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# Frontline SOLUTIONS

*Technologies for Extending Information Management*

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ID NEWS  
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## Up in smoke

When plan A falls apart, how good is plan B? APS manages the variables.

**DATABASES TO GO**  
Carrying multi-Mbytes in your pocket

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Managers gain real-time shop-floor visibility

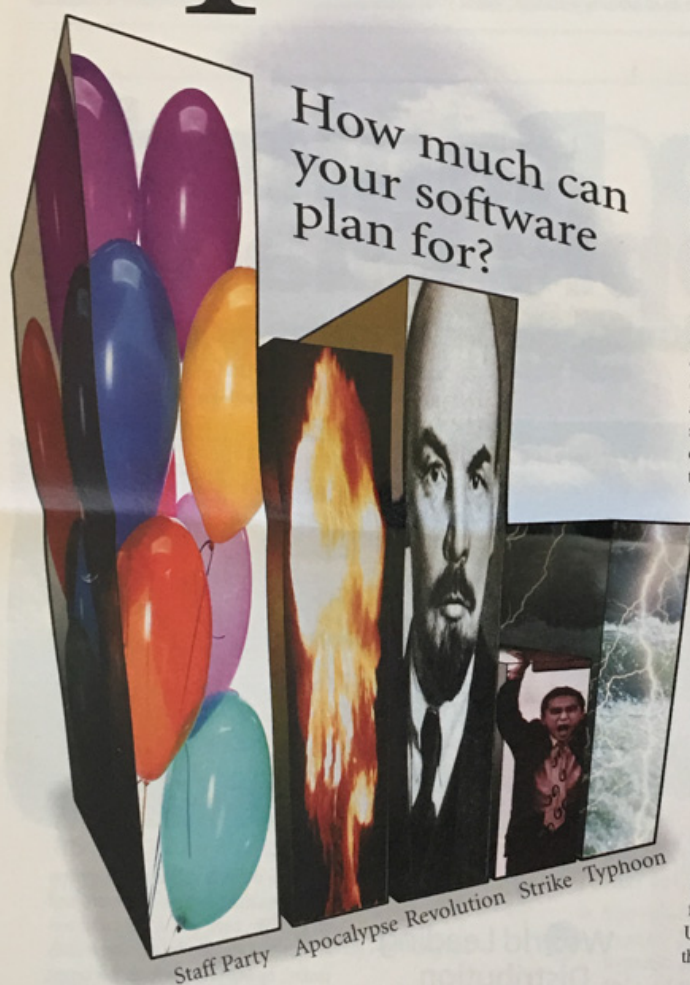
**e-VOLUTION**  
Directions for the trip from brick to click

■ SOFTWARE ■ MOBILE COMPUTING ■ EDI/E-COMMERCE ■ RFID ■ SCANNERS ■ PRINTERS ■ RECRUITMENT



# Proceed to plan B

When everything looks perfect on Planet ERP, APS brings you down to earth



How much can your software plan for?

By Salina Christmas

By now, you've heard of Advanced Planning and Scheduling (APS), software advocated by vendors and analysts as the ultimate solution in tackling complex shop-floor scheduling.

APS started life in the 70s as two software modules: the MPS (Master Production Schedule), created to respond to demand, concerning only finished goods, and the CRP (Capacity Requirements Planning), used to analyse the utilization of manufacturing resources<sup>1</sup>. The two came together to become a modest scheduling and planning system, and after several key adjustments in the late 80s (bigger memory, Windows interface), the system was re-branded APS.

## The next big thing

Covering demand management, supply chain planning, production planning and scheduling and distribution planning, APS is the fastest growing software market in the world. Last year, the market grew by 60%, reports ARC Advisory Group (Dedham, Massachusetts, USA), with growth concentrating on distribution-centric supply chains.

AMR Research's (Boston, Massachusetts, USA) March 1999 report on manufacturing states that plant scheduling systems implemented to solve narrowly defined plant problems have saved companies US\$200,000 to US\$2 million, increasing throughput by 3% to 4%.

