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MIS: systems

Management Information systems have evolved over many years from estimating and invoicing into complex systems collecting performance data from throughout a print factory. More recently, the advent of the Job Definition Format has seen MIS take a starring role in production workflows, while links to websites offer e-commerce and greater customer contact.

In an ever more competitive printing sector, being able to offer excellent, fast or economically priced print isn't enough any more. Printers also have to look to their bottom lines, which means tighter control of costs. To do this they need to know how to analyse the real costs of jobs, both to create more accurate estimates and quotations but also to understand which jobs are profitable and where cost savings in production can be made.

Many printers currently get by quite happily using price lists and spreadsheets to calculate quotations. However, a dedicated management information system (MIS) can provide much more detailed tracking and calculating of costs, which can then be fed into estimating and quotation modules (or averaged into price lists tailored to each client). It can be as much project management as simple calculation of costs. Most MIS developers also offer modules for production scheduling, stock control and re-ordering, reporting and analysis, links to accounts programs for ordering and billing, and increasingly they will either include or link to web-to-print ordering systems, and customer relationship management (CRM) systems.

An MIS can be a major investment both financially and in the time and training needed to implement it effectively, yet it doesn't seem to excite people in quite the same way as a new press or a platesetter. But an MIS genuinely has the capacity to transform a printing company, to help turn an ailing company around, or to make a successful company better.

At present there are roughly 20 MIS product lines available in the UK, ranging from complex modular systems aimed at large multi-press printing companies, to low-cost and easily configured systems intended for small printers with a handful of employees.

Small companies can benefit particularly from an MIS, because the automation and speed means that busy staff don't need to take so much time off from production tasks to do otherwise time-consuming tasks such as preparing and delivering estimates. Linked to a small web-based digital storefront, a small MIS can accept and return many of the routine customer requests for quotations (RFQs), order submissions, job file uploads and job progress reports without distracting staff at all. For very large users the MIS is morphing into the ERP (electronic resource procurement) type of system.

The long-term trend towards shorter runs means that a printer needs to take in more jobs to stay afloat, and also to control costs. The adoption of digital printing accelerates this and means that an MIS needs to be able to register, track and charge relatively large numbers of the very short run jobs required for fast-turnround, sometimes repeated regularly with minor changes to prices or other details. On the other hand MIS production scheduling is not so relevant for presses and equipment dedicated to quick turnround work. It's easy to get carried away by technology, but each printer should ask 'what can an MIS do for me?

Setting up and MIS

It requires a considerable amount of integration to be able to take information from standalone systems, such as accounting packages and pre-press workflows, as well as direct machine interfaces, or external sensors attached to presses and bindery equipment, to report back on mechanical processes.

However, a fully integrated system can help reduce production bottlenecks, as well as managing estimates, stock control and invoices. It can show information on every aspect of a business, from which customers are slow to pay invoices, which jobs are the most profitable and the cost of maintaining each machine in the factory. It can also generate automatic job tickets, and follow these jobs through to invoicing without any need to re-key information.

There's a considerable advantage in giving end customers greater access to a printer's system. It means that staff spend less time dealing direct with customers, following up estimates, or chasing proofs, which in turn can allow a printer to reduce the number of staff, or to take on more work without having to increase staffing levels.

Speed and ease of use is also a big factor, as Geoff Stephens from digital print costing and quotations software developer, TimeHarvest, points out, "When I talk to users I hear time and again that it's not the cheapest quote or even the one from a favourite supplier that wins the job. It's very often the one whose quote arrives fastest."

Common functions and modules in MIS

MIS system capabilities and functions vary widely from supplier to supplier. Most of them are modular, so each installation can be slightly different. However, there are broad categories of function sets that most MIS developers implement.

Estimating

The heart of any MIS and usually the starting point for a new job or repeat order. This is where RFQs (requests for quotation) are processed. Job and customer details entered here will be passed on automatically to other modules, meaning there's less risk of errors by retyping them. But this means the data must be correct to start with.

Generally the estimating module will be where a job number is initially assigned, and increasingly it is where an electronic job ticket is first generated to define the methods and materials requirement to the downstream production processes and their operators. Many printers have several presses and finishing lines, so estimating modules need to be able to find the best working method, depending on factors such as whether customer is prepared to pay extra for fast turnround or high quality, and the availability of production equipment in the forward schedule. Often they'll offer several different options for the human estimator to choose from. Website ordering systems also need to communicate with the estimating module.

