HONORABLE MENTION:
 Biggest Improvement in Efficiency and Customer Responsiveness as a Result of Process Automation

Das Druckhaus – Beineke Dickmanns GmbH

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Germany
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GENERAL APPLICATION INFORMATION

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Description of company services/market: Full service provider, offering everything under one roof, absolutely meeting demands for quality and on-schedule delivery

Supporting vendors/JDF-enabled products implemented:
1.) Heidelberg
   - Prinect Printready System 2.1 incl. Remote Access (Prepress Workflow with integrated internet data submission and approval.)
   - Prinect Prepress Interface 3.1 (Software for calculation of ink key presetting
Company Rep: Armin Hespeler
Title: Product Manager Prinect
E-mail: Armin.Hespeler@heidelberg.com
URL: http://www.heidelberg.com

2.) alphagraph team GmbH
   - Prinance 4.5 (Management information system)
   - Web.Connect 2.0 (Customer online portal as part of MIS)
Company Rep: Norbert Hotze, Karsten Thomas
Title: Managing Director
E-mail: info@alphagraph.com
URL: http://www.alphagraph.com
BACKGROUND

FOCUS:
REMOTE ACCESS (PRINECT PRINTREADY SYSTEM)
WEB.CONNECT (PRINANCE)

A description of the subject workflow environment and conditions prior to implementation:

Our concept of “Das Druckhaus” is based on our goal of providing services that are optimally adapted to our customers’ needs in all areas of media production. We aim to be a full service provider, offering our customers everything they need under one roof.

We meet permanently increasing demands for quality and on-schedule delivery with consistent use of state-of-the-art technology, and with motivated staff and round-the-clock operation. In our media company, 53 staff members, including temps, are currently working toward this goal. Our policy of constant innovation and investment is an additional advantage for our customers.

Situation before the introduction of the Prinect Workflow
The printing house supports its customers in the creation of documents and also processes “finished” printing data supplied by the customer (e.g. QuarkXPress files).

Customer involvement in the processes Request for Quote, Job Tracking, Job Approval and Inventory Management
Basically all processes where our customer service reps had to process data just in the sense that they were relaying information to our customers proved to be bottlenecks. Answering the many requests simply made it difficult to focus on consulting with the customer.

For example when we create documents together with our customers, we have to go through more correction cycles, and more proofing steps, than when we are supplied with data that is ready for printing. The individual components of a document – photos, illustrations, texts – must be maintained as open files to enable them to be reused independently of the print job. Customer documents are frequently processed at “Das Druckhaus” before the actual order for printing is placed.
**Workflow before the introduction of Prinect**

Before the Prinect modules and the media database were introduced, Heidelberg Delta Technology was installed as output system for proofs and printing plates. Data carriers supplied by our customers were checked, native files opened, output as hardcopy proof using Delta Technology and then sent by courier to the customer for correction / approval. Due to the restrictions in a ROOM workflow like Delta Technology (page orientation portrait/landscape, no possibility of editing the intermediate format), the pages had to be processed in the RIP several times. Large data volumes were generated whose administration was very time-consuming and likely to produce errors, i.e. much of the work had to be done manually, and we had to approach our customers to get information.

However, this and other programs were just isolated digital applications in a non-integrated workflow, i.e. the systems did not communicate with each other and could not provide the expected performance (information transfer, automation). Eventually, the prepress stage became a bottleneck in the
throughput regarding the processing and tracking of customer data, which led to an unsatisfactory utilization ratio of printing equipment.

**Proofing**
Integrating the customers (inquiries, approval processes) was very time-consuming, as the system did not support these tasks. Consequently, proofing took a lot of time, the proofs were sometimes not available in time – and frequently did not match the subsequent print.
- A digital proof is output for each 4-color job
- 2-color jobs are only output as form proofs
- Both proofs are customer-specific

The PDFs provided by the customer did not have the quality required for printing. For lack of a control system, we had to perform many manual checks to ensure that the PDFs could be used for printing.

Subsequently a lot of time consuming manual checks had to be performed to make sure everything is all right.

**OBJECTIVES**

A description of the printer, publisher or prepress service’s goal and motivation, including any quantities criteria upon which the goals were established:

With the introduction of PDF on a broad basis, we had to be able to check PDF files supplied to us, edit them and use them in the workflow, once they were approved by the customer.