Growth. Statistics. Return on investment.

You've heard this all before. Isn't that the same pitch they use to sell ERP (enterprise resource planning)? And you're probably thinking: "Why bother with yet another supply chain software when a) I already have ERP doing the job? and b) electronic schedules will only make me go through the problem quicker, but won't solve anything?"

## Not useless, but not perfect

ERP has sophisticated code and memory-resident processing, capable of handling complex planning, scheduling and sequencing scenarios, but some say it doesn't consider the actual available capacity of resources of the plant. In the ERP world, everything is perfect. Delivery of raw materials is prompt, orders are accurate, the machine never breaks down, the workers never fall sick, the customer never changes his mind. Unless interfered with, all works will go smoothly according to the ERP plan.

## APS works with ERP

If you buy APS, will your ERP become old hat? Do you have to fork out money for a new system?

"ERP does a poor job at finite scheduling capacity," says Rienk Bijlsma, the Northern European operations manager of Systems Modelling (The Hague, The Netherlands), "but it's always used in combination with our solution to bring data into Tempo, the APS system."

Systems Modelling uses ERP from suppliers such as Great Plains and 4th Shift to tighten the APS-ERP integration. Major ERP

## What is APS?

It won't do Advanced Planning and Scheduling (APS) justice to dismiss it as a job organizer with a fancy Windows screen. But that definition isn't far from the truth.

### What you see is what you get

What makes APS unique is its Windows graphical interface. As you feed in raw data such as resource utilization, time and cost estimates into the system, APS produces a visual list for all to see. Whereas previously your marketing executive, your client and your staff had to rely on

tables, spreadsheets or, worse, their imagination, to understand and believe your objectives, APS lets everyone see when and how the plan is going to be achieved because everything is visually laid out on the monitor.

### All problems figured out

APS automatically re-schedules and creates floats for all specialized sub-activities and potential risks not considered by ERP. It predetermines the solutions to the problems rather than reacting to the problems.

"An APS runs entirely in computer memory," says Quentin Brearley

of Glovia International. "Most planning systems use a database and have to read and write data to the database over and over again in a planning run. Where an MRP (Material Required Planning) system might take two hours to run, an APS might take two minutes."

### Easy sequencing

If you choose to disregard the APS suggestion, which you inevitably will, and alter the APS plan to match your own schedule, you can click on the menu, drag and drop the simulated tables to rearrange the master plan. Unlike

ordinary ERP or MRP, APS isn't a batch process, and doesn't re-plan in a sequential fashion.

"Tampering" with the automated schedule will not create problems elsewhere in the tables.

Adjustments are dealt with instantaneously.

### Real-time interaction

APS allows the back-end office, logistics and the shop floor to interact with each other in real-time. Results are updated on the monitor to correspond with the actual work progress on the shop floor. Supervisors don't have to make frequent trips to the floor

to check on progress.

### Finite capacity

A production plan consists of a sequence of operations. To fulfil the orders, the plan has to be based on the real capacity of resources. This is finite capacity scheduling. Resources can be anything: staffing, tooling, machines, raw materials — anything that's a risk to process. APS churns out recommendations according to what's available on the shop floor. Therefore you can predict your lead times, and you can give out reliable delivery dates.





vendors such as Kewill, JD Edwards and i2 Technologies also provide APS packages than can be integrated into their ERP systems.

"APS software complements, not replaces, traditional ERP or MRP systems," says Sarah Sherman, spokesperson for i2 Technologies (Burnham, UK), the provider of Rhythm. "Dealing with everyday occurrence and knowing the effect of the changes and your corrective actions is where ERP

and MRP (Material Required Planning) systems break down. Because of the batch and the sequential nature of MRP planning, any management help from the system is too little, too late. You need the answers now. And they must consider both material and resource limitations simultaneously in order to provide meaningful information."

#### A way of making promises

"Most companies implementing APS see

quick and striking improvement in on-time shipment," says Sherman. "APS allows the manufacturer to quote a realistic promise date to begin with, and then supports the execution of the plan to meet the date."

