

## INTRODUCTION

This article introduces Sales & Operations Planning and explains its importance to, primarily, manufacturing businesses. It describes the full cycle of activities which make up the process and the people who will need to be involved. Further practical advice is offered and deliverables identified. Reference is made to eg. ERP and PC applications but, as S&OP is a **process** carried out by **people**, these are not explored further here.

## WHAT IS S&OP?

Sales & Operations Planning is an umbrella term describing a series of business management processes which, taken together, can allow a business to plan most sales, manufacturing and related activities with a far higher degree of accuracy and therefore confidence than would probably otherwise be the case.

## WHY IS IT IMPORTANT?

Manufacturing, indeed all companies need to be efficient. Not efficient to the point where responsiveness or service levels become compromised, but as efficient as otherwise possible. To achieve this, their resources need to be matched to the level of demand expected, with appropriate margins to allow flexibility.

If no attempt is made to achieve this match, either resources will be wasted or sales will be missed (see Figure 1.). Probably both and probably simultaneously as well. Customers (more importantly than sales) will be lost. Customers who aren't lost will be less satisfied. Costs will be higher than they need to be, so either returns will be lower leading to unhappy shareholders, or prices will be higher, leading to unhappy or lost customers again.

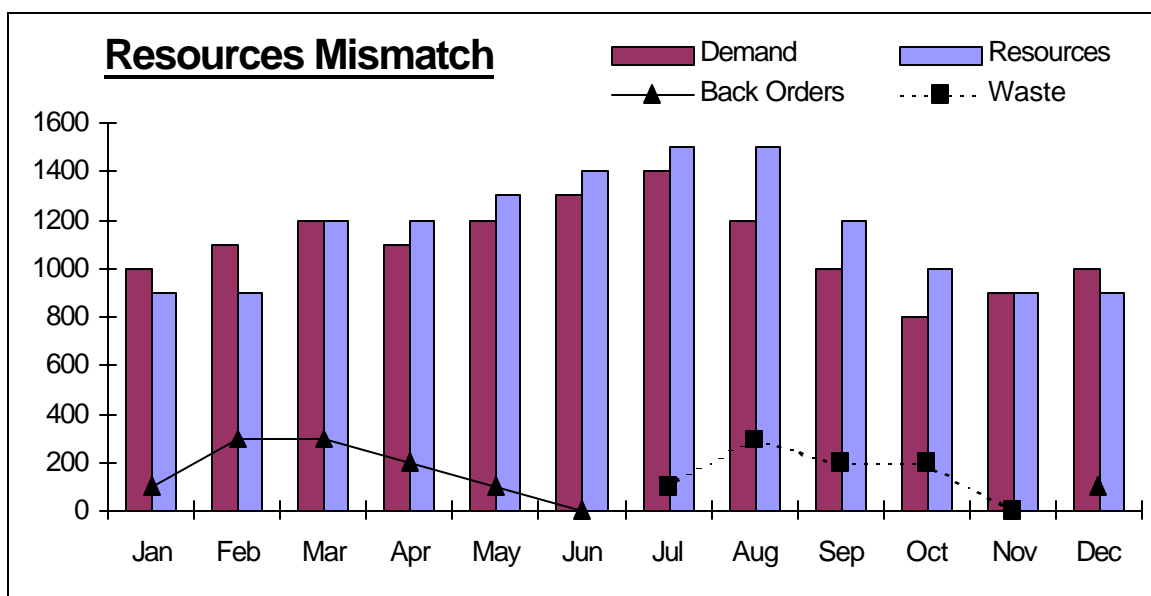


Figure 1 Resources Mismatch

It's also as much about planning and managing levels of sales, customers, expectations, promotions, etc. Also finance, development, investment. It's a great vehicle for team working and a sound base for policy and strategy development.

## THE KEY PLAYERS

As is so often the case, there really is only one key player, the Managing Director. If the MD isn't committed, the processes are unlikely to succeed, or at least unlikely to get anywhere near the potential results. When you have a committed MD, the other players who will matter are Sales/Marketing Director(s), Manufacturing Director and Finance Director. In addition a Demand Manager and Master Scheduler will be needed, or existing staff will have to do this work.

