

A CEO's guide
to making great decisions

The art of business integration



*Discover the secrets that drive
the world's best organisations*

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What is MRPII

While we are sure a linguist could present this section much more eloquently, the only way we could think of doing it, is to go from the lofty heights of strategy, straight into the engine room of MRPII. MRPII is fundamentally the planning and execution engine of a manufacturing and distribution business¹. However, it is first and foremost about delivering high levels of customer service – no matter what you hear about what businesses are in business for; the one thing customers keep coming back to, is that they just want a company to deliver what they promise, when they promised it.

To do this effectively, we need a platform of knowledge, clearly defined roles and responsibilities that spans the organisation, and rigorously followed processes – it is a bit like a high-performing rugby team – each person has a specific role, but each understands how their role contributes to the bigger picture of winning through scoring tries and kicking goals.

Within those roles and responsibilities, people design and follow pre-defined processes. We do not often hear the question that comes right after we make the previous statement, but we can just feel the body language asking, “Why? Haven’t I got enough to do without being further restricted in what I do?” In fact, our observations are exactly the opposite. What we find is:

- *The amount of re-work and re-thinking time is drastically reduced*
- *The amount of time thinking about routine activities is drastically reduced*
- *Knowledge of what works and what doesn’t work is formally captured and appliedThe one set of plans and numbers – that drives everything from demand planning to supply and supplier planning, to our financial projections – keeps everyone focussed on the one end game (one set of numbers sounds like an easy thing to do, but it is not, especially if the environment and behaviours are not supportive)*
- *The ERP system then becomes a facilitator of “doing the routine things routinely”, and “automating what can be done automatically”, as opposed to something to be skirted around because it is too clunky and slow*

¹ Incidentally, it has also been applied successfully in service industries, but that is a whole other story.

Simply put, we need to work on people's knowledge and application first; then design business-specific processes to work by; and finally, get technology to make it easier. It then becomes a never-ending cycle of People, Process, and Technology to continually improve business capability.

So why have we re-iterated this again? Because more often than not, MRPII is just seen as a computer system, but to make it work optimally, we need to first address the People and Process stuff.

Closed Loop MRPII

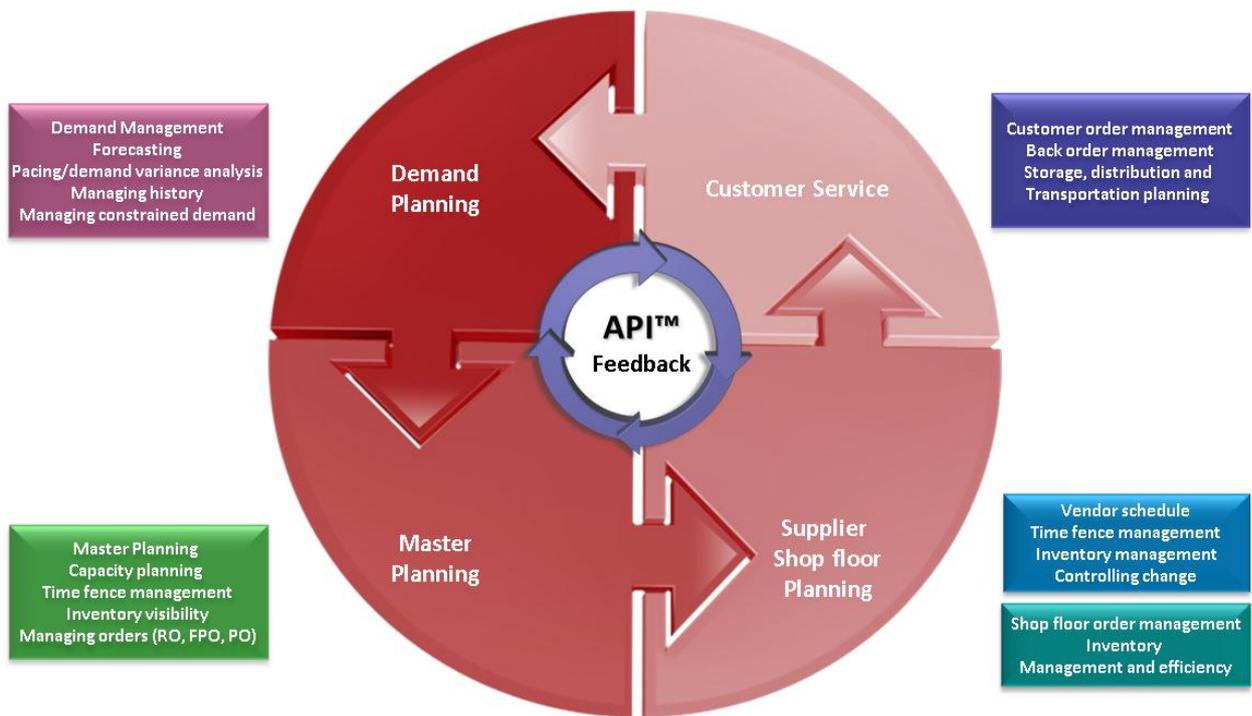
MRPII in the early days, was often referred to as close-loop MRPII. What "closed loop" means is:

- *The ERP system holds all decision-making data such as forecasts, budgets, supply plans, inventory plans, and open and closed orders*
- *The ERP systems simulates reality, i.e. if I look at a number in the system, its accuracy and timing is as close to what is really happening, as it is humanly possible to enter the data*
- *Promises are valid, i.e. when we say we are going to complete an order – regardless of whether it is a manufacturing order, a purchase order, or a customer order – it is completed on time, in the right volume, to the correct specifications more than 95% of the time*
- *The reverse is also true – do not promise to complete an action that there is not a high degree of confidence that it can be completed on time, to specifications*
- *Management is by exception – which simply means that the working assumption is always that the signed-off and agreed plan, is going to happen unless otherwise formally notified*
- *To support the above point, bad news early, is better than bad news late, i.e. if for whatever reason the plan is not going to be delivered on time², then there needs to be formal escalation criteria to surface the issue as early as possible*

In the following section, we will explore the practical application of how this could work. One point to note as we work through this is that if any of the parts are missing or performing sub-optimally, then the rest is not going to work effectively either. In simplistic terms, it is not "closed loop" any more.