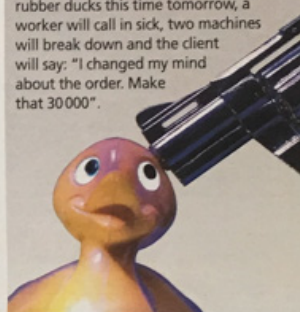
Nordberg Group (Helsinki, Finland), a user of i2's Rhythm, hopes to install the software on all sales representatives' laptops, enabling orders to be transferred directly from customers' locations to the plant.

Nordberg manufactures crushing equip-

## Deliver, or the duck gets it

### A scenario starring APS

You are operations director at ACME Rubber Ducks. When your sales director agrees to supply 10,000 rubber ducks by Easter the responsibility rests on your shoulders. You may not be happy but trouble comes with the job. Sooner or later, you're going to run across problems on the shop floor, and problems will run across you. You can almost guarantee that when you have to deliver 10,000 rubber ducks this time tomorrow, a worker will call in sick, two machines will break down and the client will say: "I changed my mind about the order. Make that 30,000".



# Here is your new identity



**METGET AB** is a privately owned manufacturer of RFID cards, disc tags and transponders. Founded in 1995, today **METGET** operates world wide in supplying very thin, RFID disc-type products and cards in bulk to retailers, solution providers, system houses, and niche application leaders.

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**METGET** products are based on careful engineering and complete mastery of all processes involved in transponder production. Their purpose-built assembly lines guarantee consistency within strict qualitative parameters and therefore high product reliability.

## metget

RFID transponders.

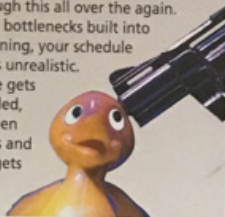
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ment for rocks, ores, sands, gravel and demolition debris, selling them through distributors in 25 countries and 120 distributors from different markets. The company is already using Rhythm to manage complex scheduling due to orders generated from sep-

### The yellow dye delivery doesn't arrive on time...

The supply chain events are disrupted. Now you have to adjust your master plan. But because the ERP plan is done in a sequential order, fixing the schedule disrupts the entire sequence of planning. You tear the whole thing apart, put it together again, and after a considerable time, it comes up with Plan B. Another problem happens. You go through this all over the again. Without bottlenecks built into the planning, your schedule becomes unrealistic. Resource gets overloaded, the burden increases and the job gets longer.



arate sales literature, price lists and technical specifications.

### You need more than a Plan B

Houston-based Varco is a prestigious name in drilling equipment for the oil industry. Despite the good name, Varco has had to compete as hard as the next guy to secure contracts with customers. To crown it all, Varco had problems with scheduling.

The company needed a system that communicates in real-time, can discipline the shop floor and can simulate many different strategies in accomplishing a task.

Varco wanted to tell customers about its shop-floor efficiency to prove that it is a quality enterprise. Glovia International's (Solihull, UK) real-time APS software helped Varco do just that.

Quentin Brearley, European project manager of Glovia International: "APS has the ability to consider multiple constraints in a single planning run. MPS/MRP only considers inventory and simple lead times whilst planning."

"An APS will consider all the business constraints: inventory, capacity, tooling and skill in one planning run, resolving the plan in great detail. As the plan runs so

quickly, multiple simulations are possible in a reasonable time-frame for comparison purposes."

### Survive e-commerce

SMEs (small and medium-sized enterprises) want to know how they can survive the onslaught of e-commerce. They already know what e-commerce is doing to their schedules, but where does APS come in?

E-commerce is changing the rules. Goods such as apparel and consumer electronics are now being purchased directly from the manufacturers instead of through retail outlets.

"Meeting demands on a customer-to-customer basis is posing a huge challenge for

these companies, meaning that APS will become more and more critical in the near future," says Sarah Sherman.

