

Read all about it!

Value chain optimization in the newspaper printing industry

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It is hard to imagine a business that turns out more new products on any one day than the newspaper printing industry. Or one that depends on so many different machines and equipment, or involves as many different technologies. Add the fact that producing newspapers is a resource-hungry process, and it is easy to see why printing houses give such high priority to value chain optimization.

ABB's Industrial^{IT} portfolio was developed with just this kind of process in mind. In newspaper printing, there are many operations that can benefit enormously from the solutions Industrial IT has to offer. Two examples are Produce^{IT} MPS Workflow, which was developed for platemaking operations, and Plan^{IT} MPS Cockpit for managing the overall production process.

Newspaper printing is resource-hungry by nature (see Table on page 40). Diverse new products are printed in huge numbers, night after night, in highly automated plants, usually under extreme pressure. Timely delivery is everything – nothing loses value faster

than a newspaper that hits the streets too late.

Publishing newspapers is also a highly complex operation. Know-how across a wide spectrum is required – from information management during page make-up, through the technologies

used for platemaking and reproduction on the presses, to newsprint logistics, automated bundling and packaging, and final distribution. The range of equipment needed for all this is enormous. Besides controls, drives, automation and machines of every kind, powerful

Typical resource data for a medium-size European newspaper publisher producing 18 editions, with 32 pages, nightly

<i>Resource</i>	<i>Typical values</i>
New data generated per day	12 Gbytes
Plates used per day	1200
Newsprint used per day	50 t
Ink used per day	500 kg
Power consumption per day	20 000 kWh
Editorial staff	270
Technical staff	350
Administrative staff	50
Capital investment in plant	DM 100 million

computer networks and sophisticated measuring and positioning systems are installed. On top of all this come the media that are used to transmit the data, ranging from wire through wireless to satellite. Such a wide array of plant, processes and technologies obviously presents a challenge not only to the publishers, but also to the equipment suppliers.

Production – the sum of many parts

Newspaper printing is further complicated by the fact that the



production process is made up of many individual, self-contained sub-processes. The different machines, eg for plate exposure, printing, newsprint supply and so on, also come from different suppliers. This causes a problem, as each supplier provides a proprietary automation solution for his own machine. Software-only solutions are found in just the prepress and page make-up areas. Unfortunately, these are not usually interoperable, which puts the onus on the publishers to make sure that all the processes and systems are able to communicate with each other on at least some minimum level.

Different departments for different tasks

Each of the sub-processes calls for different skills and expertise, and newspaper printing houses are often organized in a way that reflects this. It is usual to have separate departments for

the prepress work, plate production, printing, packaging and distribution. Alongside the more or less independently operated technical processes, there exists a distributed organizational structure in which relatively large amounts of information have to be exchanged in order to control the process. Such an arrangement makes it difficult to obtain the key economic data required to optimize operation.

Is networking the answer?

It would be unfair to the suppliers of the technical software not to mention the efforts they are making to provide a networking solution capable of linking all the different systems together. However, their 'production control systems' are proprietary solutions and, as a rule, no more than two supplier products are linked at a time. They therefore fall far short of being anything like a fully integrated solution.

Neither will the 'hottest new thing' – *digital workflow* – do anything to change this situation. When 'computer to plate' technology was introduced, digital workflow was reckoned to be *the* process, capable of handling all the digital data used in newspaper copy in a way that would ensure ready-to-print quality plate production. However, digital workflow applies to just part of the process chain, namely platemaking. Beyond this, it has no influence whatsoever.