## THE DEMAND MANAGER

This is a relatively new function and may require some explanation:

S&OP is about balancing (primarily manufacturing) resources with demand. Resources are the responsibility of the Manufacturing Director, who will have a team, probably including a Master Scheduler, supporting the planning and delivery of manufacturing achievement, ie. output. Similarly, therefore, the Sales Director is responsible for planning and delivery of demand achievement, ie. orders. The role of the Demand Manager is to assist in the planning of demand and administer the relationship between plan and actual (ie. orders). Typically, the Demand Manager will also co-ordinate the whole S&OP process, although others could do this instead.

## OVERVIEW OF THE PROCESS CYCLE

The cycle in Figure 2. should repeat monthly. I suppose there may be businesses where a different frequency is better, but monthly is normal and works well.

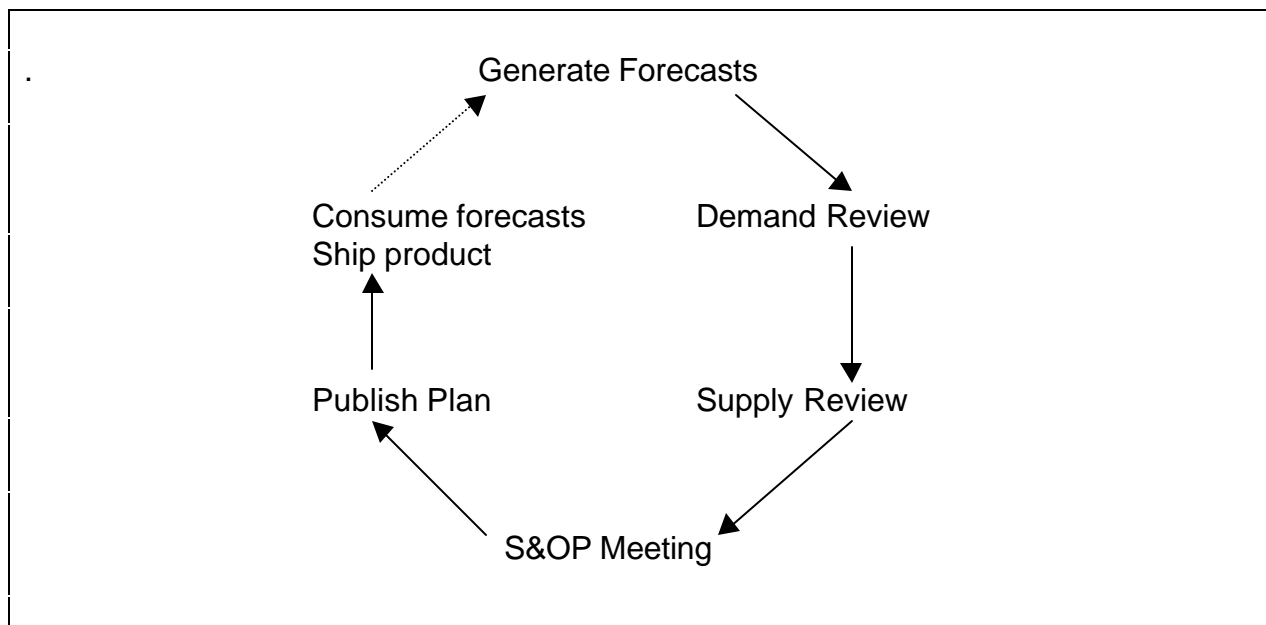


Figure 2 – Process Cycle

The process starts with refreshing (or generating) the sales forecasts. These are subjected to scrutiny and approval at a demand review and released to manufacturing for RCCP-type analysis. At a supply review, manufacturing declare their plans to meet the demand and agreement is reached. The plan goes forward to the S&OP meeting where, after thorough review, it receives approval. The final plan is released and exploded through MRP. Manufacturing continues and incoming orders are matched to the forecasts as the month goes by. The process repeats.

## FORECASTING

Its often said that there are only two kinds of forecasts: lucky and wrong and many businesses have convinced themselves that they cannot forecast sales. What they really mean is that they cannot be precise about what they will sell, to whom or when. However, all businesses manage to produce a budget each year, based on sales forecasts, generally expressed in product family terms, which is just what S&OP requires. Forecasts don't have to be for products; they would more usually be for product families. The sales product families don't have to be the same as the manufacturing product families (see Figure 3.). The sales product families should be those recognised by the marketplace.

