2008 Winner
Southern Colour (Vic) Pty Ltd
CIP4 International Print Production Innovation Award
for
Best Process Automation Implementation — Asia Pacific

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Company Background – Southern Colour (Vic) Pty Ltd:

Southern Colour (Vic) Pty Ltd was established in April 2002. Over 16 years of experience has seen Southern Colour (originally Southern Lithographics established 1992) grown to a prominent industry supplier with a reputation for service and quality.

In February 2007, Southern Colour (NSW) Pty Ltd was established, enabling us to broaden our offerings to both key states in Australia. With additional manufacturing capabilities in New South Wales, Southern Colour's ability to provide quality, service and advice is boundless. Parallel cultures and business philosophies ensure Southern Colour (NSW) offers the very best in print.

Southern Colour is a relationship focused company who offers cutting edge technology coupled with skilled and experienced personnel. Our core business is providing a total solution to our clients through a vast array of technologically advanced, in-house pre-press, printing, binding and inventory management facilities. Both long term and recent successes within the corporate, financial and retail sectors are testament to our ongoing commitment.

Southern Colour's core capabilities are offering tailored printing solutions to its clients by utilizing

- Our own Inventory Management System
- Warehousing and Distribution
- Cutting edge Pre-press technology
- State of the art large and small offset printing facilities
- In house binding and finishing
- Exceptional colour management skills and systems.

We have 90 employees and are located in South East Metropolitan Melbourne.

We have also achieved Quality Management Standard ISO 9001:2000, Environmental Management Systems ISO 14001:2004 and Occupational Health and Safety AS/NZS 4801:2001 accreditation and in addition we also hold Forest Stewardship Chain Of Custody Certification as well.

Our focus is on developing relationships with corporate clients who have a multitude of requirements including stationary envelopes, forms, marketing and brochure printing, warehousing and distribution. Our objective is to provide a total solution for our clients satisfying all of these requirements.

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

Year 2002 – Business Process & Manufacturing Environment:

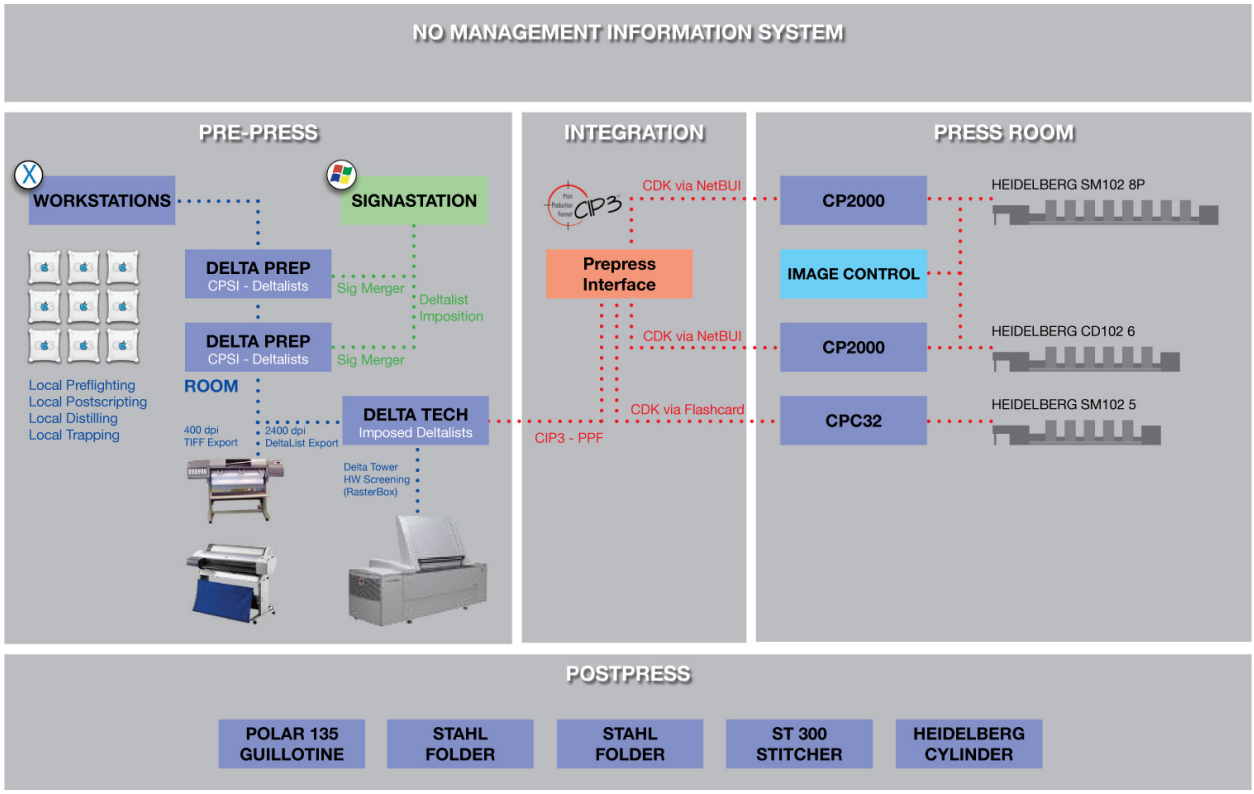
- Rapidly expanding company with a focus on high quality printed products – medium to large volumes. Average run lengths:
  - Saddle stitched books: 5,000 – 20,000 (as high as 50,000)
  - Burst bound books: 5,000 – 20,000 (as high as 50,000)
  - Leaflets & Brochures: 5,000 – 40,000 (as high as 100,000).
- No Management Information System - resulting in many manually created tasks using Microsoft Excel, Microsoft Word and Access Database. Such administrative tasks include Purchase orders, Estimates, Quote requests, Quote letters, Job Tickets and Production planning templates.
- No cost & time transparency in the production processes within our business.
- No Integration in relation to administrative or manufacturing processes except for CIP3 pre-ink
  presetting to our CP2000 (version 34) presses.
- Existing pre-press workflow was very robust and reliable, however, throughput speed was becoming an issue and we needed to resolve production bottlenecks to keep up with increased demand.
- No Online facility for customer interaction. FTP data transfer was established but did not offer any
  additional functionality such as preflighting or collaboration.
- Virtually impossible to accurately record and monitor job costing information.
- Excessive levels of outwork resulting in lost profits – just to meet customer delivery expectations.
- Increasing production workloads required more efficient manufacturing and administrative processing so as to maintain profit margins and to keep staff levels at a manageable level.
- No feedback of colour values from pressroom to Prepress.

