First Place Winner

2007 Jürgen Schönhut Memorial CIPPI Award

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

BvD Druck + Verlag AG

Detailed Application Information

Focus: Prinance, Printready, Signa, Meta, Color Solution

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

Situation before the introduction of the Prinect workflow:

Brief portrait of BvD:

- Founded in 1927
- "Full-service" printing house with prepress, press and postpress departments
- Three core business segments: offset printing, digital printing, visual printing.
- The three core segments are supported by the prepress and postpress departments and by Ardimedia.
- Ardimedia is a subsidiary of BvD with a focus on information technology.
- Approx. 40 employees, among them four trainees.

Business model of BvD:

- Focus on colored, high-quality print products in small to medium volumes
- We want to show our competency. We want offer consulting to our customers.
- Fastest possible throughput in excellent quality.
- Integration is a very important aspect of our company.

Equipment of BvD:

- Operating software: Prinance
- Prepress: Mac, Windows, Printready, SignaStation, MetaDimension, Plotter, Topsetter

- Offset printing: SM 52/2, SM52/5, SM74/5, SM74/10 combined with Mini Spots, ImageControl
- Digital printing: Xeikon 50, IGen3
- Postpress: KTL, ST 400 saddlestitcher, Kama with integrated foil blocking, various small machines
- Integrated operation with the Prinect Integration System
- Visual printing: HP 10000s, Zünd flatbed plotter UV-Jet Combi 215, Zünd cutter L-2500

Situation at BvD before the introduction of the integrated workflow:

- No continuously integrated processes, only isolated solutions
- Manual control of the workflow
- Little to no transparency in the production processes
- No automatic feedback to the MIS, hence no consistent product costing analysis → unsatisfactory cost control

Leitmotif for the future development of work processes at BvD:

For us, integration means combining economic aspects with production-related ones in order to process every job with the utmost productivity and efficiency, with optimum quality and excellent profitability and without extensive staff deployment to ensure our customers' satisfaction.

