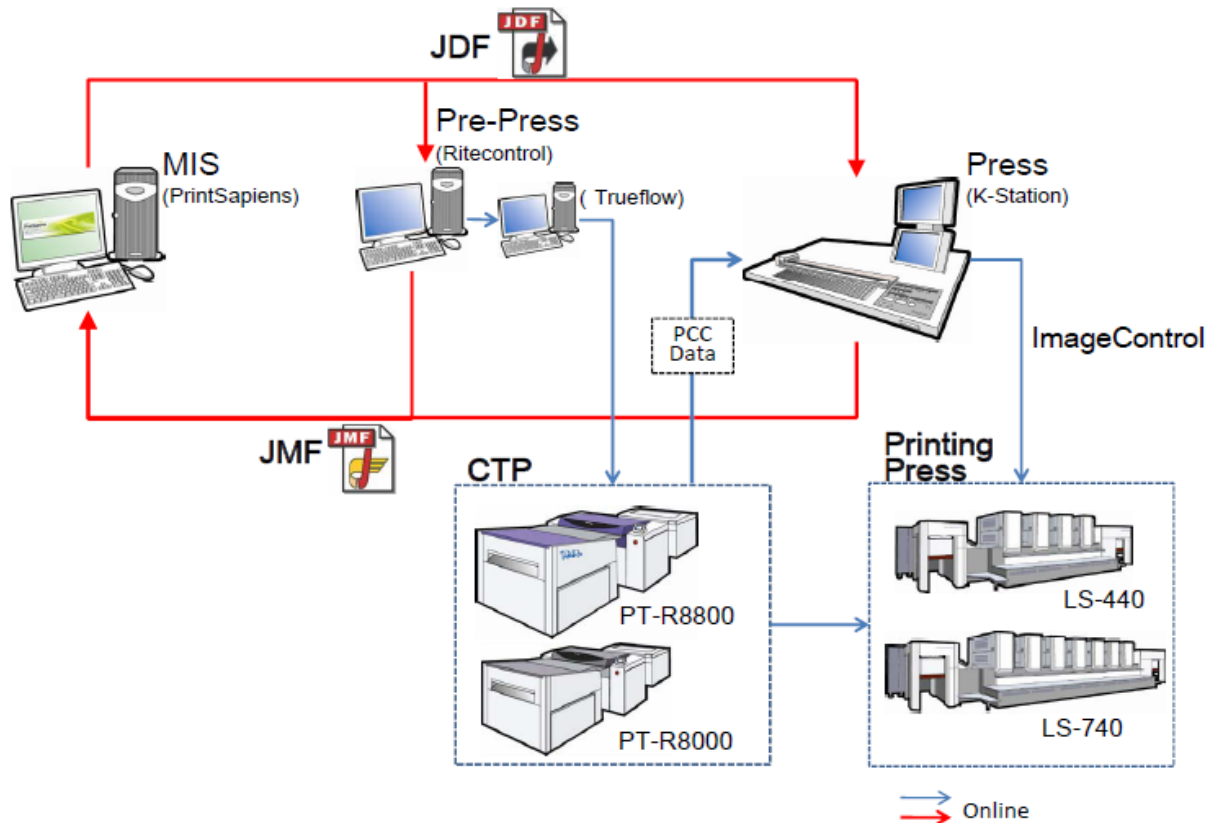
Full utilization of the automated LITHRONE S40 will provide detailed data management of the JDF workflow. A manual command will allocate idle time for the printing press which decreases inefficiency. In order to achieve an advanced type of automation such as CIM, JDF will be a necessary component.



K-station : Data coming from PrintSapiens

**Section V. Resulting Workflow/Processes** — A description of the resulting workflow, including any applicable workflow or process diagrams.

### Workflow after JDF Implementation



With this new workflow the information from our administration system (PrintSapiens MIS) is an integrated system with the pre-press (Ritecontrol) and press (K-Station) systems. The production control and management database at each of the departments has been eliminated and is controlled through the PrintSapiens MIS. The complete process of operation is managed by PrintSapiens which also serves as the JDF controller.

### Workflow after JDF Implementation

- Since sales staff inputs the order information directly into the MIS, the quality of the database has improved since we do not have any struggles with missing information. Also, we have eliminated the 5-page production order sheets; therefore we now have a paperless environment.
- JDF integrations allows for Job information to be sent from PrintSapiens to Ritecontrol and K-Station.
- The networked environment also allows us to convert the CIP3 data, where the only work done by hand is setting the plates to the printing press which has greatly reduced time and manual operation.