Web-to-print

A rather loose term for a printer's website that can be accessed by customers and often used to submit electronic job files (see the *Web-to-Print* chapter within the Digital section on page 99).

The capabilities vary widely, from simple e-mailable forms that create an RFQ that's manually processed by the human estimator, to fully automated web stores that allow customers to specify and preview their own jobs, automatically return quotations, then accept orders, pre-flight the job files and place them in a job queue for automated pre-press or digital printing. Job tracking, stock lists and repeat ordering are also common functions. Many MIS developers can supply their own web-to-print software (that can usually be customised with the printer's own branding), or if not they'll usually integrate at some level with third party sites.

Scheduling

The planning module that lets the production control department see what jobs are booked in and which machines are needed and when. Often the display will be a simulation of the traditional Gantt wallcharts. Big printers with lots of machinery and jobs often use large format plasma displays because standard desktop computer monitors can't show enough information without scrolling. Many MIS installations include some form of shopfloor data collection to monitor and record actual production for costing. Increasingly this information can be fed back to the scheduling module, to allow live status monitoring. This helps with manual or even automatic rerouting of jobs if something else is either running late or becomes available unexpectedly.

Some MIS companies supply their own sensors to fit onto production machinery. In other cases the data may be captured directly from the standard computerised controls fitted to some press and finishing equipment – increasingly this is handled via JDF/JMF code, which can act as a universal data interface between otherwise incompatible code structures. In the case of re-routing, the most sophisticated systems can pass information to the pre-press computers so they can re-impose multi-page jobs for different press formats, if required. Feedback may also be sent to the CRM module or to the website for live tracking of job status.

Data collection and JDF

Shop floor data collection modules can gather very accurate production times for each job for direct costing and analysis for future estimating. The information can often be fed in real-time to the scheduling and CRM modules, allowing instant revisions to schedules as well as constant progress tracking for customer service reps.

Originally MIS systems relied on operators recording their activities on keypads, but increasingly the information can be captured live and in more detail by direct machine interfaces (DMI). Special sensors might be fitted to the machines, though as more and more presses and finishing equipment become computer-controlled, it's feasible to send their data directly to the MIS.

JDF (Job Definition Format) is taking on increasing importance here. This is an industry-wide initiative supported by a large number of print-related machinery and software developers. It allows a standardised JDF electronic job 'ticket' to be passed to production systems, where it can set them up automatically if they are sufficiently computerised, or provide set-up instructions to an operator through a computer terminal or printer next to the machine. Live feedback from some machines can be passed back to an MIS using the related JMF (Job Messaging Format).

Nearly all MIS developers can support JDF/JMF now, but communications between production systems are not yet 'plug and play' so they still often need to be configured specially for each installation. It makes sense to use the MIS to administer the creation and distribution of JDF job tickets and the feedback via JMF. Because of this, MIS technologies are now starting to bridge the gap between administrative and production systems.

Customer Relationship Management (CRM)

As with accounts and websites, some MIS provide their own CRM module, but others can swap data with industry-standard systems. A CRM provides instant data on-screen in response to enquiries by a customer. Typically it will be used by sales or customer liaison staff when dealing with customers on the phone, or during site visits via laptops. They can call up details of customers, their current and past jobs and give them any information about progress, despatch, costs and anything else stored in a database. Usually a CRM-friendly MIS can also receive new customer data entered via the CRM, such as new names, addresses, phone numbers and so on as well as acceptances of quotes, passed proofs and the like.

Costing and accounts

Some MIS have built-in accounts modules, more often they'll export in a format acceptable to standard business accounts systems. Costing is essentially the mirror image of the estimating process, taking actual timings and material consumption, adding the fixed costs and calculating the real cost of production to the printer. If shopfloor data collection is used, its records might be used to override the estimated values.

Results can be passed straight to the accounts system for billing, or it may require some human adjustment where the margins passed onto the customer are increased or reduced for a variety of reasons.

Real costs can also be used for analysis of individual jobs or patterns of jobs over time. This in turn can be fed back to produce more accurate estimates, and also used in forward business planning – say to decide on whether an expensive new press would pay its way or whether to get a few more years out of an existing one that's already been paid for.