Workflow before the introduction of Prinect

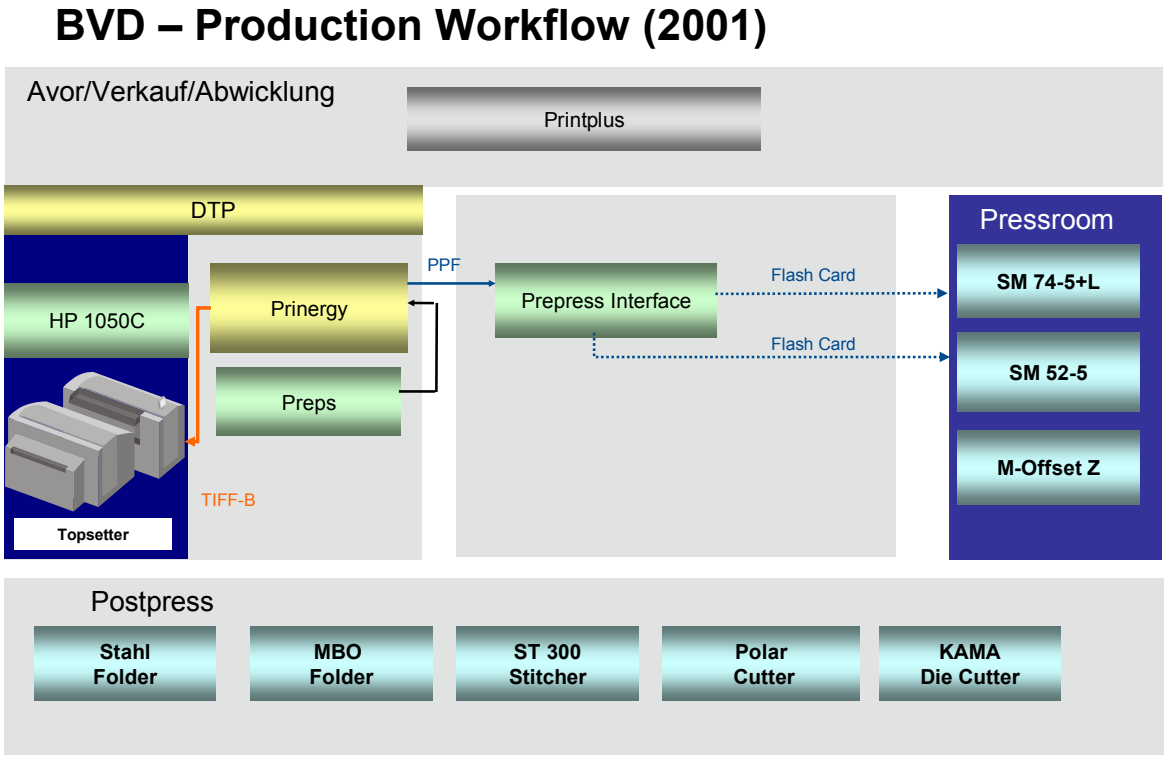

Figure 1: Workflow at BvD before the start of the integration project

Brief description of the BvD workflow in 2001:

No integrated MIS, i.e. no electronic job ticket, no feedback from production. No fully integrated prepress department, i.e. no automatic job import from the MIS, no automatic imposition, no fully automatic file processing. The pressroom is integrated via PPF data and flash card, i.e. only semiautomatic ink presetting of the presses. No system-supported job planning and status feedback from production. JDF has not yet been introduced as basis for the integration.

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:

Quantitative and qualitative goals and motivation

Aim of integration

Today's technology enables us to integrate the individual departments.

For us, integration means combining economic aspects with production-related ones in order to process every job with the utmost productivity and efficiency, with optimum quality and excellent profitability and without extensive staff deployment to ensure our customers' satisfaction. To make the customer come back, not the products.

Job-specific feedback of all processes is a quick and simple means of achieving statistical evaluations that can be used for business and organizational purposes in everyday work.

Goals in job management / job preparation

- Preliminary costing analysis for all jobs
- Improving transparency, i.e. job tracking
- Statistical evaluation of the sales volume, customer analyses, evaluations of product groups, waste, rate of use and activity level of the equipment

Goals in prepress

- Quick creation of jobs
- Achieving reliable printing data. Ripped data correspond to the result of the printing plates
- Eliminating time-consuming data checks (color conversion from RGB to CMYK and from Pantone to CMYK, cut-outs/trapping functions automatically)
- Automatic broadening of hairlines
- Automated working on the Signa
- Great time savings

Goals in press

- Quick makeready of the press
- Few steps required to transmit color data to the press
- Hardly any manual intervention in the ink zones
- Less time needed to achieve the OK-sheet
- Less waste
- No additional expense for product costing analysis

Aims in postpress

- Project phase 2008: integration into the overall system with the solution that will be available at this time

Approach to a solution:

Introduction of a system that will integrate all work processes relating to production and production control centrally on the basis of JDF/JMF.

BvD's expectations of such a system:

- Ensuring the integration of the existing work environment (presses, other equipment and workstations)
- Little effort for administration
- As little effort as possible for implementation
- High investment safety
- Modular, scalable design that can be upgraded at any time in the future
- Centralized JDF/JMF administration
- Simple and uniform use
- High system reliability

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

Decision criteria for the introduction of an MIS system

In late 2002, we seriously considered an integration and its potential positive effects on BvD. There were various criteria that figured in our decision for a new MIS system:

- The new MIS must lend itself to full integration, i.e. job data must be captured only once and then be available online in the company.
- Product costing analysis must take place in real time at the control station and be fed back automatically into the MIS
- The MIS must furnish reliable business data
- The MIS must detect the production status of a job.
- The MIS must create calculations quickly and easily and use them to generate offers and jobs.
- The MIS must be able to trace back jobs.
- The MIS must be able to process Visa Purchasing and advertising consulting commissions (e.g. for agencies)

In 2005, we changed our workflow system from Prinergy to Printready. This way, Heidelberger Druckmaschinen AG became our exclusive partner for the integration. That was a decisive factor in our attempt to keep the complexity of the total integration at a manageable level. In 2007 and 2008, we will focus on the Prinect Integration System with the Pressroom Manager (integration of the entire pressroom), Postpress Manager (integration of the postpress equipment) and Digital Print Manager (integration of the digital press XeroxiGen3). At the same time, BvD is aiming at defining measurable variables and integrating them into the production process in order to implement further improvements.