**QUANTITATIVE AND QUALITATIVE GOALS AND MOTIVATION**

**High data security in in-house processes and processes involving the customer**
- Report on the data quality for the customer.
- Customer must be informed of errors in his file
- Ability to assign responsibility for decisions in the approval process to the customer
- Data security in the in-house PDF workflow
- Support of in-house quality assurance (where do errors occur?)
- Reducing errors during data input

**Rationalization**
In the course of the past 4 years, our sales volume at “Das Druckhaus” has doubled, yet the number of prepress staff has remained the same. Since the order structure has also
remained unchanged, this means that the number of orders has increased (doubled); the number of offers has quadrupled.
- Rationalization of sales and sales support (automated cost estimation, system-supported order status information for the customer, administration of products in stock by the customer)
- Rationalization in prepress: Automation is necessary to achieve a higher throughput and be able to process the increased number of orders (100% increase)

**Quality assurance for increased efficiency**
Improving the quality of customer processes, with involvement of the customer
1. Increasing the quality of customer inquiries to facilitate cost estimating for the job (‡ forms in the customer portal force the customers to think about the completeness and correctness of their inquiry)
2. Making approval processes faster and more efficient, while keeping them transparent so that responsibility for decisions is clear

Ensuring and improving the in-house printing quality
1. Introducing an in-house printing standard to ensure that the proof matches the print

**METHODOLOGY**
A description of the process of selecting a solution, including alternatives and deciding factors:

**DECISION CRITERIA FOR THE INTRODUCTION OF AN MIS**

- Price of the MIS
- Degree of networking and networking possibilities in the entire printing house
- Feedback from equipment to the MIS with subsequent evaluation
- Product costing analysis must be possible

The following management information systems were evaluated using these criteria (in 2000):
- Hiflex*
- WinKaar by alphagraph (which has since been renamed Prinance)

* In 2000, Hiflex could not yet accept direct feedback from the printing press, hence we decided on WinKaar by alphagraph (now Prinance), which met all requirements.
DECISION CRITERIA FOR THE PURCHASE OF A NEW WORKFLOW SYSTEM

• Most important factor: Efficient integration of the customer (inquiries, approval) into the workflow without using our own human resources

• High stability/continuity of the system
  - Strategy of the suppliers
  - Long-term security of the investment in the workflow

• Performance of the customer service
  - Fast on-site service

• Interfaces to other systems, open architecture with respect to the MIS, the media database and the equipment in all production areas

• JDF-capable and hence integratable into the workflow

The following workflow management systems were evaluated using these criteria:
• Agfa Apogee
• Fuji
• Kodak Prinergy + InSite
• Complete workflow:
  - Heidelberg Prinect + Prinect Printready
After close examination, only the Prinect components by Heidelberg met all our requirements; they fulfilled the individual criteria while offering the possibility of a flexible integration with other systems.

DECISION CRITERIA FOR INTRODUCTION OF A MEDIA DATABASE

• Media database for handling orders and files

• Time recording in prepress must be possible

• Feedback to an MIS required

The following media databases were evaluated using these criteria (in 2005):
• OPAS G
• Cumulus
• Accordo
OPAS G meets all requirements and automatically feeds back to the Prinace MIS, the systems work well together.
Potential systems for print buyer integration:
• Webconnect for Prinance, to improve the communication with customers
• Prinect Remote Access, to speed up the approval process for print production

RESULTING WORKFLOW/PROCESSES

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

A job is created in Prinance, and thereby automatically in the OPAS-G media database and in Printready. Open files or, increasingly, PDF files are supplied online via Remote Access. The data is standardized and checked in Printready. An online Preflight Report is available to the customer immediately after the upload, giving him the chance to react quickly and correct the data, if required (e.g. increase the resolution of images). Depending on the type of job, the data is then assigned to the job either in the media database and/or in the production system.

The cost of data manipulation/correction is recorded manually in OPAS-G and transmitted to Prinance for cost analysis. The material consumption for proofs / printing plates is fed back to Prinance via Printready. The data for correction / approval by the customer is also made available online via Remote Access, either as PDF file or as a ripped bit map.

Non-job-specific work requires creating a “collective job” in Prinance und Printready System

Some of our customers typically send us requests like these: “It'll probably be 24 pages, we'll send you the rest later, go ahead and start, the page numbers might change, we don’t know yet if the invoice should be sent to our customer or to us”. This requires non-job-specific processing; test jobs are created in the MIS and the media database, which are converted to real jobs as soon as the customer gives us the go-ahead.