Year 2002 – Equipment in use:

- Microsoft Back Office Server environment for administration file serving and processes.
- Macintosh and Intel PC Platform support hosting all major DTP software from Adobe & Quark.
- Composite PDF based workflow using many 3rd party software elements to assist in the preparation of data to be processed for proofing and CtP plate production.
- Pre-press workflow consisted of Heidelberg Delta RIP Architecture (version 6) combined with Heidelberg SignaStation (version 5) and a Heidelberg Trendsetter 3244 F AL producing 12 plates per hour.
- Epson and HP Inkjet plotters with ColorTuner Front end formed our proofing offering.
- The offset print room comprised of SM102-8-P (CP2000 v34), CD102-6 (CP2000 v34), SM102-5 (CPC32). Prepress Interface (version 2) was online to both the SM102-8-P & CD102-6. Flashcards were used for the SM102-5.
- The post press area consisted of a Polar 135 Guillotine Work Centre, Heidelberg ST300 Saddle Stitcher, various Stahl Folding machines and a Heidelberg Cylinder.

Refer Figure 1.

Figure 1. *Year 2002 - Production Environment & Workflow Prior to the start of Integration Project.*



Year 2002 – Brief Workflow description:

The lack of a Management Information System resulted in many manual tasks being unnecessarily duplicated and also created more scope for errors in manual data entry processing. Estimating templates were built in Microsoft Excel and Microsoft Word Templates were used for Quotation Letters (manual copy and paste). Manual Scheduling Boards were in use (still used now – with some refinements over the years) and production planning was using Microsoft Word and Excel templates to build imposition plans for pre-press. Many hours of lost time also spent folding pieces of paper to calculate pagination sequences - this was a common practice.

The pre-press workflow was very stable but provided no integration with other systems or processes (except CIP PPF ink presetting to SM102-8-P & CD102-6). Currently no JDF based systems in place to facilitate any form of future process integration.

There was no feedback of colour measurements from the existing Image Control into the Prepress area. Colour information and process calibration were not stored centrally and resulted in longer lead-times for quality control and even production.

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:

2004 - Stage 1: Management Information System – Functionality, Goals and Objectives

Goal: Provide functionality and integration of the following processes to improve our ability to efficiently manage manufacturing and business processing tasks within our company. Improve business analysis processes by having a system that accurately captures and records all activities and materials against any given job. Statistical evaluation by way of reporting to be easily accessible and derived from accurate data.

Cost reduction goals:
- Reduce administrative processing costs (estimating through to job creation) by 30%.
- Reduce the cost of data collection by 20%.
- Reduce job costing processing costs by 30%.
- Reduce invoicing (including capture of additional charges) costs by 50%.
- Reduce analytical reporting time and costs by 70%.

Process integration of:
- Financial management and accounting Integration
- Estimating
- Purchasing
- Materials inventory
- Finished goods inventory
- Job planning, tracking and costing
- Scheduling
- Shop floor data collection/direct machine interfaces (touch screen terminals)
- Customizability
- Clear demonstration of existing or future JDF based architecture compliance.

2007 - Stage 2: Pre-Press Workflow System – Functionality, Goals and Objectives

Goal: Provide a centralized workflow environment that allows multi user access and a repository for standardized job processing settings and definitions. Increase throughput levels in all areas of pre-press including CTP imaging capacity. Standardise and automate the following processes:

- Postscript Normalising to PDF.
- Automated Preflighting, Preflight Reporting, Preflight Repair routines.
- Automated Trapping processes.
- Automated Colour management tasks such as RGB to CMYK conversions using Device Link ICC profiles; incorporating UCR/Total Ink Value correction.
- Streamline the imposition creation process and page allocation process.
- Provide a digital audit trail of all tasks/activities against a given job. (Particularly beneficial for shift handover situations).
- Greater accuracy and efficiency for ICC profile generation and colour analysis.
- Capture time and materials usage against a given job, together with costing definitions such as Author's Corrections, re-work, overtime etc. (information feed to MIS).
- Maximise production throughput with lower staffing levels.