The following systems were considered using these criteria (in 2000):

- Printplus by Printplus AG
- Prinect Prinance by Heidelberger Druckmaschinen AG

Decision criteria for the purchase of a new workflow system:

- Fast creation of jobs
- Achieving reliable printing data. Ripped data correspond to the results on the printing plate
- Time-consuming data checks are no longer necessary (color conversion from RGB to CMYK and from Pantone to CMYK, cut-outs/trapping functions automatically), hairlines are broadened automatically
- System must save time

- Automated working in sheet assembly (collating marks, alignment marks, registration marks, color wedge, Mini Spots)
- Real-time transmission of color and JDF data to the presses
- Fast and reliable working.

The following workflow systems were considered using these criteria:

We compared Prinergy and Printready. Both programs were found to be good, but we considered it an advantage to work with Heidelberg as a full-service provider.

Implementation Story — Please provide a description of the implementation effort including timeline, participants, critical path/milestones, obstacles overcome (if any), training and testing:

Project schedule and milestones

Milestone 1: *October 2003 to end of December 2003 – introduction of Prinance*

In late April of 2003, we installed a test server with Prinance and tested the software. In this way, every employee in job preparation could familiarize him/herself with the Prinance System.
The decision was made in favor of Prinance, so that we began to work on the details from October to December. Starting on January 1, 2004, we worked exclusively with Prinance.
In the 1st quarter of 2004, our main goal was to solve all manner of pending matters in Prinance (credit notes, connection to financial accounting, reminders, calculations...). Since mid-2004, our focus has been on online product costing analysis and the reduction of production times.

Milestone 2: *October 2004 to June 2005 – feedback of production data to Prinance*

Since the beginning of 2004, we were able to transfer production data to Prinance.
Since we had a tight schedule for the installation of Prinance, we began implementing the feedback of production data in October 2004. Our focus was on training our employees. Training and software adaptations kept us occupied until the end of 2004. The system has been stable since mid-2005.

Milestone 3: *July to September 2005 – introduction of Printready*

In 2005, BvD introduced Printready to replace the Prinergy system. The changeover was implemented without significant problems.

Milestone 4: *April to May 2007 – introduction of the Prinect Integration System and the Digital Print Manager*

The results of this additional JDF-based integration have not yet been evaluated, due to a lack of time. However, past experience indicates that the new modules will furnish considerable savings.

Milestone 5: *2008 – introduction of the Postpress Manager*

Integration of postpress equipment with automated production data feedback and machine presetting.