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- When job is completed, the press staff would record the production data and now it can be done at a push of a button and we have accurate information.
- The JMF feedback from Ritecontrol is sent to PrintSapiens with data such as job status, and time in which status was changed as well as number of plates used for the job. The JMF feedback from K-station to PrintSapiens includes project name, Job Part ID, production data such as Amount, Waste, Start Time, End Time, Percent Complete, Speed, Operating time, Running time, Switching time, Preparation time and Hourly print production.
- The status and schedule of jobs, printing materials, paper and post-press work outsourced to third parties can all be checked on PrintSapiens. Since all jobs follows the order sheet information created by PrintSapiens, the order information can be automatically consolidated with the job status and actual performance data for easy monitoring.
- Since all other information is automatically fed back to the MIS, management can have real time job status and performance

**Section VI. Details for most innovative use of process automation technology in an implementation** — 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:

### Benefit 1: Integration of the 2 Facilities

While JDF has made a big impact in our daily workflow, the integration of the 2 facilities also made a huge difference in our operational and communications effort. Due to the separate facilities, employees only had contact when it was only considered necessary and gatherings were held once every 2 months. The integration has made the communications between employees livelier and has shown improvements in the quality of work produced.

### Benefit 2: Less Human Error

- With the JDF starting from the MIS, there is no need for the job to be created on Trueflow and allows us to eliminate the risk of writing down a different numbered Job ID. One of the reasons we have incorporated JDF was to have the process as automated as possible and reduce mishaps due to human errors. We are now able to centrally manage jobs and data with the job ID eliminating the need to double-check the proper job ID. In addition, management of job status on one database allows our staff to monitor job status more easily and efficiently. The amount of time necessary to prepare and confirm jobs at prepress has been minimized dramatically.

### Benefit 3: Easier Press Proof Process

- As mentioned previously, we started our business as a pre-press company and a large number of jobs require us to conduct press proof. We are repeatedly required to perform the task of “CTP output to Print (color proof)” for proof reading process between job entry and print. In JDF, the job is categorized as “completed” after the processed film forwarded to the plate making. However, when we are required to enter revised proofs, a new job is created in Trueflow which would raise the fear of duplicating job entry and other accidents.



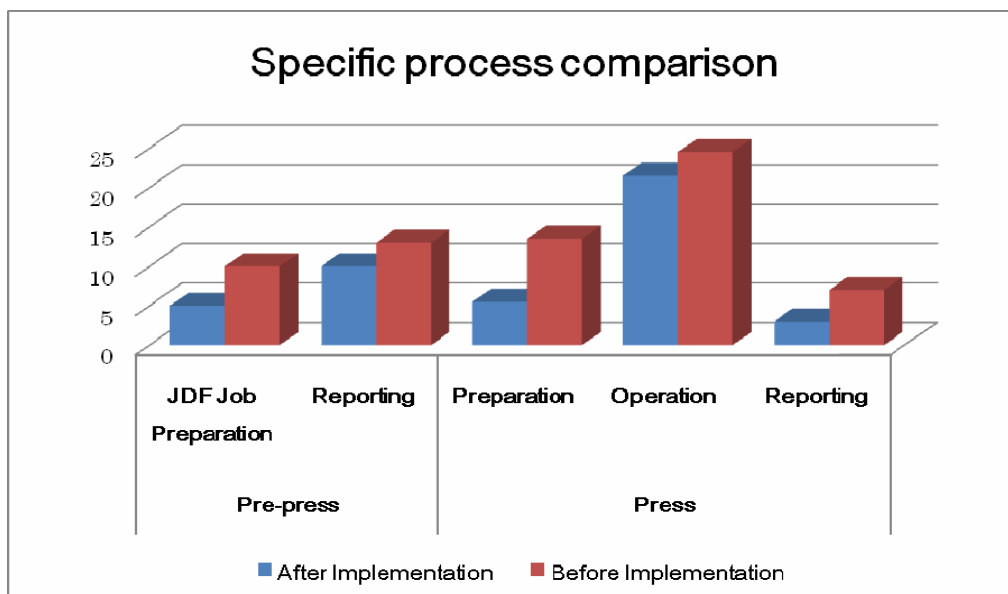
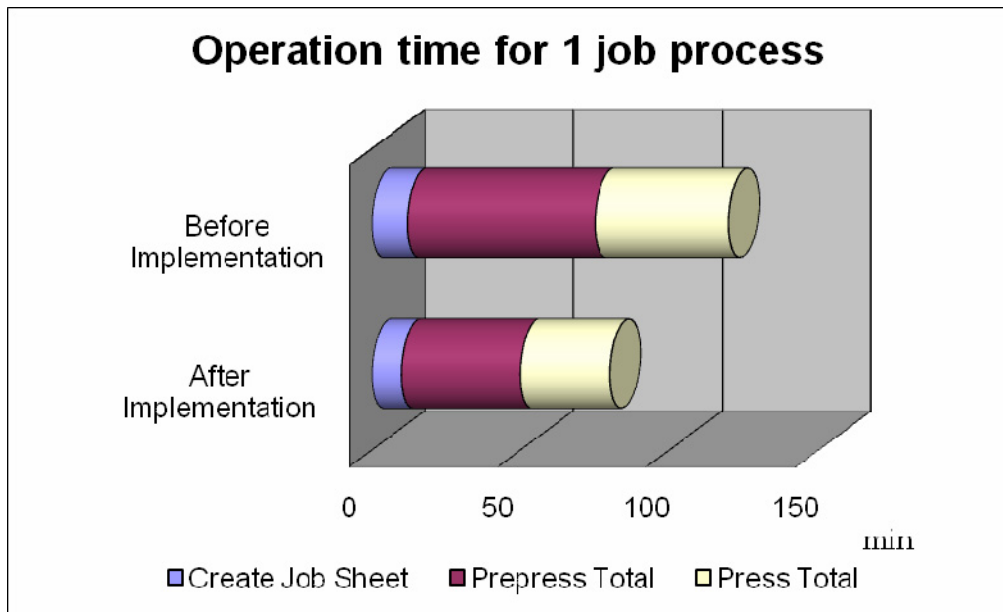
In addition, press proof needed to be identified as a job and managed as 1 job in the press run. With each of the vendors, we held intensive discussions on the topic of improving the “JDF workflow for Daimu”. The core components of the solutions we received from Olive, Screen and Komori were combined which produced a solutions of operating 2 or multiple jobs (recurring revised proofs) as 1 job. As press proof is a common practice in Japan, we feel that this unique solution will have a significant impact to the way we and other domestic printers perform business in the future. We feel that benefits identified in the Japanese markets will contribute to the development of JDF specifications.