2007 - Stage 3: Press Room Workflow System – Functionality, Goals and Objectives

Goal: Provide a centralized workflow environment that allows multi user access and a repository for standardized job processing settings and definitions. Increase throughput levels in all areas of print activities.

- Reduce Customer proof approval cycle times by 50%.
- Reduce supplied data error rates by 30%.
- Increase CTP plate production capacity over 200%.
- Reduce Press Make-ready times by 20%.
- Reduce paper waste by 20%.

Standardise, improve and automate the following processes:
- Improve Print Make-ready processes and reduce time.
- Improve Presetting accuracy and adopt PPF+ into new routines.
- Reduce paper waste across the board.
- Improve Press Operator Knowledge base of Colour Standardisation and Colour Theory.
- Introduce Shop Floor data collection processes to MIS.

2009 - Stage 4: Future Process Automation Goals and Objectives

Goal: Introduce a system that will integrate all processes relating to job manufacturing and monitoring, based on a centralized JDF/JMF control centre:

- Integration of existing JDF/JMF production systems.
- JDF information flow from estimating to production planning.
- JDF information flow from production planning to prepress (possible future merge of these areas).
- Modular approach to implementation.
- Further training of key staff in IT department – JDF Expert Certification.
- Increase Customer based integration via online portal – Online RFQ, real-time job status information, accounts/invoicing status, credit details, continued workflow collaboration.
- Reduce administrative costs by having single point of entry for ALL materials and resources.
- Reduce errors in information by eliminating conflicting erroneous data via multiple databases.
- Increase efficiency by having harmonious Paper Specification Database.
- Estimating, planning and pre-press share common specifications (planning & pre-press have accurate information for automatic creep calculations & spine width calculations).
- ***VERY IMPORTANT:*** *Consolidation of fragmented database information. (i.e. create common customer contact database accessible by all areas of system. Create common Paper database – currently we have our MIS paper database, MDS paper database, Metrix paper database. Consolidation of equipment resources and parameters across all systems)*

2009 - Stage 3: Prepress Workflow System – Functionality, Goals and Objectives

Goal: Integrate existing JDF based workflow system into overall Production Management System and existing Management Information System:

- Introduce Digital Print Integration into overall workflow.
- Improve Scheduling and Production status transparency within this department.
- Integrate into overall workflow system by way of pre-setting via MIS/planning departments and also live JMF feeds back to MIS.
- Consolidate Production planning processes and enable direct JDF import of imposition data into prepress workflow system. (Metrix vs. Prinect Signa Station – refer Appendix A).

2009 - Stage 3: Press Room Workflow System – Functionality, Goals and Objectives

Goal: Provide a centralized workflow environment that allows multi user access and a repository for standardized job processing settings and definitions. Increase throughput levels in all areas of print activities. Standardise, and automate the following processes:

- Continue to improve Set Up/Make-ready processes and reduce time.
- Improve Scheduling and Production status transparency within this department.
- Reduce waste and improve quality control mechanisms within this department.
- Integrate into overall workflow system by way of pre-setting via pre-press/planning departments and also live JMF feeds back to MIS (Scheduling).

2009 - Stage 3: Post Press Workflow System – Functionality, Goals and Objectives

Goal: Provide a centralized workflow environment that allows multi user access and a repository for standardized job processing settings and definitions. Increase throughput levels in all areas of Postpress activities. Standardise, and automate the following processes:

- Improve Set Up/Make-ready processes and reduce time by using existing Prepress presetting from Prinect Signa Station data.
- Improve Scheduling and Production status transparency within this department.
- Reduce waste and improve quality control mechanisms within this department.
- Interface manufacturing equipment onto network and integrate into overall workflow system by way of presetting via prepress/planning departments and also live JMF feeds back to MIS (Scheduling).

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

It is important for us to establish a vendor's current and future levels of JDF capabilities to ensure that they are in line with our own process automation goals and objectives.

Firstly, one of the most important factors for deciding on a workflow solution was the Request for Quote (RFQ) process via a web based "Customer Facing" portal and secondly, the integration of the MIS system specifically with 3rd party production planning software. The latter would involve the job estimate data (containing an estimated manufacturing plan and a specific description of the completed job) being "digitally" passed on to production planning for re-analysis at the time of placement of the customer order.

At this stage, we are intending to further integrate "Metrix v3.0" with Optimus QS to fulfil this goal. Unfortunately, in most cases, the estimation process does not know all exact details of the job when it is estimated, i.e. what the equipment availability will be across all manufacturing departments (mainly press and post press departments). Thus, these systems can only determine a "likely" production scenario, as opposed to an actual production plan. It is envisaged that Metrix, will process the "Estimated data" from the MIS via the "Job Messaging Format" and allow the production planning department (in accordance with updated scheduling information) to produce an accurate production plan. The resultant JDF data will be imported to Heidelberg's Prepress Manager, thus eliminating the need to re-generate impositions in the pre-press department. NOTE: At this stage we are using Metrix for Imposition "Design" and despite the fact that we can successfully import JDF from Metrix into Printready; we are using Prinect Signa Station to physically build the impositions. (refer Appendix A).