IndustrialIT from ABB

Continuing pressure in the industry to raise productivity, to further increase

1 ABB's MPS family in an Industrial^{IT} context, showing the contribution to value chain and asset optimization

- 1 *Maintain^{IT} MPS Service*
- 2 *Control^{IT} MPS Press Control*
- 3 *Operate^{IT} MPS Control Console*
- 4 *Produce^{IT} MPS Production*
- 5 *Inform^{IT} MPS Inform*
- 6 *Plan^{IT} MPS Edition*
- 7 *Produce^{IT} MPS Roll Handling*
- 8 *Produce^{IT} MPS Workflow*
- 9 *Plan^{IT} MPS Cockpit*

Asset Optimization	Reduction of capital employed			7			
	Optimization of resources	6	8 9	7	6 9	9	
	Productivity improvement		8 9	7	4 9 4	9	
	Quality control		8		3 4 5		
	Maintenance		5	5	1 5	5	
	Automation		8	7	2 3 4		
		Prepress	Platemaking	Roll supply	Impression	Packaging	Distribution Subscribers
Value Chain Optimization							

return on resources and operating capital, and to provide more reliable data for decision-making, points to a strong need for new business models. It is important here to realize that this is about much more than just finding some new way to increase the automation of a technical process. The model that is needed must be able to seamlessly link and integrate all the systems, software and services participating in the value chain.

ABB calls this business model Industrial^{IT}. In order to apply it, all the products, systems, software and information technology solutions have to be Industrial IT enabled and comply with certain rules. The more suppliers there are for the different products and systems, the more complex the task will be and the more effort will be needed to find a solution.

Optimizing the value chain

The first step towards Industrial IT is to

integrate all the automation systems taking part in the process to allow the free exchange of all the data required for smooth, trouble-free operation. However, this alone is not enough to achieve the goal of value chain optimization. What is needed is *real* integration of the systems, to enable operating procedures, functions and data ownership, as well as all the different means of communication, to be analyzed and harmonized across the entire process. When this is done, it is perfectly possible for software modules from one supplier to be integrated in a computer from another supplier. Production parameters, etc, could then be indicated and modified where it makes most sense.

Optimizing the operating assets

As a further step, ABB's Industrial^{IT} concept aims at optimizing the operating assets. These are the investments made

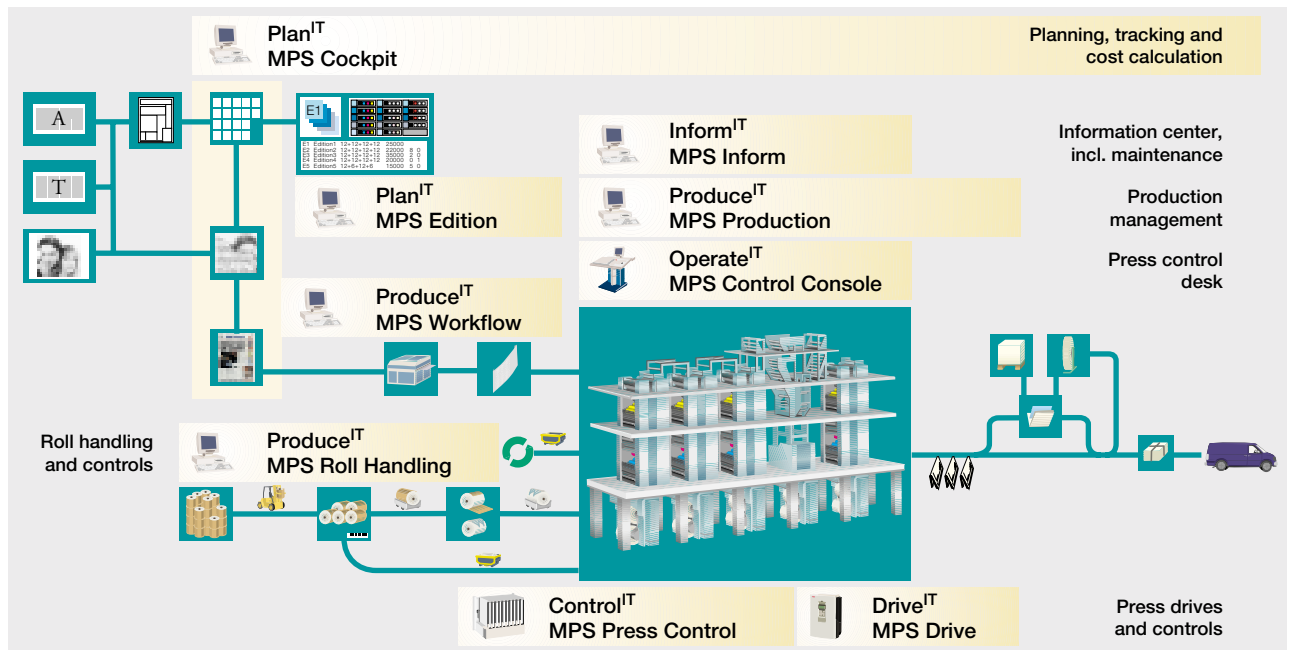
in machines, material and personnel to achieve trouble-free, high-quality production at minimal cost. Optimization here depends on specific information about the available machines – such as operational behavior and key economic figures – being collected and evaluated in terms of the total process.