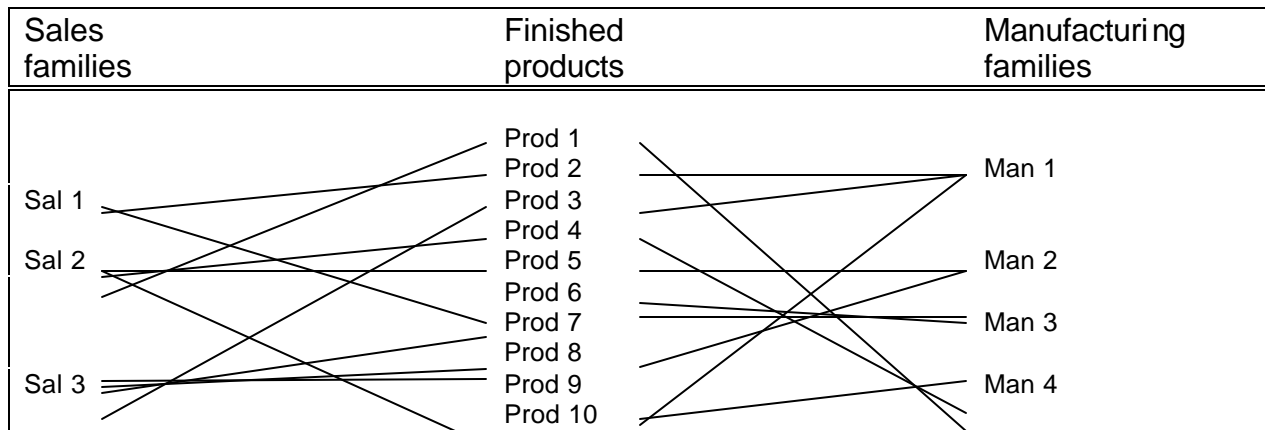


Figure 3 – Product Families

The sales forecasts must be generated by the sales people. No one else is close enough to the customers and the general marketplace to do a better job. In many organisations, other people often feel that they can write 'better' forecasts and maybe they can, but that misses the point. If others can write a better forecast its because the sales people haven't been trained or motivated to do the job properly. Forecast authors should be accountable for their forecasts and the differences between them and the actual sales achieved. Minimising the administrative burden of creating the forecasts is important, as sales people are not known for their willingness to do paperwork well!

## THE FORECASTING PROCESS

Step 1 is to generate or refresh the sales forecasts. The type of industry and marketplace will determine whether discrete packets of demand can be forecast, or whether statistical techniques to predict overall demand levels are more suited. The forecasts generated should be unconstrained; ie. what the sales person thinks will be sold, without regard (at this stage) to any resource constraints. Again, this may vary between industries, but the forecast should cover at least the next 12 months and preferably extend to 18 months.

generally also offering many demand management support facilities such as demand analysis and interfaces with existing ERP systems. In principle, they offer a choice of algorithms with which to predict the future from the past and the ability to override the prediction. The Demand Manager runs the statistical forecasting module, then sends the results to the sales team, who make what modifications they judge right and return the file.