Systems Considered & Researched in 2003:

Heidelberg's Prinect Prinance	*(very early in development at this stage – not mature).*
PRISM Win	*(not as cost effective – future JDF path not as clear).*
Printers Choice	*(No demonstrated future JDF development path).*
Optimus2020	*(Demonstrated future JDF development path, better pricing model, excellent estimating module).*

Further downstream we ultimately wish to link manufacturing equipment/systems across all areas of the business, thus streamlining the transfer of production data from machine to MIS automatically - namely pre press, press and post press to the MIS environment. Using an open IP network environment it is hoped that the MIS will be able to validate and process JMF data feeds from these devices and systems. Additionally, the MIS should have the ability to coordinate JMF instructional messaging for "set-up" parameters etc. and to provide a bi-directional communication platform between all areas of the business.

We have made steady and calculated investments in equipment in recent times and we are slowly replacing non-compliant hardware and software to ensure we can achieve these goals in the near future.

Stage 1: Management Information System – Selection Methodology

Financial Management and Accounting
Integration with our existing financial systems played an important role in the selection process. We currently use AccPac to manage various financial functions within the business. These include general ledger, accounts receivable, and accounts payable, invoicing, and payments. Another contributing factor was our need for multi-company, divisional, and departmental reporting.

Estimating
The estimating module needed to be flexible, adaptable, and configurable so that it can be tailored to our specific customer needs. Estimating should integrate and share information with scheduling (as a future consideration), production planning and management, job costing, and other parts of the MIS system.

Purchasing
The purchasing system needed to allow for all of our business needs, for example, raw material inventory, consumable supplies, asset purchases, or finished goods. It should be possible to generate requisitions from quoting information when a job is entered. Also, purchase orders should integrate with inventory and accounting functions to reflect items ordered.

Materials Inventory
The inventory solution must support the methods we use, such as tonne-weights, as the method for pricing out paper. In the process of managing inventory, knowing the what, when and where of material allocation was extremely important - maintaining appropriate stock levels, while providing delivery of materials to the correct location at the correct time.

Finished Goods Inventory
Integration (existing or future) was an important consideration. The despatch department needs to know which jobs are ready to ship and to where. Labels and shipping documents need to be easy to prepare (auto populating from customer/job database). Once shipped, the system should tag the job and indicate it is ready for billing.

Job Planning, Tracking and Costing
Job planning lays out the specific workflow, processes, and resources to be applied to complete the customer's job based on job specifications, estimates, and customer supplied materials. Job tracking and costing functions update the status of the job and call components within the job as it flows through the shop and capture the time and materials resources consumed at each production step of the job. Integration with data collection to provide real time job status is a key consideration. Customer service needs to be able to monitor a job through a complex series of manufacturing steps. Job costing reports all time and material costs on chargeable work performed. Job costing reports needed to be logical and easy to read and support comparison of estimate vs. actual costs.

Scheduling (Future Implementation)
For a future scheduling solution, integration with other processes is a key consideration. Once an estimate becomes a live job, its production requirements should make a smooth transition into the scheduling module. Easy entry of scheduling data with intuitive displays of changing status is an important aspect. We require the ability to optimize the flow of work across all processes, and to

instantly display updated job status information as conditions change within the factory at any given time.

Shop Floor Data Collection & Direct Machine Interfaces (Future DMI connectivity)
Ease and accuracy of collecting time, inventory usage, and production quantities is of the utmost importance. Our employees need to feel comfortable with the technology the system adopts. The MIS solution needed to have a GUI interface that provides job status information that is easily accessible, touch screen technology, and automated data collection via direct machine interfaces.

Computing Platform and Operating System
The MIS system needed to comply with our existing IT infrastructure and knowledge base. Integration with the existing network, servers, and workstation configuration currently in place within our business was an important factor.

JDF Future Interoperability Development
Our aim is to eventually provide a means for consistent, automatic, and effective bi-directional communication between our production systems and the MIS. Since 1998 we have closely followed the development of the JDF standard with much interest. The industry adoption and in some cases, our customer awareness has increased dramatically since the first formal ratification of version 1.1 in May 2002. In addition to this, vendor support has increased dramatically and our own understanding of its capabilities has developed over this time. Thus, to achieve our aim, we believe that a JDF compliant MIS system was mandatory when making purchasing decisions for this area of our business (ICS conformance standards).

Our strong belief that JDF plays the major role in bridging the communication gap between production and Management Information Systems, we feel it is necessary to fully understand the MIS vendor's future roadmap for JDF integration and development. (This is still an ongoing process for us at this point in time).