Customer integration through Web.Connect online portal of the MIS Prinance

Our customers like to contact “Das Druckhaus” via the Internet to request shipping of material that is already printed and in stock. They appreciate the complete online overview of all offers made/requested, which saves them the work of calling us to obtain that information. Customers also use Web. Connect to place orders for reprints; besides the convenient overview, this approach saves them time, because the production data is already specified in the form.
MILESTONE 3: Integration of the customers into the JDF workflow

April 2005: Introduction of Prinect Remote Access
Selection of the customers whose orders can be handled using this system. Presentation of the possibilities and instruction of the customers in the operation. The selected customers accepted the new system within a few days and after a small number of test jobs.

Aug. 2005: Introduction of Prinance webconnect:
After one day of installation and instruction, we could already work with the system. The introduction of the customers to the system was more difficult. We had to explain the new possibilities in detail and show our customers how these possibilities could be used to meet their needs.

MILESTONE 4: Integration of the media database into the JDF workflow

Jan 2006: OPAS-G media database
Since the file names have to be unambiguous, we had to change our entire way of working in the printing house. At first, we were afraid we would not be able to find the files, because we were dealing with a completely new system of organizing and naming files in the database.

BIGGEST IMPROVEMENT IN EFFICIENCY AND CUSTOMER RESPONSIVENESS AS A RESULT OF PROCESS AUTOMATION

A quantitative analysis of the hard and soft ROI factors expected and realized, to include breakeven analysis, IRR or NPV determination of hard factors and testimonial evidence from users or customers as to the realization of soft benefits.

IMPROVED CUSTOMER RETENTION WITH WEB.CONNECT

• Customer inquiries are structured by the online form: all information required for cost estimating is included

• Customers see a history of inquiries and can compare them

• Customers can check their products in stock and initiate shipping

• Main savings for „Das Druckhaus“ with Web.Connect:
  - The structured customer inquiries save our in-house staff 50% of the time needed to draw up an offer
  - For all orders on average: 10 min., for creating a job file ‡ with Web.Connect only 5 min

• Rationalization of customer inquiries: Frequently, customers only make inquiries to find out how much the job would cost; the work load resulting from such inquiries is considerably reduced with webconnect.
  - Customers request information on many versions of a job in order to be able to decide internally what is to be produced and how it is to be produced. Das Druckhaus is – quite involuntarily – a technical advisor and cost calculator for its customers. The structure of inquiries has changed:
    - In the past: “I have a job to produce, how much does that cost?”
    - Today: “I have a budget for a job, what do I get for the money?”
  - Many cost estimates are used only to define the job for the customer, not to actually plan production.

IMPROVED QUALITY IN JOB TICKETS THROUGH A STRINGENT PROCESS STRUCTURE WITH PRINANCE

• By now, 90% of all jobs are processed according to the calculations in Prinance and the information in the job ticket, i.e. there are far fewer changes in the job data during production.
The networked production has taught everyone involved that a production order can only be issued with reliable information. This is a desired organizational effect of the direct feedback between departments.

**FASTER APPROVAL WITH REMOTE ACCESS**

Remote Access saves us 50% of time and costs, because communication with the customer is automated in the workflow system, e.g. with the automatic “Approval Mail” system.

Many manual steps have become obsolete, e.g.

Producing a physical hard copy ‡ packaging the hard copy ‡ organizing the transport to the customer ‡ invoicing with courier services ‡ accepting the returned copy ‡ distribution of returns among the departments and administration of product versions ‡ manual creation of a low-resolution file for transmission via e-mail

**INTEGRATED PREPRESS WORKFLOW**

• The automation of data preparation and the avoidance of multiple processing since the introduction of Printready has resulted in a time saving of 50%

• Data is prepared only once, no matter what kind of output is required (proof / plate)

• Our imposition bottleneck could be eliminated, since the page orientation and the output can be initiated at every...

**Figure 2: Faster approval and order process through online integration of our customers**
workplace in the workflow. Before the introduction of the new system, this was only possible at the (single) Signa Station.

• Automatic color management using pre-defined job tickets
  - Many faults are the result of a wrong parameterization of color management systems by the customer / data creator, increasingly RGB photos made with digital cameras; today, this can be automatically checked in Printready, and the parameters (sequence) are corrected according to the customer’s job profile.
  - Continuous color management for proof and final print

ROI CALCULATION AND CONCLUSION

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<th>Periods</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tbody>
<tr>
<td>Discount rate</td>
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<td>0,8900</td>
<td>0,8396</td>
<td>0,7921</td>
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Benefits (in savings)