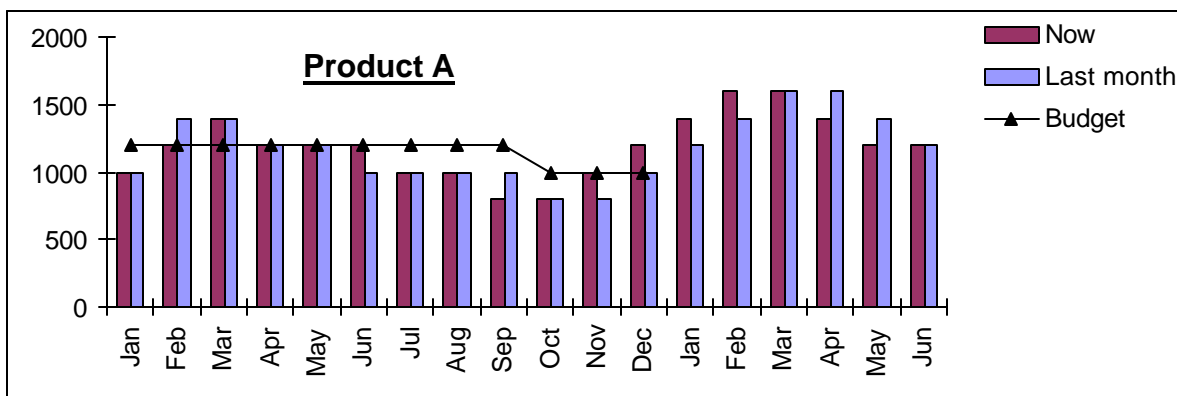
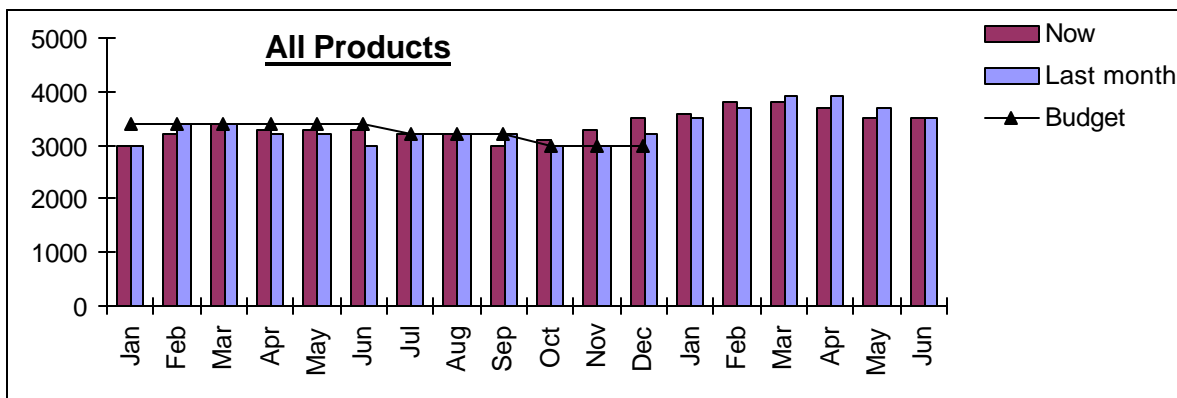
If discrete forecasting is possible, the Demand Manager sends the last forecasts out and the sales team make amendments and return them.

With either approach, the sales team will also send a set of assumptions. These are a structured and informed commentary, identifying the key marketplace events or trends that have led to the forecasts, the risks and opportunities taken account of and will be of importance at all subsequent reviews. For this reason they should be specific and checkable.

Forecast accuracy will be significantly improved if close relationships are maintained with key customers. Customers are generally impressed with evidence of a supplier process designed to ensure that capacity is available to meet their requirements and are likely to want to participate fully. A 'customer linking' programme will deliver benefits to both parties.

## DEMAND REVIEW

After gathering in the forecasts, the Demand Manager will consolidate both them and the assumptions, produce analyses such as by region, by type, this time vs. last, forecast vs. budget, etc, etc. Graphical representation (see Figure 4.) will be useful.



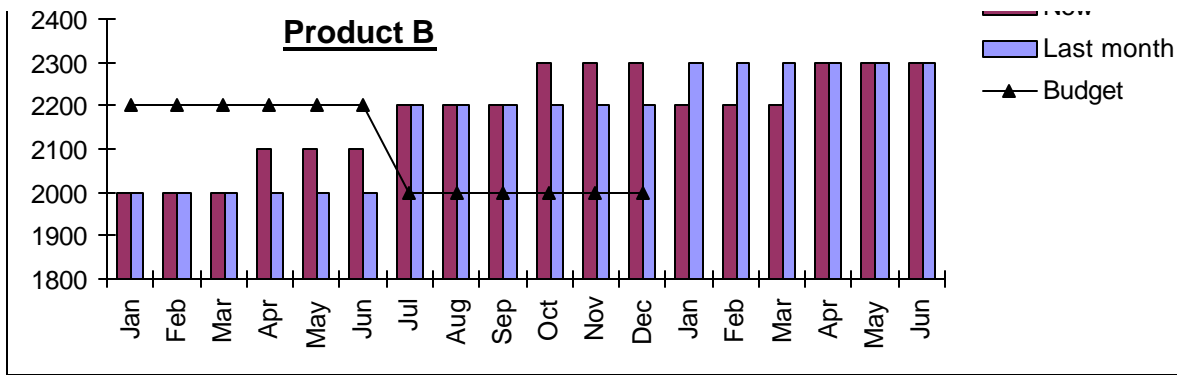


Figure 4 Demand Analysis

All levels of demand (i.e. spares) should be included, as should new products.