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

Workflow description milestones 2 + 3

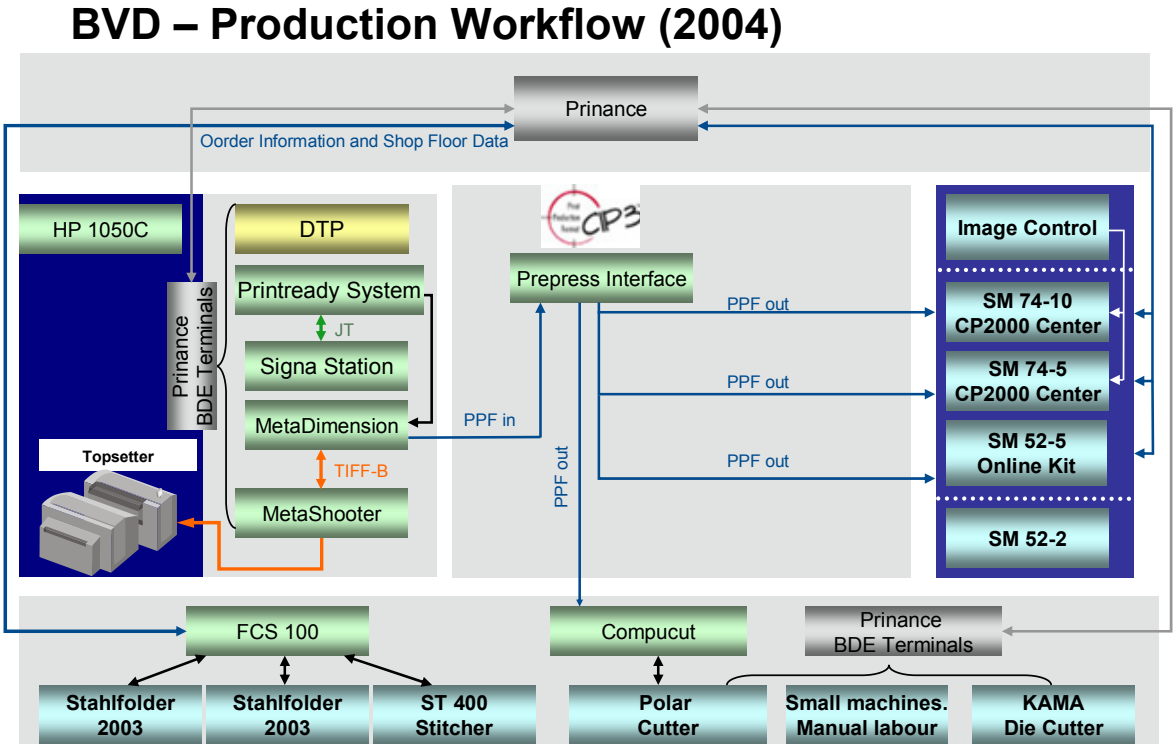

Figure 2: Workflow after the end of project phases 2 and 3

Brief description of the BvD workflow in 2004:

The MIS has been replaced by Prinect Prinance at this point. Integrated prepress, pressroom and post-press. Electronic job ticket for printing and converting. Installation of the first purely JDF-based workflow Prinect Printready as core element of the future JDF integration. The Prinect SignaStation imposition station and Prinect MetaDimension are already integrated into the Prinect Printready System, resulting in an extensive automation of prepress.

Presetting values are automatically transmitted to the presses. Prinect CP2000 Center automatically imports job data and considerably reduces makeready times and waste. All departments report data back to Prinance.

All in all, a successful start of integration.

