

The Planning and **Execution Gap**

Is rapid priority management the answer?

BY **BOB TUREK**

At-a-Glance

- Solutions like APS, TOC, and Just-in-Time cannot meet (nor were they designed to meet) the challenges posed by short-term prioritization.
- Rapid priority management can bridge the gap between planning and execution in a relatively low-cost way.
- The methodology is part of a solution that won the 2003 APICS Innovation Award of Excellence.

Modern supply chain forces such as increasing planning changes, decreasing lead times, and an increasing to-order mentality exacerbate the problem of short-term prioritization across the supply chain. Determining what companies need from suppliers, manufacturing, and distribution in order to ship on time is difficult without the proper tools. Planning and execution solutions, including manufacturing resource planning (MRP II), distribution requirements planning, advanced planning and scheduling (APS), Just-in-Time, theory of constraints (TOC), and other order promising mechanisms have not solved, and in fact are not designed to solve, the problem.

This gap between planning and execution can be filled by solutions that provide tools to manage the one- to two-week planning horizon. Rapid

priority management (RPM), which focuses on working the plan, has gained a foothold in several companies and is producing real results. Sophisticated MRPII users have achieved 30 percent improvements in throughput, work in process, and lead times in less than one year.

RPM shows this high value at relatively low cost and low impact by using information from the planning systems already in place. Virtually any company that has planning meetings to determine supply and work plans to serve its customers in a one- to two-week period has experienced the chaos surrounding this task.

Let's take a look at several actual challenges provided by companies that were searching for a solution to managing short-term priorities. These challenges reveal the frustration of not being able to obtain the information that users know is available (albeit in an unusable form) in their planning systems.

Petroleum dispensing equipment. The company needed a way to identify purchased components that would affect the ability to complete a customer's order. The material requirements planning (MRP) system could not separate the real needs from the total needs—in other words, those things that were affecting existing customer orders as opposed to forecast or multiples ordering.

Aluminum light poles. The company's biggest problem encountered with its new MRPII system was that the visibility of the customer order was lost. If an order item had a purchased component with a long lead time and was not on hand, it was difficult to determine if the customer order needed to be rescheduled and re-acknowledged. This had to be done manually by pegging in the system for each level of the bill of materials (BOM), to find the customer order demand.

Upholstered furniture. The company had several plants that all fed a central warehouse. A substantial number of shipments were made on its own truck fleet. The plants had to stay together from a scheduling perspective or the warehouse would fill up with unshippable items. The company wanted a method to help keep the plants and departments synchronized.

Sandpaper products. The company's traditional two-week delivery time once led the industry, but it had to dramatically reduce that to meet market

demands. Traditional planning systems were not sufficient anymore. It had to be able to move very quickly to determine what it needed to be doing in the present to prevent problems in the immediate future.

These companies vary greatly in terms of products, planning needs, complexity of processes, BOMs, and supply chains. All of them had short term prioritization problems, and all of them solved these problems by implementing RPM.

The history of RPM

THE TERM RAPID priority management is a recent development, although the idea is not. The first application of these principles goes back to the mid-1960s when well-known manufacturing consultant Dick Ling developed the first version while working as an IBM systems engineer. The logic later became part of the MRPII system developed by Arista Manufacturing Systems, a division of Xerox and pioneer in developing MRPII systems.

The capability was not appreciated at the time because industry was focused on improving planning, not improving short-term execution. Jim Rittenmeyer, an Arista employee, began to provide specifications to customers so they could develop their own RPM modules. Rittenmeyer later founded Systems Plus, an RPM software vendor that won the 2003 APICS Innovation Award of Excellence.

He describes one of these early, customized versions of RPM: “A manufacturer of printed circuit boards asked us to provide help in improving the performance of their MRPII system. It was doing a good job of planning components, but manual checking and analysis were needed to ensure all the required parts were on hand at the start of production. RPM eliminated the manual checking because potential shortages could be identified early enough to do something about them. RPM contributed to improved planner efficiency and customer delivery performance.”

Short-term prioritization problems and the RPM solution have been around for a long time. So why hasn't everyone heard about it? “Rapid advances in computer technology have blurred the distinction between the roles of the computer and the people in modern business systems,” says Ling. “The current perception is technology by itself can solve the problem. But manufacturing is a complex process made up of a series of least-worst decisions. There are no simple, magic answers.”

“Management appears to have lost sight of the role people play in solving the challenges short-term problems present and aren’t considering options that would improve the productivity of their knowledge workers—planners, schedulers and buyers,” adds Ling.

Addressing the issues

RITTENMEYER SAYS THAT one particular encounter with the president and the materials manager of a window manufacturing company contributed to the development of the RPM approach. He explains that the materials manager stopped him one morning to ask if there was something in the system that would tell buyers what glass they really need. Rittenmeyer responded that MRP should do it.

The materials manager contended that he wanted his people working on items needed for customer orders first— whether purchased or worked on at any level in the plant—ensuring critical items arrived on time and not past due. Rittenmeyer concluded the materials manager was correct. Planning in general would not answer the questions he was asking. It cannot and should not differentiate between forecast and customer orders. If it did, then planning would not work. Also, planning can’t notify a planner that an item that is on schedule (properly planned) is a problem until it is past due.