During the month, the Demand Manager will also have been managing order intake (see later). Comparing this with forecast levels for the same period will give a view of forecast accuracy. This can be measured in many ways, the best of which will be the simplest to understand, even if it contains a small degree of technical incorrectness. Actual orders received as a percentage of those forecast at, say, 3, 6 and 12 months ago (see Figure 5.) can be analysed and presented.

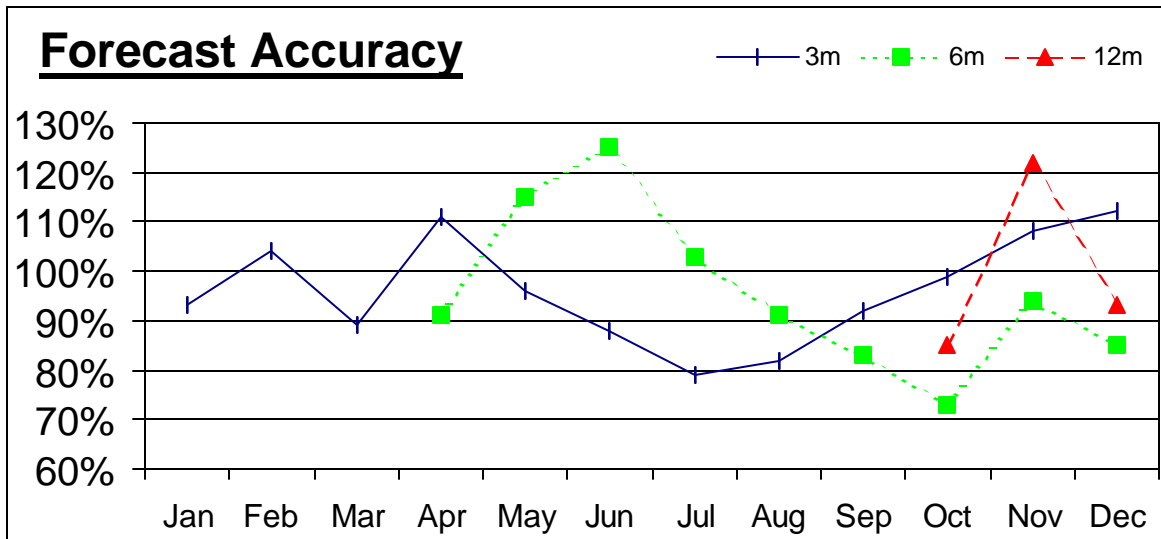


Figure 5 – Forecast Accuracy

Then the Sales Director will hold a demand review, where all the forecasting data is subjected to his (and maybe others’) critical review. It may well not be practical to call the whole sales team around this table, so well-documented assumptions will be crucial. Telecomms access may also help. Sales people are naturally optimists and any inappropriate optimism should be worked out in this process. Seasonality (more prevalent than most people think), bias, growth or decline need recognising and accommodating. The purpose is to produce a credible demand plan.

At this venue, forecast accuracy would also be reviewed. Lessons from past inaccuracies would be learned, customer linking programmes reviewed and any other initiatives considered.

The demand plan is then released to manufacturing.

**SUPPLY REVIEW**

The manufacturing families being used will probably be different to those used by sales, but modern ERP systems will manage the conversion via the finished product parts (see Figure 3.), or other techniques can be used. An RCCP process will then be used to identify the manufacturing resources needed to meet the MPS.

The Master Scheduler will be aware of current and planned manufacturing performance factors and have these in use in the RCCP process. Supplier constraints will also be known. Inventory build or depletion (see Figure 6.), capacity flexing, etc will all be tools to help match supply with demand.