Master Printing System (MPS) – ABB's system family for the newspaper printing industry

ABB offers a whole series of innovative, software-intensive solutions for automating newspaper printing operations **1**, **2**. In printing plants around the world, they are already playing their part in ensuring timely, efficient and economical newspaper production:

■ Drive, control and automation systems for presses (Drive^{IT} MPS Drive, Control^{IT} MPS Press Control, Operate^{IT} MPS Control Console, and Produce^{IT} MPS Production).

2 Overview of newspaper printing operations and the Industrial IT systems ABB has developed for them



- Logistics and control in the roll supply area are provided by ProduceIT MPS Roll Handling.
- InformIT MPS Inform offers valuable information for statistical evaluations and optimization, and is also used as a planning tool for press maintenance.
- ProduceIT MPS Workflow covers everything from conversion of prepress data to platemaking.
- PlanIT MPS Edition is a prepress planning tool for coordinating the newspaper structure with the press capabilities.
- Finally, there is PlanIT MPS Cockpit. This completely new system is used for production-wide planning, tracking and calculation.

To illustrate the unique benefits of ABB's MPS family, two of the above systems, ProduceIT MPS Workflow and PlanIT MPS Cockpit, are looked at more closely in the following.

ProduceIT MPS Workflow

The introduction of computer-to-plate (CTP) technology, has made digital workflow the main topic of discussion at symposia, in trade journals and among members of the printing profession. The

focus has tended to be on the suppliers of the CTP equipment and their digital workflow solutions for transferring the incoming data to the printing plates. Numerous functions are involved in this, including workflow automation,