Stage 2: Pre-Press Workflow System – Selection Methodology

In late 2006, we changed our prepress workflow system from Delta v7/SignaStation v8 to Heidelberg's Prinect Printready. We looked at other systems including Dainippon Screen's TrueFlow and Kodak's Prinergy. One of the biggest factors in our decision was the vendors approach and ability to integrate into our existing and future manufacturing environment. Despite recent efforts in ICS conformance testing, we needed to minimize the complexity of future system integration and in addition to this; Heidelberg's approach – particularly in relation to Process Calibration and Colour management presetting – was far superior compared to what was available at the time from other vendors.

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:

Milestone 1: *February 2004 to May 2004 – introduction of Optimus2020.*

In 2003 we actually installed a test server hosting Heidelberg's Prinect Prinance MIS System. We found this system to have many excellent features; however, due to its early development cycle we found some fundamental problems. One of the biggest issues was that material requisitions

from within jobs did not automatically synchronize with the material inventory database. We also found some calculation bugs with run-on quantities and at that point in time, the administrative set up of the system seemed far more complicated in comparison.

After looking at several MIS Solutions, we submitted a detailed Request for Proposal document to Optimus in Mid 2003. After a successful submission, Optimus installation began early 2004. An initial implementation period of approximately 6 weeks (including key staff training) took place early 2004.

This phase also saw the introduction of Touch Screen Data Collection Terminals throughout the factory.

This system also presented early bugs and minor implementation issues, but on the whole it definitely brought about immediate benefits to our business.

Milestone 2: *November 2006 to February 2007 – change of Prepress Workflow System.*

In November 2006 we introduced Heidelberg's Prinect Printready v3 Workflow, together with the installation of a Suprasetter H105 (30 SM102 plates per hour) – fitted with Online Multi Cassette Loader and Glunz & Jensen Quartz Supreme Pre-Heat Oven, Processor and Stacker.

Due to the fact that our pre-press staff had prior knowledge of SignaStation and TrapEditor, the transition was relatively smooth. The workflow concept is very different from Delta and this did require some "getting-used-to" initially. MetaDimension supports the Native DeltaList Format and this proved very useful for "re-print no-alts" work and also helped in the migration of existing work into the new Printready system.

The important part was to ensure the administrative aspect of the system was set up correctly right from start. We use an Active Directory Infrastructure for network authentication and the Printready neighbourhood needed to be established in this environment – from file servers to client (cockpit) workstations. Appropriate users and permissions were set as well as Job Plan Templates etc.

Within 8 weeks we had fully migrated from (and decommissioned) the old workflow system.

Milestone 3: *September 2006 to June 2007 – Completion of Building Modifications and Upgrade of CP2000 Centers & existing Image Control. Purchase of new additional Image Control. Migration of additional press and finishing equipment (purchased existing Offset Printing Company).*

During this period, we made major internal layout changes to our factory to facilitate the re-location of additional press and finishing equipment as well as improving the flow of production processes and communication between departments.

They key to this phase was to minimize any downtime of production. Part of this re-structure saw the re-location of the Production planning department; moving them to a central location to the entire business. This provided improved communication and access for Sales, Pre-press, Press, Finishing and Despatch.

Upgrades to CP2000 and Image Control enabled the further advancement of pre-setting capabilities on these existing presses as well as providing (via ColorInterface, Preset Link), the ability to send colour measurement data back to prepress for analysis and use in the Calibration Process for CTP, Proofing etc. (via Quality Monitor & PrintOpen). We also introduced "Plate on

Demand" functionality which has proven useful particularly in situations when the CTP area is not staffed on the weekend.

Milestone 4: *January 2009 and beyond – Introduction of Prinect Integration Manager.*

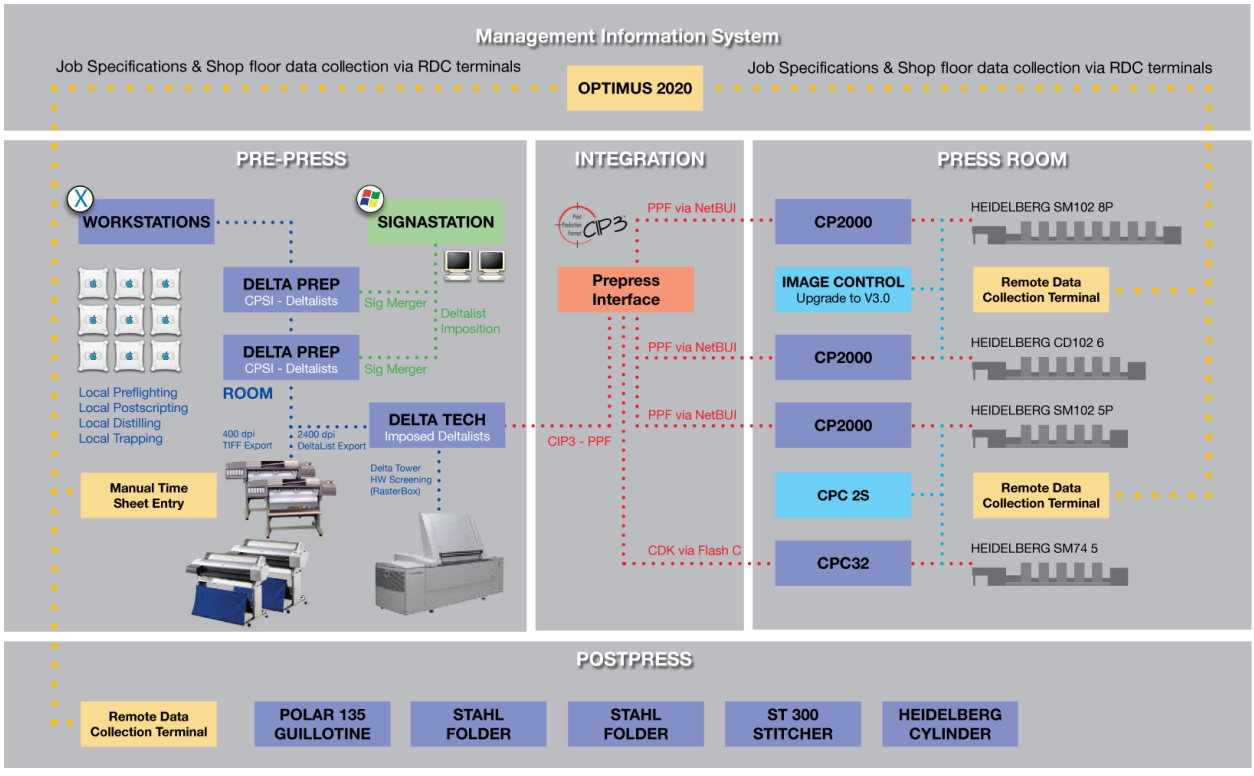
Installation of Prinect Integration Manager incorporating Prinect Prepress Manager (new naming for Prinect Printready), Prinect Pressroom Manager, Prinect Digital Print Manager and Prinect Postpress Manager.