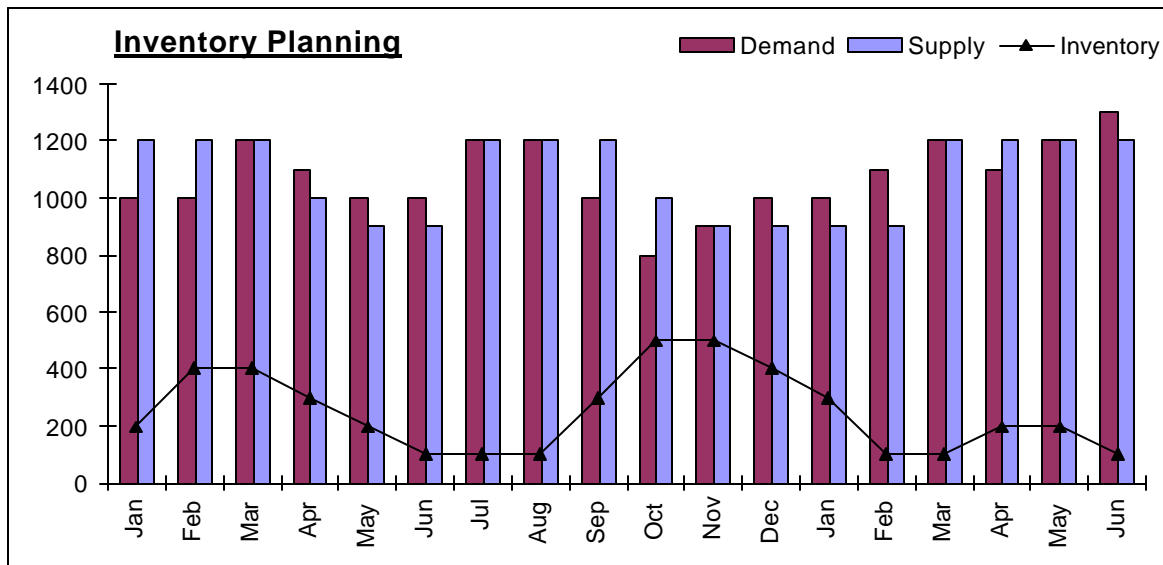


Figure 6 – Inventory Planning

The Manufacturing Director will then hold a supply review, with his appropriate team members and, probably, the Demand Manager and Sales Director. Here, manufacturing performance is reviewed to validate the factors used in RCCP and plans are drawn up to provide the resources necessary. If this cannot be achieved, the Demand Manager and Sales Director may be asked to amend the demand plan. However, the purpose of the meeting is not to challenge the validity of the demand plan itself, rather to find a compromise between what it requires and what can be achieved.

When this has been done, the plan is ready to go forward to the S&OP meeting.

## THE S&OP MEETING

This meeting should be chaired by the Managing Director and attended by all the directors or senior managers involved in running the business. Its purpose is to scrutinise all aspects of the plan, ensuring that it is both credible and acceptable.

Before the meeting, therefore, other key managers and directors need the opportunity to review and support the plan. This can either be done informally or at a 'pre-S&OP' meeting.

For the meeting to succeed, a pack of supporting information is prepared, generally coordinated by the Demand Manager, but with manufacturing contributions and others if needed from (eg.) Finance, Engineering, HR. The pack would typically contain:

- against plan
- b) Other relevant operational performances
- c) Key business issues & market review
- d) Analysis of the detail of the demand plan
- e) Analysis of the detail of the manufacturing plan
- f) Financial analysis.

The meeting is then held. Care must be taken not to spend too much time analysing the past; it is relevant, but the purpose of the meeting is to plan the future. Care must also be taken not to be preoccupied with 'meeting budget'; budget was the situation then, this is the situation now.

When all is agreed and accepted, the plan, revised if necessary, is signed off.

Finally, the whole process cycle should be reviewed for improvements.

## **EXECUTING THE PLAN**

The approved plan is then published and exploded through MRP. This is the 'one set of numbers' driving the business, the 'hymn sheet' from which all are singing. Manufacturing and all other MRP users will therefore be responding to the plan and other functions will be able to do so as well. Sales and manufacturing are each accountable for meeting their part of the plan.