Milestone 4

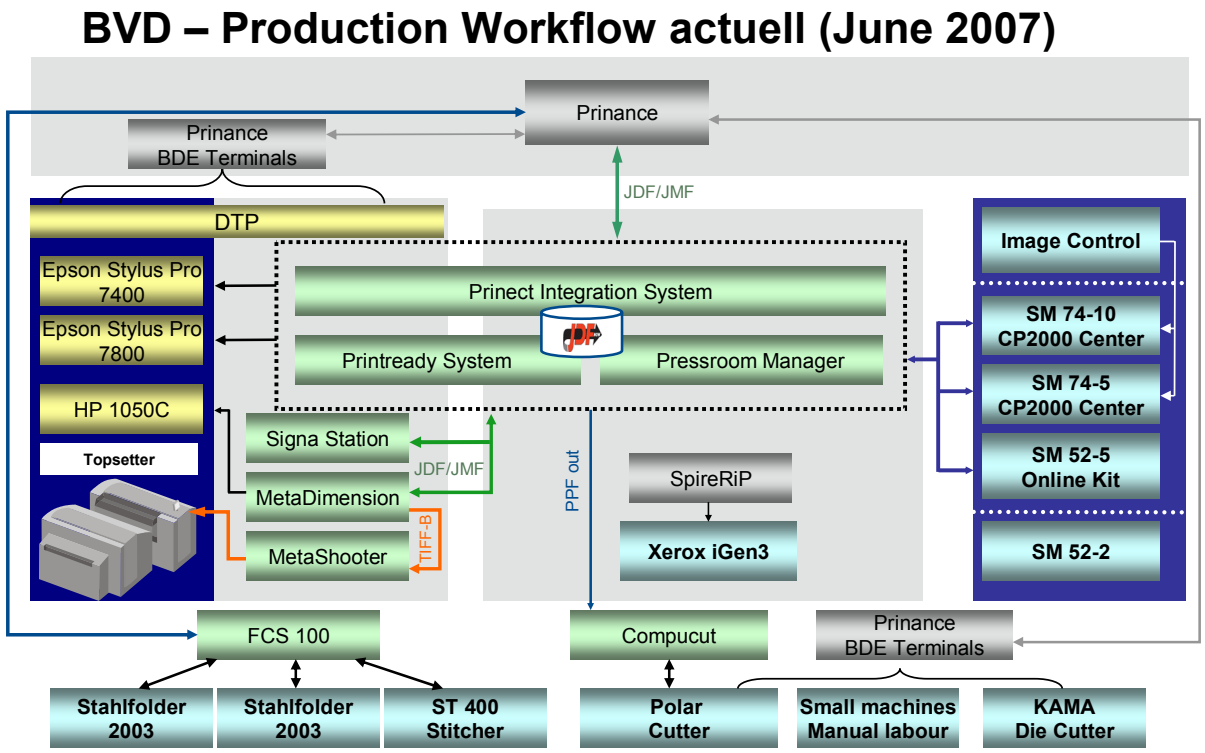

Figure 3: Current production workflow (June 2007)

Brief description of the BvD workflow in 2007:

Job preparation, prepress and the pressroom are completely linked with JDF. The Prinect Integration System, Prinect Printready System, Prinect SignaStation, Prinect MetaDimension and Prinect Press-room Manager are based on the centralized JDF administration within the same system architecture. All modules are part of the Prinect workflow architecture. Information is exchanged via JDF / JMF, and different JDFs no longer have to be synchronized for a job, thanks to the centralized JDF admini-stration. The information in the system is always consistent. The process, beginning with the prelimi-nary costing analysis and planning, is automated, or at least semiautomated. The data for job production and the permanent monitoring of the production process (tracking) are consolidated in one system that offers easy access to absolutely reliable information for all those involved. Job manage-ment, and determining the status of a job, has become much easier.

The integration of three departments is, in our opinion, a noteworthy achievement.

We believe that this result is only possible with the Prinect workflow system by Heidelberger Druck-maschinen AG.