Manufacturing consultant and author Dave Turbide addressed this same planning issue in “Realistically Mining the Data,” in the May 2002 issue of this publication. “This whole concept of planning (and advanced

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planning), however, stops short of providing much help on the execution side,” Turbide wrote. In other words, which specific actions will affect which specific customer shipments?

Because plans are developed item by item, tracing the impact of an action or a change, such as a late receipt or quality problem, is problematic. Starting at

either the top (customer order) or the bottom (raw material) or anywhere in between, tracing demand involves pegging through the BOM one level at a time and matching required quantities and dates to find the next level (component or parent item). “Some materials departments spend nearly all of their time slogging their way through this mass of detailed data,” wrote Turbide.

What exactly is RPM?

TURBIDE’S COMMENTS DRIVE home the fact that planners, schedulers, and buyers have been attempting to do manual RPM already. This is like doing MRP explosions on paper. It may work for one item, but it instantly becomes difficult and irrelevant once volume increases.

The information on specific quantities needed from purchases, work, and plans to ship product in one to two weeks is already in most companies’ MRP or APS systems. The problem has always been trying to extract in time to make decisions.

Planning information is item oriented due to logic and process. The problem is that this makes access and retrieval of the needed information very difficult. RPM accesses inventory and open, planned, and firm-planned orders that support a customer requirement down through all levels of a BOM. Then, RPM collects this information into a file from which reports and inquiries are generated. These reports conveniently show recommended actions regardless of where they fall in the product structure.

RPM helps people focus on the actions needed to support shipments by quickly and accurately identifying potential reasons for delay to those shipments. Activities that support customer requirements are easily distinguished from those that are in the plan to replenish inventory or meet safety stock. The beauty of RPM is that it can exist completely outside of the enterprise resources planning (ERP), APS, or MRP system. It does not care about upgrades and changes to these supporting systems unless there is a change to the original routing of information to RPM. It provides timely, usable information that typically can be obtained only with a lot of difficulty.

A dramatic example of RPM involves a customer who had a single customer order with 731 separate line items—all with the same ship date. The BOM was four to five levels deep. Think about some of the questions you would

ask yourself if you were a master scheduler. First, it's a safe bet that not all 731 items are in the warehouse available to ship. If they were, there would be excess inventory.

Other questions you might ask are:

- How many of the 731 line items are not in inventory?
- What are the potential purchase and production problems?
- What other customer orders are affected by this one; what is contending for resources?

This is a daunting task with most systems. RPM, through its ability to provide a true link between internal and external demand, manufacturing, purchasing, and distribution activities, can provide the answers.

In our example, an initial RPM orders-by-customer screen would show only one line of information per order. That vital information would be a simple count of how many line items of each customer order are shippable, unshippable, and partially shippable. The 731 lines could quickly be pared down to 25 line items that are either in the unshippable or partial categories.

A deeper dive from that view reveals a multilevel view of each of the 25 line items. This is called a potential delay inquiry in RPM-speak. Only assemblies or parts in the BOM that are potential delay candidates to shipments are listed in a multilevel view format. Supply quantities planned and drop dead quantities to satisfy the specific order line items are available. Immediate action was taken to cut a purchase order for a component three levels down in the planning hierarchy that was actually missed in the MRP planning run. Catching this miss before it became past due is virtually impossible without RPM, and the shipment would be delayed. Finding this and other potential delays can be done in a matter of minutes without having to go through painful data collection efforts that can take hours and even days.

Implementing RPM

THE IMPLEMENTATION OF RPM is surprisingly easy. It is a decision support system that does not require data to be input and only affects planners, schedulers, and buyers.

Shenandoah Manufacturing, a poultry equipment manufacturer in Harrisonburg, Virginia, was debating whether or not to pursue an evaluation of a TOC- type APS software package.

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When the company started the evaluation, it realized that the implementation of the package would involve a degree of business process change that it was not willing to undertake.

Shenandoah therefore chose the RPM package from Systems Plus. Certain conditions already existed that made the decision easier and helped implementation:

- The software is an inquiry-based, decision-support package that uses data from current MRP II software with no data input required
- The impact on the user population is very low, focusing on planners, schedulers, and buyers
- The resulting tools yielded immediate benefits during the software buying cycle in terms of on-time shipments and lead time
- Up until implementation, Shenandoah had spent a lot of time collecting information and very little time analyzing and making decisions with it.

The Shenandoah RPM implementation went smoothly and produced quick results. The plant manager was particularly enthusiastic. “RPM provides the means for keeping the whole production organization focused on the few things that have to happen as the ship date approaches to get each order shipped on time,” he says.

Components that have potential for delaying an order are identified so they can be managed. Shenandoah's limited resources are spent managing the right things at the right time rather than digging out and analyzing information.

“Knowing the right things to pay attention to at the right time has allowed on-time shipping to be improved by 40 percent in less than one month and lead time to be reduced from three to four weeks to one to two weeks on the most important products,” the plant manager says.

Planning and scheduling systems have tremendous benefits but come with a lot of baggage that can actually hinder short-term priority setting. RPM is a proven breakthrough for solving nagging post-planning problems and doing it with attention-getting value.

RPM provides this value in a short time by using and improving current solutions through a low-impact and low cost implementation. The rationale and value of RPM will only increase as modern day supply chains increase in complexity and degree of change. □

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