The Demand Manager is responsible for co-ordinating order intake to the plan and in resolving inconsistencies. To do this, incoming orders must be matched to forecasts (forecast consumption). Again, modern ERP systems support this activity, but it can be done other ways as well. Orders received in line with forecasts can be accepted with no need for review, as MPS already expects them. However, when actual order intake varies from that planned, understanding and managing these differences is a major part of the Demand Manager's job.

When an order is received which is for more, or different, or earlier or later than planned, this must be regarded as unplanned demand. Often it will be possible to match this against a forecast for a similar product which, by then, looks less likely to be met, but if not the Demand Manager and Master Scheduler must agree a local change in plan. In addition, this unplanned order may carry implications for other forecasts, or reveal information that should be accounted for by a sales person.

As the month progresses, some forecasts will not have been taken up (see time fences below). The Demand Manager will need to work with the sales team to chase up outstanding orders or find acceptable alternatives to those forecast. Only close working with both sales and the Master Scheduler will deliver the planned demand or match resources to locally agreed differences.

In the event that supply falls short of planned (when the order book is full), the Demand Manager will co-ordinate prioritising of supply.

## **SOME FURTHER PRACTICAL ADVICE**

### **a) Training**

As always, training is a key element. Training should not only address the actions, but the principles of what the process is designed to and will achieve. Without this, the behaviours

the process.

**b) Forecast time fences**

Depending on the business and product, orders must be received and forecasts consumed by a certain time, the 'forecast time fence'. For a business selling from stock, that time fence would be (almost) zero. For a make-to-order business it could be (almost) as short as the manufacturing lead time, or longer to allow for (eg.) material procurement. Different products or product families may have different time fences. Unconsumed forecasts that cross their time fence must be lapsed unless special arrangements are made. Better customer responsiveness will be achieved by shortening internal lead times and hence time fences.

**c) Supply chain stability**

Customer linking has further benefits beyond improving forecast accuracy. Information flowing up the supply chain, ideally from the point-of-sale, can do wonders for smoothing load. We all know how distorted apparent demand patterns can get towards the start of the chain. Try to get your customers (if they are not themselves the end of the chain) to link with their customers. Link yourself with your suppliers, and so on.

**d) How accurate do forecasts need to be?**

As accurate as possible and improving. There is no absolute answer; it will vary from business to business and from time to time. However, it will depend on the level and the time. If the lead time to change resource levels or buy materials between, say, product ranges A and B is 6 months, then forecasts at range level need to be more accurate within that time. Beyond 6 months, the range level accuracy's are less important, but the overall level accuracies still matters. Pareto analysis can help also: 'A' class items or families will need higher accuracies than 'C' class.

**e) Analysis paralysis**

All this is an action process. Analysis is needed, but don't take it too far. There are already a lot of approximations in the numbers.

**f) Data hosting**

The right place to keep the plan data is on the ERP system. Everyone can see it, it drives MPS & MRP, order intake can consume forecasts easily, etc. However, even modern ERP systems are poor at data presentation, whereas the flexibility of spreadsheets etc is excellent. It is tempting therefore to hold data on spreadsheets. Resist this temptation, as if there is to be 'one set of numbers', they must only be in one place, or before you know where you are, you will have (at least) two.

**g) Budgeting**

When budget time comes around, part of the job is already done. The current S&OP plan becomes the basis for the budget.

**CONCLUSION – THE DELIVERABLES**

Properly implemented and run, an S&OP process will deliver, at least:

- Resources being managed to match the level of managed planned demand.
- Improved understanding of and relationship with customers and the market place.
- Improved understanding between sales and manufacturing.
- Better communications between all business functions.

### **About the author**

**John Hackforth**, MIOM is a Degree-qualified Mechanical Engineer, a member of the Institute of Operations Management and associate member of the Chartered Institute of Purchasing and Supply with a Graduate Diploma in Purchasing.

Since 1996 he has been Director of Interim Materials Management Ltd., practising as an independent Interim Manager and Consultant and specialising in pre-manufacturing processes. His clients have included the Luxfer Group, British Aluminium, Webster & Bennett and Douglas Equipment, implementing or project leading change programmes, often including S&OP.

Prior to this, John was Materials Manager at Zimmer (medical devices) and also at Smiths Industries (aerospace). He has also worked for GEC Measurements following his apprenticeship with GEC Power Engineering.