Milestone 5

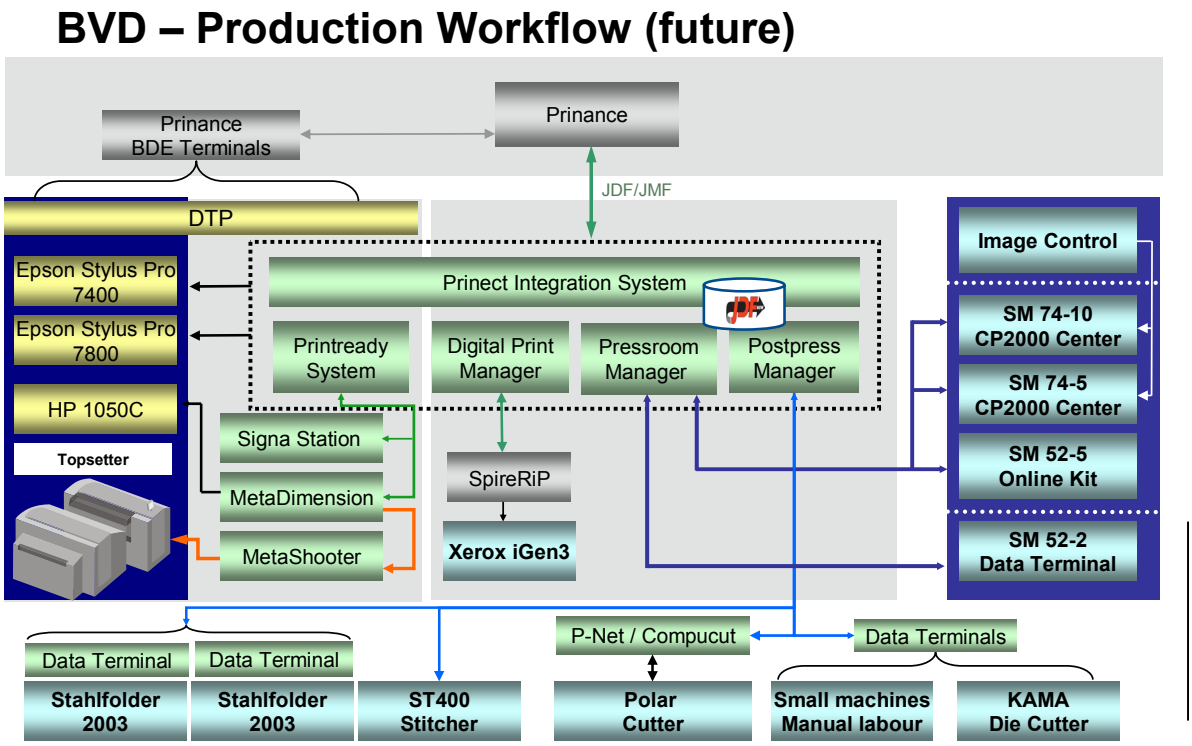

Fig. 4 BvD – future production workflow (2008)

Brief description of the projected workflow in 2008:

Postpress will be integrated in 2008 on the basis of the JDF workflow. In addition, the digital printing facilities will be connected directly based on JDF. Once these steps are complete, the entire production process at BvD will be integrated by means of the Prinect Workflow System, and JDF will be the universal interface format. All workstations, presses and other machines will automatically receive the required job information or presetting data, production data will be reported back automatically or semiautomatically as JMF.

The entire production will be controlled centrally, and the production status can be called up at any time with the push of a button.

Biggest improvement in efficiency and customer responsiveness as a result of process automation — Please provide 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.

Description of the benefits of individual groups of functions

Higher productivity in prepress

Considerable increase in productivity thanks to automatic job import, automatic PDF processing, automatic imposition and RIPing. The significant increase in production reliability helps avoid press stops.

Higher productivity in the pressroom

Reduction of makeready times and printing waste thanks to data import from prepress and the MIS. The rate of use of the presses could be increased significantly, ensuring a higher throughput in the entire company.

Not yet evaluated, because it was installed only recently: Prinect Color Solution -> predictable effect: more savings due to integrated quality control and lower expenses for color quality management.

Production data collection and product costing analysis

The direct savings in this area are low. However, the qualitative benefit is considerable, because we can perform an exact product costing analysis for every job since the introduction of the semiautomatic production data collection – without additional expenses. If we were to compare this method to the expenses for product costing analysis without JDF integration, we would have to count the annual salary of a controller as additional cost reduction.

Other (non-monetary) benefits of permanent product costing analysis:

1. Careful analysis of the customers and their profitability and corresponding control of the customer base
2. Permanent check of our preliminary costing analysis

Increase in sales volume and number of orders

The increase in productivity resulting from the workflow integration, and the resulting higher production capacity with the same resources, could be used directly for additional orders. In the offset and digital printing segments, this development led to a significant increase in sales volume while the cost structure in job preparation, prepress, printing and postpress remained the same.

NPV (Net Present Value) and ROI (Return on Investment) calculation and conclusion