3 Example of an application for Produce^{IT} MPS Workflow

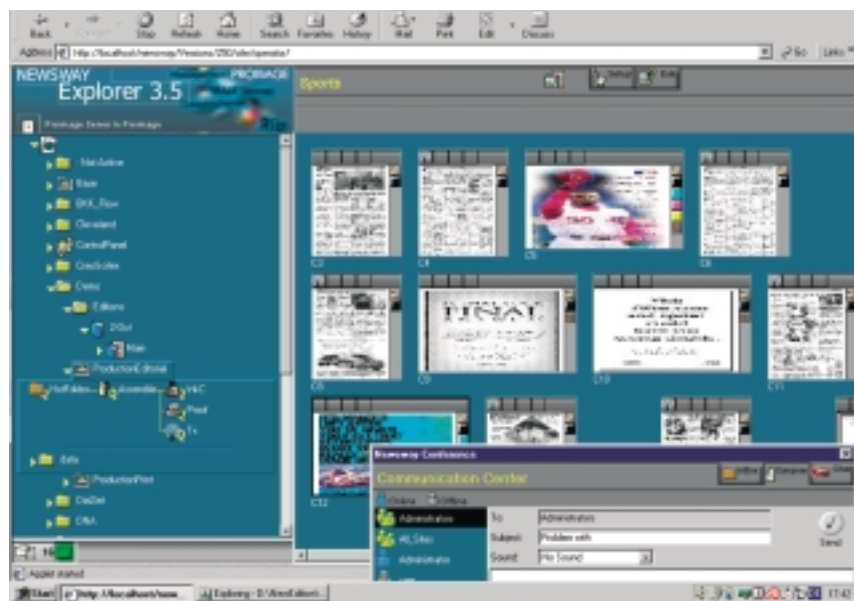
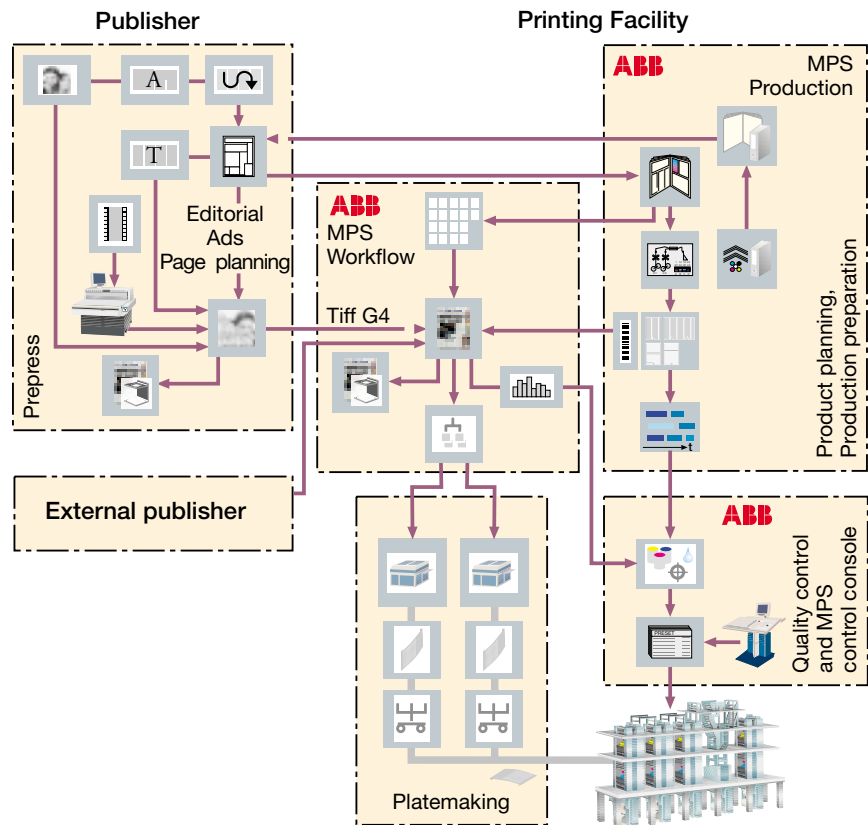
A seamless synthesis of page planning, platemaking and printing operations creates a homogeneous, total solution that merges equipment, products, systems and applications to provide an ideal basis for value chain optimization.

screening, page composition, preparation of data for exposure, plate management priorities, color proofs, exposure unit control (including load balancing), calculation of ink zone data, production visualization and control.

One of the market leaders in supplying workflow solutions for platemaking is ProImage Ltd. ABB has signed a cooperation agreement with ProImage aimed at closely coordinating its workflow technology with the press production management capability offered by Produce^{IT} MPS Production. By merging page planning, platemaking and printing, ABB has created a uniform system that it markets as Produce^{IT} MPS Workflow 3, 4.

This fully integrated solution, which optimizes newspaper printing through the exchange of dynamic, real-time information, is consistent with the goals of Industrial IT. Advantages that Produce^{IT} MPS Workflow offers over conventional CTP solutions include:

- Coordination of product characteristics between the prepress stage and the press
- Checking of new pages for production feasibility
- Use of proven press impositions as the basis of all product structure options
- Coordination of plate requirements with the current situation in the press room
- Extension of plate annotations to include the physical plate location in the press
- Automatic updating of the systems for plate changes and for rescheduling at short notice.