Distinguishing between MIS

There are some 20 different MIS lines sold in the UK market, and distinguishing between them all can be difficult. Broadly speaking, they can be split into three rough categories: At the top end, there are those which are aimed at large printing groups, with multiple plants, often operating in different countries and which are capable of dealing with many different languages and currencies. These tend to be based on powerful databases such as Oracle. This group includes MIS from the likes of Dims, Prism and EFI's *Hagen* as well as Kodak's new *Enterprise Management Solution*. Several of the midrange MIS use Progres or SQL databases. These include Optimus, Shuttleworth, Tharstern, Radius and Imprint, as well as EFI's *Logic* and *PrintSmith*.

At the bottom end of the market there are a number of MIS rting to appear based on *FileMaker Pro* databases. Examples include *Printuitive*, developed by Outsourced Projects, with Yorkshire printer PC Print, and TimeHarvest, a company that concentrates on digital print analysis.

Conclusion

A fully integrated MIS should be able to gather and analyse performance data from throughout a print factory, and to generate job tickets and drive production processes with minimal operator intervention. This kind of automation is essential if a print company is to handle a larger number of small jobs whilst reducing costs.

Major MIS suppliers

DIMS!

DiMS! develops high end MIS and ERP systems that are bought by the likes of RR Donnelley, Roto Smeets and Lithotech. Based in the US and Netherlands, DiMS! has had a UK office in Nottingham since 2004.

The software is a single, Web-enabled, multi-lingual, multi-currency package that integrates administrative and printing processes for printing and packaging. Recent additions extend the enterprise features of planning, production, purchasing and inventory management, and accounting for multiple plants, division or countries.

EFI

EFI's purchase of PrintCafe in 2004 gave it the world's largest selection of MIS product lines, though not all are sold in the UK and one or two are specialist high end systems. The popular and low cost *EFI PrintSmith* MIS is aimed at small printing companies and is particularly easy to implement. It can be expanded with the *PrintSmith Site* web storefront for on-line ordering. It would be equally suited to digital copyshops or wide format printers in addition to offset companies. For larger companies, the *EFI Logic System* may be best suited if they work mainly with price lists (often relevant to digital print), or for multi-element jobs the *Hagen* MIS may be better. EFI's *Digital StoreFront* (DSF) and *PrinterSite* suite can be added to create web-to-print front ends for its higher end MIS products, though the functions of *PrintSmith Site* are broadly similar.

Heidelberg

Heidelberg at one time seemed determined to have an offering in every print-related activity. *Prinance* was the MIS it commissioned to work within its *Prinect* print-factory networked operations. Not surprisingly it offers particularly good JDF enabled links to other Heidelberg production systems, from pre-press to press to finishing. Heidelberg doesn't want to shut out third party MIS developers, so stresses that it works with any of them – at recent UK open days, Optimus, Tharstern and Shuttleworth were present, demonstrating their *Prinect* connections.

Hiflex

Hiflex was an early pioneer of JDF links between its *Hiflex Print* MIS and production systems via the NGP developers' organisation. *Hiflex Office* is the core MIS for estimating, order processing, materials, customer management and interfaces to financial and payroll accounting. *Hiflex Factory* is a JDF-compliant production planning and shopfloor data collection. *Hiflex eBusiness* allows customer access via web browsers for job ordering, invoices, tracking, stock checks and contact data. It also offers the *Hiflex Streamlining* consultancy service for identifying potential savings.

Imprint

Set up in the early 1980s, Imprint now has more than 500 systems installed at more than 250 UK companies. In 2007 it introduced a new generation of its expert MIS, featuring

enhancements to estimating and production control software, live viewing of the entire production process, automated alerting and integrated sales and marketing as well as e-commerce trading. Imprint is particularly proud of its high speed estimating module, which it says can work out the most complex job in less than two minutes, including generation of a quotation letter. The estimating module can be accessed by web browsers, by sales staff on the road.

Kodak

Kodak Graphic Communications launched an MIS called *Enterprise Management Solution* (EMS) in 2006. Based on an ERP (enterprise resource planning system), it has been adapted for the printing industry and can be configured for any level of business from a relatively small five-user set-up up to hundreds of users across multiple plants. Core modules cover quoting and estimating, sales support, job management, purchasing, production planning and scheduling and finance. Optional components include CRM, quality assurance, supplier management, 'lean manufacturing' processes, customer and supplier web portals and business intelligence.

Optimus

One of the longest-established UK developers, Optimus was originally a spin-off from Optichrome, a large sheet-fed offset printer in Woking. It was subject of a management buyout in 2007 but remains located within the original Optichrome print site. The current 'third-generation' *Optimus 2020* modular MIS was introduced in 1998 and is still a leading-edge system that's updated several times per year.