Calculation BvD CIPPI Awards 2007

			Periods				
			2005	2006	2007	2008	2009
	Discount rate	6%					
1	Discount factor		0.9434	0.8900	0.8396	0.7921	0.7473
	Benefits (in savings)						
	Improved job costing prepress		18,560.16	18,560.16	18,560.16	18,560.16	18,560.16
	Improved job costing press		90,211.18	90,211.18	90,211.18	90,211.18	90,211.18
	Shop floor data collection		1,087.97	1,087.97	1,087.97	1,087.97	1,087.97
	Additional sales offset		467,519.35	584,399.19	584,399.19	584,399.19	584,399.19
	Additional sales digital		261,113.76	326,392.20	375,351.03	424,309.86	473,268.69
2	**Total annual savings**		**577,378.66**	**694,258.50**	**694,258.50**	**694,258.50**	**694,258.50**
	Cumulative savings		577,378.66	1,271,637.16	1,965,895.67	2,660,154.17	3,354,412.67
3	Discounted annual savings		544,696.85	617,887.59	582,912.83	549,917.76	518,790.34
	Total investment						
	External investment (products)						
	Prinance	22,968.34					
	Printready migration	25,361.88					
	SignaStation & MetaDimension	21,155.05					
	Prepress Interface	22,666.13					
	Image Control	148,689.78					
	PCM	13,007.33					
	Other expenses for integration	47,870.86					
	Internal investment (internal training)						
	Internal project management	7,846.57					
	Maintenance costs (recurring)						
	Internal IT administration		12,088.60	12,088.60	12,088.60	12,088.60	12,088.60
	Service expenses		7,702.86	7,702.86	7,702.86	7,702.86	7,702.86
	Training		11,333.06	11,333.06	11,333.06	11,333.06	11,333.06
4	**Total annual costs**	309,565.94	31,124.52	31,124.52	31,124.52	31,124.52	31,124.52
	Cumulative costs	309,565.94	340,690.46	371,814.98	402,939.49	434,064.01	465,188.53
5	Discounted costs	309,565.94	29,362.75	27,700.71	26,132.75	24,653.53	23,258.05
6	**Net benefit (annually) (=2-5)**	-309,565.94	546,254.15	663,133.98	663,133.98	663,133.98	663,133.98
	Cumulative net benefit	-309,565.94	236,688.21	899,822.19	1,562,956.17	2,226,090.15	2,889,224.14
	Discounted net benefit	-309,565.94	515,334.10	590,186.88	556,780.08	525,264.23	495,532.29
	NPV (net present value in €)	**2,373,531.64**					
	ROI (return on investment) in %	**766.73**					

The extraordinarily good result of the **net present value (NPV)** of **2,902,982 €** and the **ROI of 938 %** of the investment was possible thanks to the excellent Prinect workflow system by Heidelberger Druck-maschinen and our own excellent internal IT skills.

The following factors contributed to the great success of the integration project:

1. Selection of the best workflow system available on the market: Prinect by Heidelberger Druckmaschinen
2. Outstanding internal project management
3. Excellent internal IT skills
4. Great motivation and disciplined implementation by all employees involved in the project
5. The management assumed direct responsibility for the project
6. Clear definition and pursuance of goals during the project

The result shown in the NPV calculation above was determined exclusively with clearly measurable factors (see description in xx). In addition to these easily measured factors, the new workflow provided many improvements that are difficult or impossible to measure and were not considered in the NPV calculation. Among these improvements are:

1. Faster reaction times
2. Greater employee satisfaction due to higher process safety
3. Greater customer satisfaction and hence long-term customer loyalty
4. Continuous improvement of processes and internal skills
5. Permanent product costing analysis without additional staff deployment

Moreover, other modules that are already installed, such as the Prinect Integration System and the Prinect Pressroom Manager, were not yet considered in the cost-benefit analysis, because we have only been using these modules since May of this year, and we do not evaluate the equipment until the end of the business year. It is, however, safe to say that these new components will again contribute greatly towards lowering our costs.

The increase in productivity achieved so far has permitted us to process slightly more offset jobs and significantly more digital printing jobs. This growth in incoming orders was achieved solely with the existing equipment and staff.

Conclusion

Due to the extensive integration made possible by the Prinect Workflow System by Heidelberger Druckmaschinen, our entry into integration based on JDF/JMF has been an unequivocal success. With this step, BvD Liechtenstein has achieved an excellent position on the market. We can measure the success of the integration by the positive feedback from our old and new customers.

We could not have found a better partner for our integration project than Heidelberger Druckmaschinen. The modular Prinect system is expanding quickly, thereby steadily increasing our benefits. This is illustrated particularly well by the diagram for milestone 4. The depicted workflow shows the configuration level that we will implement starting in 2008. At this time, all processes in our company will be integrated in the Prinect system. The sum of individual benefits and synergy effects will create an exceptionally high total benefit.

We are certain: JDF came at just the right time for us, and the Heidelberg Prinect system offered the best possible implementation.