Because e-commerce puts a greater emphasis on end-customer distribution, the plant can't help but take distribution more seriously. For distribution to synchronize with customers' erratic demands, the logistics department must have regular feedback from the shop floor. APS provides logisticians with the exact status of orders by linking them to the suppliers, sales and production through EDI or the Internet.

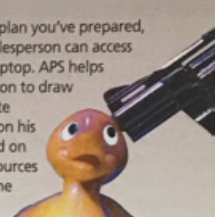
### New interface

"The Internet brings a new interface to the

### Seeing is believing...

Your salesperson is desperate. The customer sitting smugly opposite him has already received a good delivery date for 30,000 rubber ducks from a competitor. Your salesperson reckons he has a better delivery date. He says you can deliver the same amount of rubber ducks three days earlier than the competitor's proposed date. Does the client believe it? He might

if he sees the plan you've prepared, which your salesperson can access through his laptop. APS helps your salesperson to draw out an accurate delivery date on his terminal based on the actual resources available on the shop floor.



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ERP market, one that faces outwards," says Brearley. "APS tools and other associated software packages present a highly interactive interface to the internal customers of ERP."

Glovina wants to have the front-end driving the ERP functionality directly so that all business and supply chain transactions reside in one system.

APS makes perfect sense in a web-enabled front-end. E-commerce customers are not a patient lot — a web-enabled APS caters to their impatience, eliminating primitive means of data exchange — like the phone. "Personally," adds Brearley, "I am already intolerant of this form of communication from our suppliers."

### Distribution and beyond

But it's not only the distribution-centric supply chain that can benefit from APS.

"It is a massive growth area," says Ed Stubbs, the supply chain marketing consultant of JD Edwards (Reading, UK), provider of Active Supply Chain (ASC) system. "JD Edwards takes into account the whole business to provide complete planning solution. Companies are looking further than just distribution for intelligent decision-making within the supply chain."

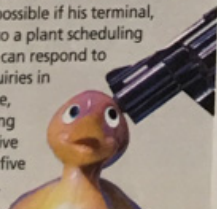
"There are many levels of APS sophistication and specialization," Quentin Brearley contends. "Glovina specializes in verticals, electronics, telecommunications and capital equipment. These are manufacturing- and sourcing-centric businesses which our APS is suited to at a cost of US\$160,000."

### Everybody needs some time

Perhaps what lingers in your employer's mind is: "If APS can interface the plant with both the suppliers and the customers, can it replace that expensive manager of the shop floor?" Ridiculous assumption? Well, ERP was once a clerk's job. Look at how much money it has saved in terms of human resources.

### Even that won't do...

After seeing the plan, the customer feels that the delivery date proposed by your salesperson won't fit in with his company's seasonal promotions. Sorry, he'll have to do business with your company some other time. Of course he will call your salesperson again for a quote. If he remembers. Your salesperson has to come up with several alternative dates now — or else. This is possible if his terminal, linked to a plant scheduling system, can respond to his enquiries in real-time, producing alternative plans in five minutes.



There are some things that can't be coded. APS helps the planner to plan. It won't eliminate the planner.

And there will be a moment when you will ignore the APS suggestion and plan things with your gut feelings as well as a calculator and an Excel spreadsheet.

"True, I have thrown away more computer-generated plans in my life than you would ever imagine," says Brearley, who has worked on the factory floor.

"You could invest in Deeper Blue, the IBM chess-playing super computer, and it still

would not know that on a particular Monday morning, Harry was not the right man for a particular job on a particular machine."

Can APS be flexible enough to accommodate a foreman's elastic schedule? Ideally, it should, says Brearley. APS allows the foreman to re-sequence the electronic schedule according to his own plan.

How, then, would the foreman convince his sceptical operatives that this system can make a difference on the floor?

Says Brearley: "My pitch would be that because APS does consider multiple con-

straints, it is more likely to be right than before. However, it will only provide solutions to 90% of the problems. Humans have to manage the other 10%. APS will give them more time to manage the 10%."

*1. "Is there still a place for MPS in the new ERP environment?" L. Fraiman and C. Boulton, Kewill, High Wycombe, UK.*

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