After building a base of compliant hardware and network infrastructure, this phase will be the most significant in relation to the overall integration of process automation. It will need to be a staged approach over a twelve-month period.

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

Milestone 1 - 2004: Southern Colour Production Workflow - Initial MIS Implementation.

Figure 2.



Installation of MIS System

We were early adopters of CTP technology and our pre-press workflow comprised of Heidelberg Delta CPSI Postscript Level 3 RIP Architecture, Heidelberg SignaStation (DeltaList Imposition) and a Heidelberg/Creo Trendsetter 3244 F AL producing 12 plates an hour with 50 plate Autoload capacity. Production planning department were using static templates drawn in

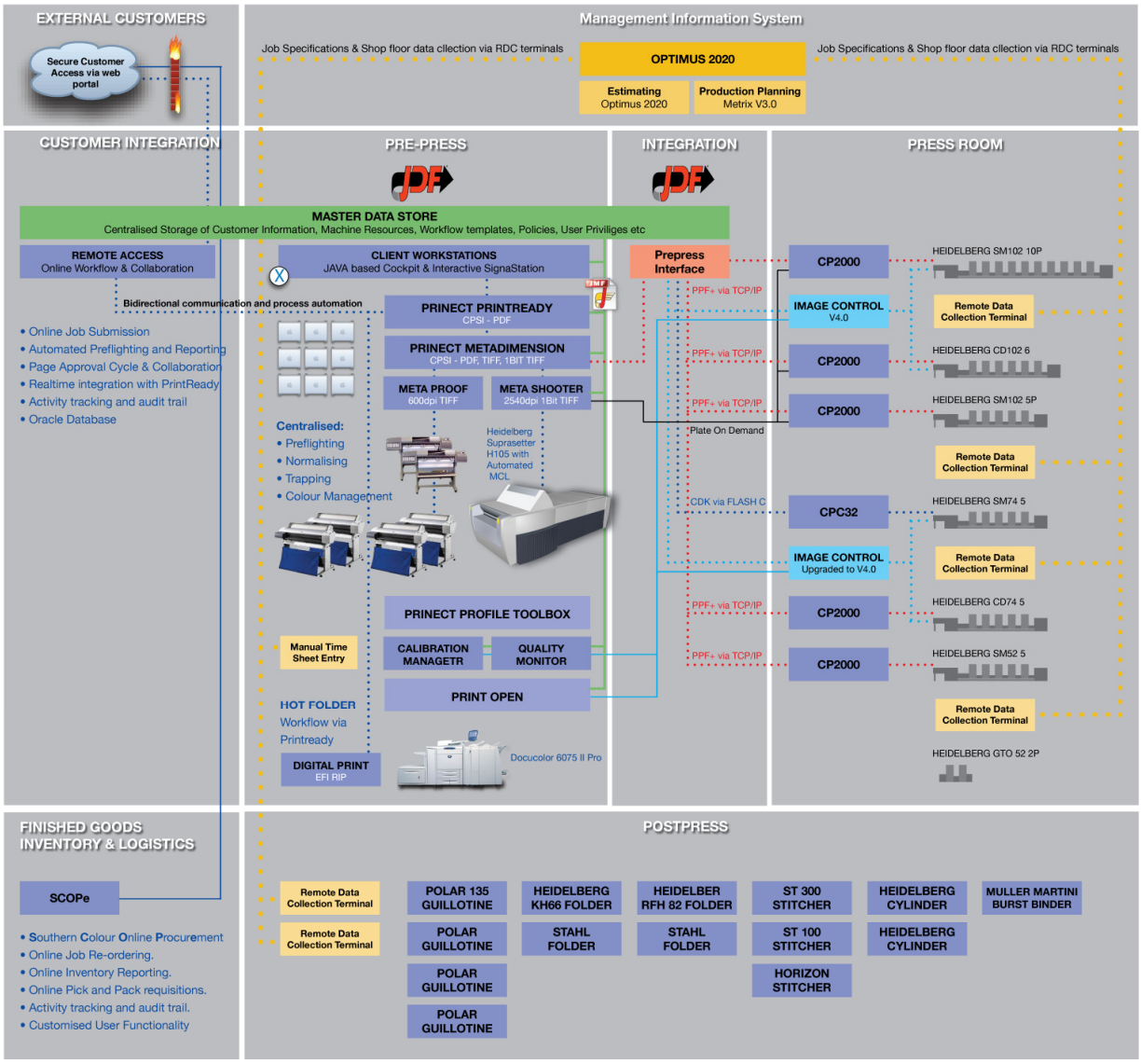
Microsoft Word for Imposition Plans (and lots of folding pieces of paper to calculate folding sequences and resulting page folio parameters).