### Benefit 4: Operation Improvements

- When we started commercial printing at our business, we came across many issues such as sending

CTP and PPF files since the HQ and printing press were at separate facilities. With the decision to implement JDF and integrate the two facilities, many of the issues were resolved. Having an automated process for sending PPF also helped reduce manual labor, human error and improve operation communications between employees.

- We encounter more press proof workflow than regular commercial jobs. In such cases, after the implementation of the JDF workflow and related equipment replacement, effect for shortening of each job such as "Job sheet check", "PPF data conversion", Automatic plate change", and "Result report" were very significant. Efficiency was increased 33 % with the mentioned improvements while in specific process in pre-press and press, a significant decrease in operation time can be confirmed (see chart below).



- In addition, improvement of "Result report" has dramatically improved, while previously this task required a huge portion of work hours. This was a burden for operators, since printing operation is their main priority and has always felt the pressure to complete printing jobs as soon as possible. However, creating the reports is very important and is required by management. With an updated JDF workflow, such type of report is generated almost automatically. Now operators can use more time for quality control, environmental control and focus on their main jobs.
- Since jobs are automatically generated, staff has become more aware of the production schedule. In addition, while the converted PPF files and jobs are also linked, there is minimal risk of choosing the incorrect job. Also, with the information of paper type coming through, JDF allows to appoint a quality management standard, therefore we can use this as a criteria for the standards.

### Benefit 5: Improvement in Total Production

- The number of processed color proofing jobs has increased. Before implementation, maximum job was 50 per day but now with the start of the JDF workflow additional CTP and printing press configuration has now improved to 200 jobs per day. In the past, the configuration was one set of CTP and printing press. The productivity at that time was 10 plates per hour and 200 plates per day. This means that 50 jobs are capable in the case of 4 color job (working on 20 hours a day). This was not fast enough because press could have a capability to perform 4 or 5 job per hour (or 80 jobs or 100 jobs per day). The current configuration is 2 CTPs and 2 printing presses. The requirement for the productivity is 200 jobs in a day, which calculates to 5 jobs per hour and 800 plates will be necessary to make in a day. We believe that 2 CTP systems will be possible run 40 plates per hour and should be able to achieve the goal of 800 plate and 200 jobs in a day. However most important key for this production and what makes this possible is definitely the automatic JDF workflow process which has reduced mistakes but has added efficiency in operation.
- From the data collected, our calculations shows that the Return On Investment (ROI) of the JDF implementation was 911.2% , while the Net present Value (NPV) of roughly 104.3 Mio JPY ( 0.87 Mio USD (1USD=120 JPY) or 0.65 Mio EUR (1EUR=160 JPY)) which equals an Internal Rate of Return of 320%. (Discount rate calculated at 6%). By comparing the average number of jobs (per month) from the pre-JDF and the JDF implemented LS440 printing press, we saw an increase of 155%.

#### Note:

- The ROI calculation does not include sales and cost figures associated with new CTP and printing press. Calculation is based on existing equipments in which JDF was implemented.
- Due to company policy, detailed sales and cost figures may not be publically disclosed. For further information, please contact us.