<table>
<thead>
<tr>
<th>Benefits</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Job Costing</td>
<td>75.000,00</td>
<td>75.000,00</td>
<td>75.000,00</td>
<td>75.000,00</td>
<td>75.000,00</td>
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<tr>
<td>Order and Production Mgmt</td>
<td>109.179,00</td>
<td>109.179,00</td>
<td>109.179,00</td>
<td>109.179,00</td>
<td>109.179,00</td>
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<tr>
<td>Improved Job Tracking</td>
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<td>69.300,00</td>
<td>69.300,00</td>
<td>69.300,00</td>
<td>69.300,00</td>
</tr>
<tr>
<td>Reduction of Labour Cost</td>
<td>460.000,00</td>
<td>360.000,00</td>
<td>360.000,00</td>
<td>360.000,00</td>
<td>360.000,00</td>
</tr>
</tbody>
</table>

2. Total annual savings | 713.479,00 | 613.479,00 | 613.479,00 | 613.479,00 | 613.479,00 |

Cumulative Savings | 713.479,00 | 1.326.958,00 | 1.940.437,00 | 2.553.916,00 | 3.167.395,00 |

3. Discounted annual savings | 673.093,40 | 545.994,13 | 515.088,80 | 485.932,83 | 458.427,20 |

Total investment

External investment (products)

Printready | 76.000,00 |
Remote Access | 40.000,00 |
Web Connect | 4.800,00 |
Prinance | 55.000,00 |

Internal investment (internal training)

Internal Training Prepress | 30.000,00 |
Internal Training Administration | 3.750,00 |

Maintenance costs (recurring)

Internal IT administration | 30.000,00 | 30.000,00 | 30.000,00 | 30.000,00 | 30.000,00 |
Update cost | 40.000,00 | 40.000,00 | 40.000,00 | 40.000,00 | 40.000,00 |

Additional labor cost for increased volume fo work

Pressroom | 180.000,00 | 180.000,00 | 180.000,00 | 180.000,00 | 180.000,00 |

4. Total annual costs: | 209.550,00 | 250.000,00 | 250.000,00 | 250.000,00 | 250.000,00 |
Cum. costs: | 209.550,00 | 459.550,00 | 709.550,00 | 959.550,00 | 1.209.550,00 |
Disc. costs | 209.550,00 | 235.849,06 | 222.499,11 | 209.904,82 | 198.023,42 |

5. Net benefit (annually) (=2-5)

Cum. net benefit: -209.550,00 | 253.929,00 | 617.408,00 | 980.887,00 | 1.344.366,00 |
Disc. net benefit: -209.550,00 | 437.244,34 | 323.495,02 | 305.183,98 | 287.909,41 |

6. Net benefit (annually) (=2-5)

NPV (Net Present Value in €) | 1.415.895,40 |

ROI (Return on Investment) in % | 675,68 |
With the outstanding \textbf{NPV of 1.415.895 \€} and the \textbf{ROI of 675\%} we were able to achieve required an extreme discipline on our side to help the customers get used to the new collaboration tools and processes. Very often for the customers it appears to be easier to just speed-dial a phone number instead of login on to a system. We had to overcome this obstacle and make it a positive experience to work with the systems.

This required:
1. Disciplined and patient staff to reinforce the processes
2. Dependable real time information provided by the systems
3. A guaranteed uptime and data security on all workflow systems

\textbf{CONCLUSION}

Only with the implementation of the new Heidelberg Prinect Workflow along with the MIS system Prinance and media database OPAS G we were able to double our sales volume only through rationalization. Since the job structure remained the same and we did not want to hire additional staff, we focused our attention on automating the workflow with a JDF standard.

We also achieved a higher efficiency through online integration of our customers. They are happy to easily manage their outsourced jobs with our online portal and we were able to stringently align our processes, making them more efficient. So this is a win-win situation for both.

With the JDF workflow, we have achieved our goal of increasing our sales volume through rationalization, and we are confident that we will be able to live up to our potential in the future.

\textbf{TESTIMONIAL EVIDENCE WITH WEB.CONNECT}

\textbf{Customers: Maba Corporation/Psion Teklogix Corporation}

- The customers outsourced their logistics of shipping brochure and other printed material to “Das Druckhaus”
- Both customers used to send the order for shipment with a form ‡ fax ‡ Beineke staff had to search the products in stock and ship them (problem with processing and updating Excel lists)
- Customers never knew exactly how many brochures were left in stock until they had to send order for reprint
- Today, with webconnect,
  - “Das Druckhaus” can store goods in other locations
  - Customers can access all of their own shipping addresses,
  - New shipping addresses are entered by the customers and automatically saved
  - Customers (Teklogix) can immediately detect potential bottlenecks regarding the availability of products and reorder the needed products in time
  - Customers use the function for outsourcing, it makes their work easier