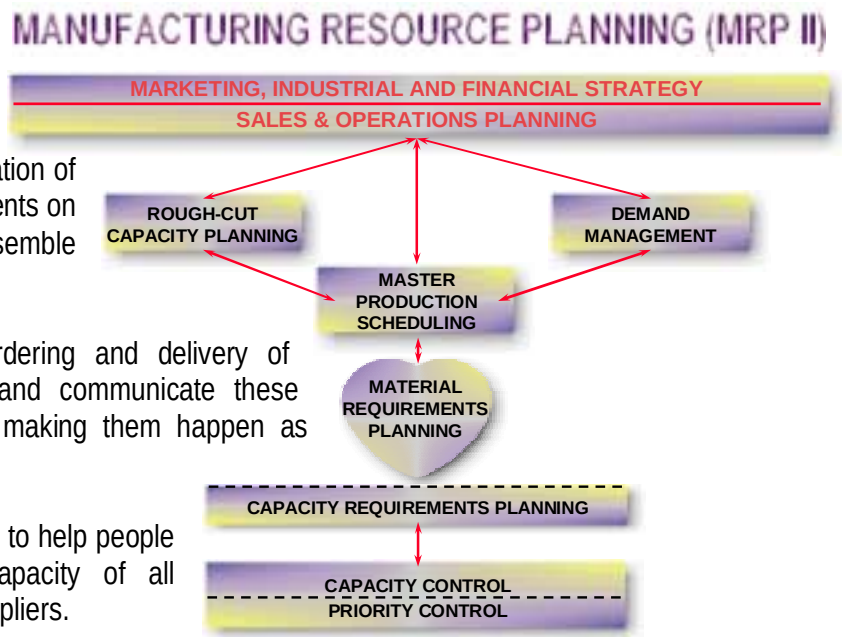
June 15, 2005

MRP: MISERABLE REQUIREMENTS PLANNING

Note: *Our previous Technical Newsletter, « Advance to the Past », caused several readers to send us their experiences with ERP «Enterprise Resource Planning» software packages.*

Material Requirements Planning (MRP) is at the heart of planning or Anticipation. MRP performs three key functions:

(1) calculate component gross requirements level by level by multiplying the quantity of the order for the upper-level product by the per-quantity in the product-structure relation of the bill of material to generate requirements on the component: (10 cars to assemble multiplied by 5 tires per car = 50 tires);



(2) simulate the future events of ordering and delivery of manufactured and purchased parts, and communicate these events to the people responsible for making them happen as planned; and

(3) plan priorities (due dates) of delivery to help people allocate the demonstrated (finite) capacity of all resources, both in the factory and at suppliers.

To be useful, Requirements Planning must reflect reality; the same is true for all the other functions of MRP II. Today however, a major defect renders many Requirements Planning modules useless: this defect is non respect of the rescheduling hypothesis.

(In the meantime remember that in the U.S. many people consider ERP to be the successor of MRP II, thereby confusing a type of software—ERP—with the technology for Anticipation—Manufacturing Resource Planning—that the software is supposed to support. Dozens of software packages support MRP II correctly, and in our experience no one software package is the determining factor in obtaining strong financial and operating results: proper MRP II and Lean logic is.)

According to the standard MRP II logic, if a new requirement appears before the due date of w Work Order already released (or firm-planned), Requirements Planning should create a rescheduling or exception message saying to move in the scheduled receipt or firm planned order already existing.

But instead of that, a number of Requirements Planning software modules plan a new order to cover the new net requirement. Positioned in time either before or in the middle of existing Work Orders,

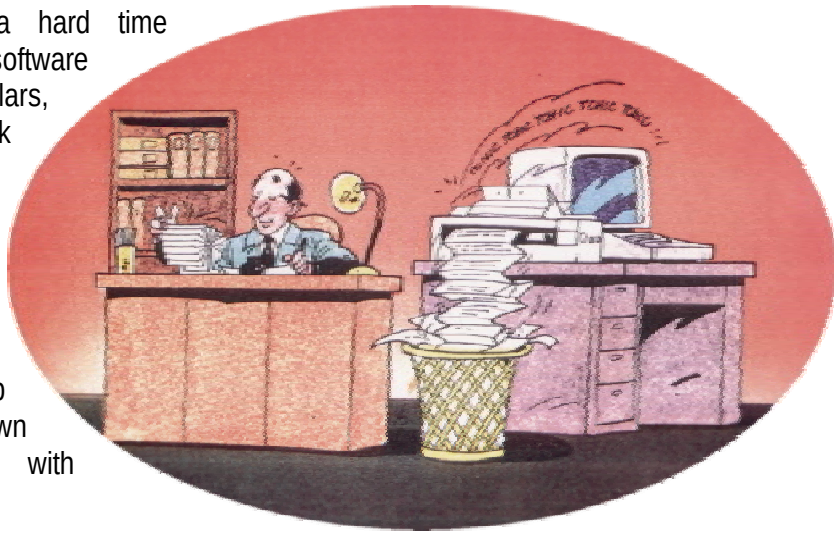
the new planned order is exploded by MRP through all the bill-of-material levels to generate new gross requirements on components. These are often in the past, and as one knowledgeable Productin Manager commented, “The overall result is not amusing.”

In reality, the best way to cover a new net requirement is to try to advance a Work Order already existing, and for which the components have already been placed into WIP. Trying to plan and release a new Work Order—and with what components?—does not simulate reality either in production or in purchasing.

The fact is that many of these Miserable Requirements Planning systems simulating dreams instead of reality are extensions of a software package that originally had only accounting and/or sales management modules. Their developers have never been educated in standard MRP II planning logic.

Often we hear that, “The Requirements Planning module can be parameterized,” or, “The planners should approve all planned orders and inform the system whether or nor they agree.” But if you have to set the parameters in the MRP software module so that its logic isn’t wrong, that’s pretty bad in the first place! Also with Lean, planners don’t validate planned orders at all, because planned orders are not released. Kanban authorizes production instead of Work Orders. Let’s not forget that there’s still a Master Production Schedule above to stabilize planning.

Top Management has a hard time understanding why the sumptuous software package which cost millions of dollars, can’t calculate correctly. They think the users are miserable when it’s the Requirements Planning module which is Miserable.



Faced with gigantic incomprehension on the part both of software developers and of Top Management, planners do their own requirements planning…by hand with Excel.

The result is a world that’s backwards. Humans, endowed with rapid judgement and painfully slow arithmetic skills, do the computer’s work. The machine, which calculates rapidly and without error but has zero judgement concerning real situations, offers parameters and the most sophisticated logic imaginable to get around the problem.

But the problem would never have come up in the first place if we had known and applied standard planning technology so that Material Requirements Planning can faithfully simulate reality so it can be of some use to us. Its primary function is still priority planning (= calculating and communicating the dates of future events), within the demonstrated capacity controlled through the Master Production Schedule and its human planner.

Note: The rescheduling hypothesis and all the other required standard functions for Requirements Planning, Master Scheduling and the other MRP II functions, are explained in The MRP II Standard System, available from Chris Gray of Gray Research at cgray@grayresearch.com. Chris Gray is a member of Worldwide Excellence Partners (WWXP).