Figure 1: Closed -Loop MRPII

² This is deliberately worded in the future tense because what we want, even if it is at very short notice, to get people to anticipate change, rather than get surprised and only report after the event.



The four essential elements of a close-loop MRP II planning system are:

1. *Demand planning, as discussed in the previous section, is the front end of the planning process. Essential elements that need to be in place to support the tactical environment are:*
 - a. *Formal change-management and communication processes, which means assuming the tactical plan that was signed off last week through the Active Planning and Integration process, is going to be delivered ... unless formally notified and managed via the pre-agreed escalation criteria.*
 - b. *A demand variance mechanism, which compares the pro-rated monthly forecast each week to the actual sales for that week³ to make sure that actual sales are going to come in close to the monthly forecast.*
 - c. *A mechanism to constrain demand in situations where there are prolonged supply issues. While some might say, that we shouldn't have constraints, in the real World issues do happen that are out of our control, and it is better to have a mildly peeved customer because we've told them how it is, than a fully irate customer because we've promised something we knew at the time we couldn't deliver. The constrained demand process includes adjusting the forecast to the constrained forecast, selling only what we have to sell, and making sure all other plans reflect*

³ Some companies, such as dairy product producers, may need to do a demand variance analysis daily, but very few, if any, should do this any less often than weekly.

this new forecast. The benefit of this is that all other planning aligns behind the new plan, so that we can:

- i. See the financial impact of the constraint*
- ii. Order no more material than is necessary to meet the constraint*
- iii. Optimally manage resources to the constraint*
- iv. Promise orders to customers based on the constrained plan*
- v. And very importantly, gain buy in from the Sales team to only sell to the constraint*

2. Master planning, sometimes known as master supply planning or master production scheduling, uses the demand plan to develop detail supply plans, with the objective of ensuring we supply what we need, where we need it, and when we need it. This master plan uses five main data files – item master, inventory, bills of material, routings and work centre, which we'll discuss in more detail later on – to break the manufacturing and purchasing processes into time-phase and synchronised activities. Some of the sub processes to support a robust master planning process are:

- a. A master scheduling/planning process that plans every single finished goods item⁴, which then drives the material (and sometimes capacity) requirements of all the lower-level plans – that is why it is known as the master plan.*
- b. A planning process for managing the capacity of critical resources (technically referred to as rough-cut type one and type two, which operates at more aggregate levels, as opposed to detailed capacity requirement planning, which very few organisations use now a days). Typically this is done at up to six constraints, which is typically machine capacity, but could also be materials, warehouse capacity, number of skilled people, and supplier capacity.*
- c. Processes for managing change and ensuring stability inside the planning time fence – this is the reciprocal process to the demand variance report, and is designed to ensure, that not only do demand changes get formally managed, but so too*

⁴ There are circumstances where there are so many small, fad-driven, items, such as in a retailing environment, that master planning becomes clogged. In these environments, the A and B items would still be master scheduled, but the tail of the C items might be controlled with auto-replenishment or open-to-buy triggers, and reconciled weekly to the agreed dollar amount or auto-replenishment criteria. Master planning can manage several thousand items, so we are only referring to small, non-core items that may run into the tens or hundreds or thousands in number.

supply changes. For example, machine break down, supply quality issues, and staffing levels, can all affect the ability to deliver the schedule.

- d. Visibility of inventory projections and comparisons to policy, which can be done for as far out as we have a forecast – most master production scheduling modules will facilitate this.*
 - e. Controlling the ordering environment by having a person responsible for firming supply orders, releasing orders to the shop floor, and ensuring the parameters in the system are accurate. This person used to be inappropriately labelled the Master Production Scheduler, but hopefully you'll have noticed that the role is more than scheduling, and we'd prefer to use titles such as Master Planner, Master Supply Planner, or in some organisations, elevating the role to Supply Chain Manager.*
- 3. Supplier planning and shop floor execution, are both driven directly from the master supply plan, translate what we want to make, buy, and then sell, into a schedule of events to make sure material and capacity is available when it is needed. The master plan then drives vendor schedules to communicate requirements to our suppliers, which conceptually, has similar characteristics to the master plan, such as, formal change management processes defined inside the agreed time fences, inventory visibility, formal communication mechanisms, and rules around change-management.. Similarly, the master supply plan also drives what the shop floor makes.*
 - 4. The last piece of the jigsaw puzzle, which for some reason beyond our comprehension, is often overlooked, is the customer service piece. We are not sure why it is so often overlooked, but for us, customer service, or more precisely defined as order entry and promising, tends to know more about the behaviour of our customers than anyone else in the organisation. Typically, this knowledge is passively acquired, and is often not formally captured to make sure the knowledge is institutionalised, i.e. embedded in the processes and behavioural expectations of the business. Important elements of order entry and promising are well-defined processes and systems available to understand and critique:*
 - a. Sales orders versus the agreed forecast*
 - b. Sales orders for supply now or soon, allocated directly from stock on hand*
 - c. Sales orders allocated via available to promise, which is planned to be available, but is yet to be manufactured or in inventory*
 - d. Potential abnormal orders – for both selling too much as well as selling too little*