In 2006 it introduced *Optimus 2020 QuickSmart*. Major changes included improved auditing and work-in-progress capabilities, greater support for fast turnaround jobs and for group functionality, more access to data for analysis and improved scheduling. *Optimus Analysis* can interrogate the data in *Optimus 2020* to analyse strategies for use in business development.

PrintCost

PrintCost is a modular system available in three configuration packs which may be purchased or leased. All systems include *PrintCost Xpert*, which automates the quoting procedure by calculating the most cost effective way to produce the job. All systems also include the job planning board and the ability to produce job bags, delivery notes and labels, and invoices. The system includes reports for quote follow-up for estimators and/or sales reps; quote conversion percentage by sales rep; work-in-progress; plus many more for job production and sales analysis.

PrintPak

PrintPak is a long-established MIS developer whose low entry costs and pricing model attracts a lot of small printers. However, the software incorporates very sophisticated intelligent agents that can adapt to any type of print operation. *PrintPak* users can run the systems in-house, or they can access powerful servers hosted by PrintPak itself. There's also an e-commerce option, also hosted by PrintPak.

Prism

A long-established and successful MIS developer, its main offering is *Prism WIN*, aimed at medium sized printers, with up to 20 modules available. A new Small Business Edition (SBE) was launched in 2006, with 14 modules, easier-to-use wizards, workflow functions and a flexible interface for fast decision making. It supersedes Prism's earlier *Enterprise 32*, a successful MIS for small-to-medium sized companies, with more than 1700 users worldwide. Prism also owns data collection and production management developer QTMS. Its products work with most MIS but are particularly tightly integrated into the Prism systems.

Radius Solutions

Radius Solutions has been around for more than 30 years. Its product is *PECAS Vision*, an MIS that's suitable for most print market sectors, such as labels, flexible packaging, folding cartons, magazines, journals, books and commercial print. It puts particular stress on data analysis and reporting. It handles the usual MIS estimating, costing, scheduling functions, as well as e-commerce and supply chain management.

Sanderson

Sanderson develops MIS software for a variety of industries. Its print suite is the *Unity MIS*, which can handle business analysis for all areas including sales, customer service, production and purchasing. *Unity* has over 40 modules, which make use of the JDF, PDF and XML technology.

Shuttleworth

Another of the long-established British developers, set up in the early 1980s, Shuttleworth has sold a lot of systems and also grown by acquisition of other developers in recent years. The company now sells worldwide, with more than 700 installations. The Shuttleworth system is modular and can be tailored for particular types of business, while retaining a core structure that allows easy modification and updating. Shuttleworth has also worked with ROI to integrate the *Xralle* web-to-print variable data procurement software into its MIS. *Shuttleworth/XRalle* integration allows products like business cards, stationery and leaflets to be created, modified and proofed in real time on the web, with automatic generation of PDFs for pre-press.

Technique

Technique develops MIS primarily for publications printers, including book, magazine, catalogue, direct mail and newspaper production – customers include Howitt (direct mail) and Woodford Litho (heatset magazines, brochures and catalogues). Technique uses dashboards and reports to deliver real-time information. There's browser-based access to the MIS, direct mail functions, inventory control including finished goods and data collection.

Tharstern

A long-established UK MIS developer established in 1984, its latest system is the *Tharstern 3* MIS, which replaced the *TharsternSQL 2* system. This features fully integrated JDF throughout. There are bidirectional links to the popular *Goldmine* CRM database. Tharsten also sells a cheaper version, *SmallPrint*, which includes full estimating, costing, purchasing, invoicing and a link to an accounts package. It also includes predefined templates, which obviate the need for expensive training. It's based on a version of Microsoft SQL, MSDE, which Microsoft supplies free of charge, but which is limited to three users.

TimeHarvest

TimeHarvest in Oxford produces an estimating and quotation system that was created for digital print from the start, rather than being an adapted offset product. Its basis is the *FileMaker Pro* database for Mac OS or Windows. *DigiQuote* as a single product that can be configured for any type of digital print, narrow or wide format. Prices start at £995 for a single-seat system, or £1995 for a networked version, plus £250 per additional seat. The job control module is another £1995. The new *QuoteBuilder* allows projects of many components to be estimated individually as line items in *DigiQuote*. *QuoteBuilder* then assembles them all together with one price, with all the line items listed.