Presetting values are made available to the presses via Prepress Interface Server and Flashcard.

Remote Data Collection Terminals within all departments provide the basis of data feeds to the MIS. A huge undertaking as far as the MIS implementation is concerned. This forms the base for our journey towards JDF process integration over the entire operation.

Milestones 2 & 3 – 2006-2008: Southern Colour Production Workflow – current status.

Figure 3.



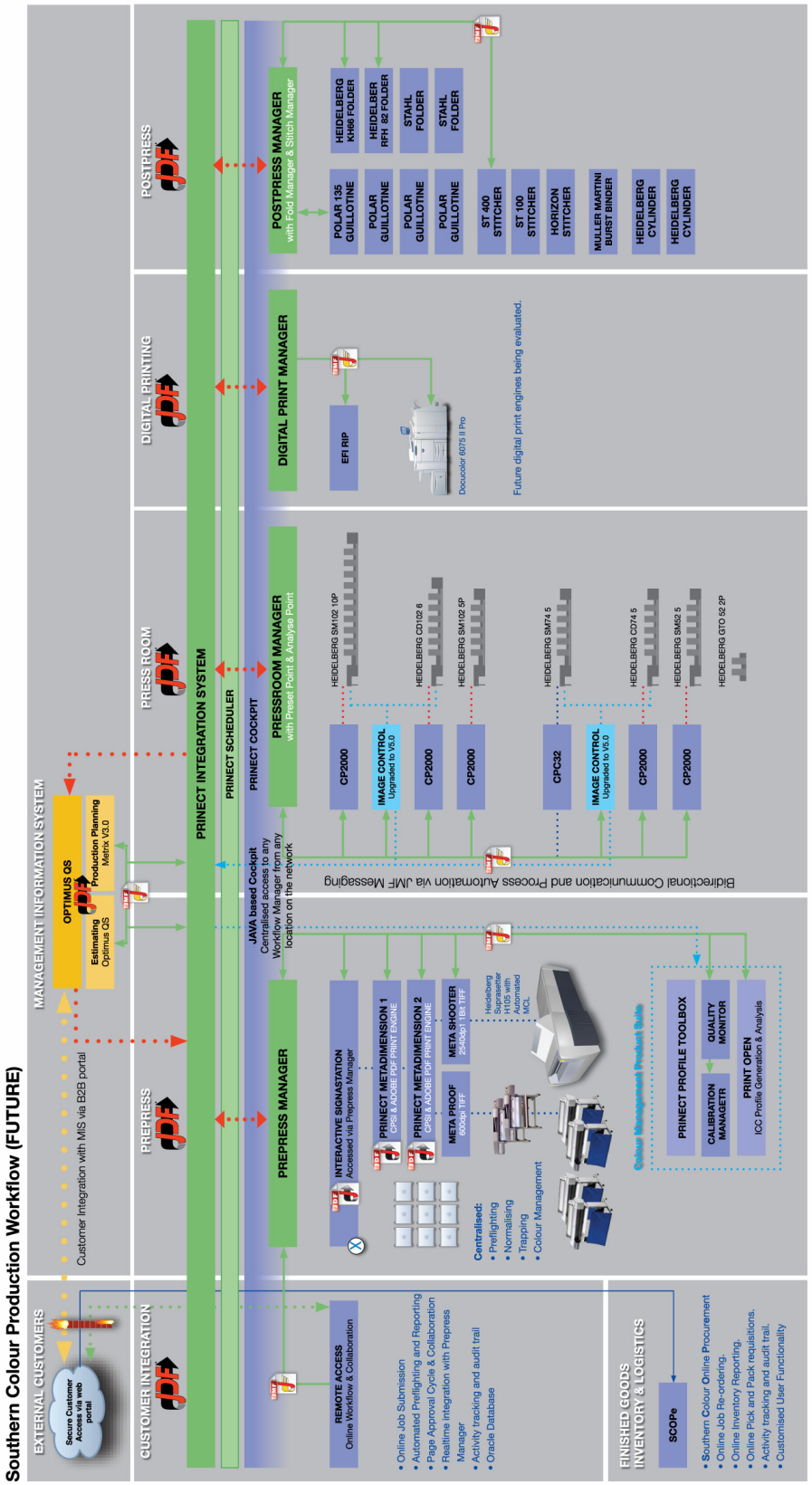
- Implementation of new JDF based Prepress workflow and Colour Management Environment.
- Introduction of Master Data Storage for synchronized information storage of equipment resources, customer information, Prinect Signa Station templates & resources etc. .
- Centralisation of Normalising, preflighting, trapping, colour management and interactive imposition creation.