4 Screenshot of Newsday's software for the plate production process in Produce^{IT} MPS Workflow

- Press set-up aids, for defining the plates to be changed in sequential production.
- Display of the screened page contents at the press control consoles.

Plan^{IT} MPS Cockpit: **the power to manage the entire production chain**

With Plan^{IT} MPS Cockpit [5], ABB offers the newspaper industry a comprehensive instrument for planning, tracking and cost optimization. This solution spans the entire production chain – from

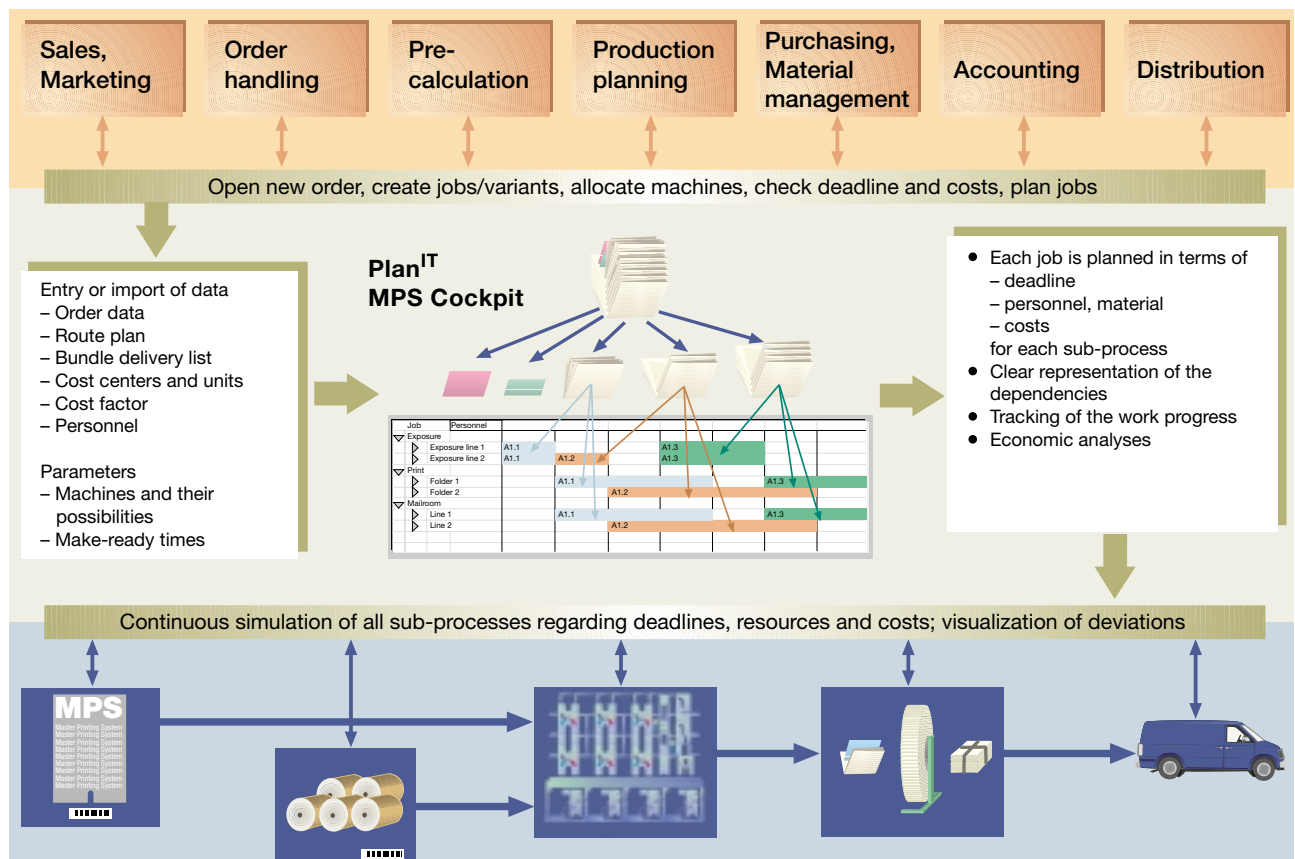
platemaking to delivery on the ramp. Production and personnel resources are assigned on the basis of the incoming order data. Continuous simulation of the process keeps the system informed of the consequences of changes in the planning data for the workload (eg, capacity conflicts), production schedule and costs. During production, Plan^{IT} MPS Cockpit also tracks the actual progress of work and displays the expected end of production for all departments.

Part of the system can be thought of as a virtual, electronic planning chart on

which all the data are continually updated by the simulator running in the background.

Plan^{IT} MPS Cockpit also supports decision-making. This is useful for determining the ideal product structure, for guaranteeing or optimizing workloads in the different departments, and for determining the key economic figures needed to analyze the process or parts thereof. This kind of information – and the costs involved – can be quickly obtained by simulating the different scenarios.

5 Plan^{IT} – MPS Cockpit workflow diagram



Another advantage of Plan^{IT} MPS Cockpit is that products from several different publishers can be produced at different sites using a single system. With a client-server configuration, information and data can be displayed or entered at any location in the network. Besides production reports there is a whole series of browser-oriented displays that can be accessed via the group intranet or the Internet. These provide a good overview of the key production data.

Plan^{IT} MPS Cockpit works together with subordinate production control systems from different suppliers. Order data, etc, are transferred in a standardized form to these systems, so they no longer have to be entered locally. Also, the systems report back with information such as the actual progress of work. Based on this information Plan^{IT} MPS Cockpit immediately generates new estimates of the end of production in the different departments. In this way, impending bottlenecks can be recognized early and timely measures taken to counteract them. Production control system databases apart from ABB's own that have already been integrated include those from Ferag, Müller Martini, Agfa, Autologic and SAP.

Operations can be previewed

Plan^{IT} MPS Cockpit is designed to promote not only communication between sales, marketing, accounting, production and management, but also a

sense of responsibility in every participant. Journalists will understand the consequences of missing a deadline by seeing themselves how it affects the production chain – and what it costs! Plans thought by a department to be appropriate but which do not fit into the overall scheduling or cost framework will be shown to be just that, allowing corrective measures to be taken. Chronic bottlenecks will also be exposed. Since Plan^{IT} MPS Cockpit provides all the facts up front, management can be more proactive. At last a tool is available with which last-minute product changes can be thoroughly checked and then scheduled into production on time.

Plan^{IT} MPS Cockpit was conceived as a central instrument, serving target groups over the whole business spectrum. Publishers, technical management, sales, production planning, accounting – all of these are integrated into one system, to benefit all of them. Among its many advantages are:

- Collision-free planning of all jobs, with visualization of consequences for the scheduling, resources and costs.
- Immediate comparison of estimated and actual cost of individual jobs.
- Visualization of the work progress and the consequences in critical situations.
- Forecasts of the resources required for each sub-process.
- Display of available personnel and production resources; this indicates possible locations of chronic bottlenecks.
- Preparation of key economic figures for owners and management.



ABB's solution portfolio

Further development of ABB's system family will see it progressively adapted as a business model to create an architecture in which *aspects* – an integral collection of *object* characteristics – play a key role. This will enable the seamless exchange of information between all systems, right through to the administrative departments. ABB's broad scope of offerings and the uniform Industrial^{IT} architecture will enable the main infrastructure of printing houses, as well as secondary systems such as the power distribution, robots, air-conditioning, building automation, to also be tied into the optimization of the value chain.

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