- Introduction of Remote Access Online portal for customer workflow & collaboration with our Printready system.
- Vast reduction in time and consumables in relation to proofing due to smarter configuration of data being presented from MetaDimension (clip to paper boundary, auto rotation, UCR adjustment).
- Massive improvement in workflow throughput and process efficiency.

With the introduction of this system, we are now producing on average 250% more CTP plates per month with 30% less staff (compared to figures from 2002).

Milestone 4 – 2009: Southern Colour Production Workflow – Future.

Figure 4.



Section VI. Optional Detail — Please provide at least one of the following:

- ROI — 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.

Southern Colour NPV calculation 2008		Periods					
		2004	2005	2006	2007	2008	2009
1 Discount rate; discount factors	6%	0.9434	0.8900	0.8396	0.7921	0.7473	0.7050
Benefits (in savings)							
Improved Job Costing Prepress					252,322	252,322	252,322
Improved Job Costing Press		181,832	181,832	181,832	181,832	181,832	181,832
Shop Floor Data Collection		9,381	9,381	9,381	9,381	9,381	9,381
Additional Sales Offset			989,204	1,771,654	2,345,104	1,571,808	1,681,835
Additional Sales Digital						384,000	792,000
2 Total annual savings		**191,213**	**1,180,417**	**1,962,867**	**2,788,639**	**2,399,343**	**2,917,370**
Cumulative savings		191,213	1,371,631	3,334,498	6,123,137	8,522,480	11,439,849
3 Discounted annual savings		180,390	1,050,567	1,648,061	2,208,863	1,792,929	2,056,630
Total investment							
External investment (products)							
Optimus	200,000						
CtP Upgrade				480,000			
Delta-Printready Migration (incl Signa Station & MetaDimension)				102,000			
CP2000 Upgrades (3x)				75,000			
2nd Image Control + Upgrade to 1st + Colour Interface for both units				320,000			
Print Colour Management set-up				20,000			
Other cost for Integration				77,000			
Internal investment (internal training)							
Internal Project Management	10,000			10,000			
Maintenance costs (recurring)							
Internal IT administration		20,000	20,000	20,000	20,000	20,000	20,000
Service cost		74,000	74,000	74,000	79,000	109,000	109,000
Training		incl.	incl.	incl.	incl.	incl.	incl.
4 Total annual costs	**210,000**	**94,000**	**94,000**	**1,178,000**	**99,000**	**129,000**	**129,000**
Cumulative costs	210,000	304,000	398,000	1,576,000	1,675,000	1,804,000	1,933,000
5 Discounted costs	210,000	88,679	83,660	989,072	78,417	96,396	90,940
Total discounted investments	210,000			910,147			
6 Net benefit (annually) (=2-5)	-210,000	97,213	1,086,417	784,867	2,689,639	2,270,343	2,788,370
Cumulative net benefit	-210,000	-112,787	973,631	1,758,498	4,448,137	6,718,480	9,506,849
Discounted net benefit	-210,000	91,711	966,908	658,990	2,130,446	1,696,532	1,965,691
NPV (Net Present Value in $)	**7,300,277**						
ROI (Return on Investment) in %	**651.72%**						

Appendix A:

We are currently using Metrix v3.0 (by LithoTechnics Pty Ltd) for the "Design" of final production plans within our business. One of the main reasons for this decision was the very intuitive user interface of the software together with its ability to dynamically adapt a production plan as changes are made. (Sheet size, paper grain direction, paper thickness, quantities etc. as well as performing quick "what if?" scenarios – vital in the daily role of a production planner).

The ultimate goal is to have the production planning department generate ALL imposition plans and import their resultant JDF data into the Prepress system - eliminating the need for the pre-press department to build the impositions (as we are doing now).

In general, our existing team of production planners have found the learning process to using Metrix far simpler than that of Heidelberg's Prinect Signa Station.

On the flip side of this, we find Prinect Signa Station to have functionality on the "construction" side that is far superior to Metrix at this point in time. For example, the management of press sheet marks and quality control marks is more suited to our requirements The ability to interactively edit a JDF imposition (individual page creep, page clipping, page placement rules) from within our workflow system is also an important feature.(rather than having to edit, export and re-import a JDF file).

We are closely watching the development of both products and wish to consolidate the imposition "design" and "construction" processes in the future using one solution.

They are both very powerful software products that provide direct benefits to our business. As both products and our internal staff knowledge base continue to develop, we will have a more definitive direction to take in the future.