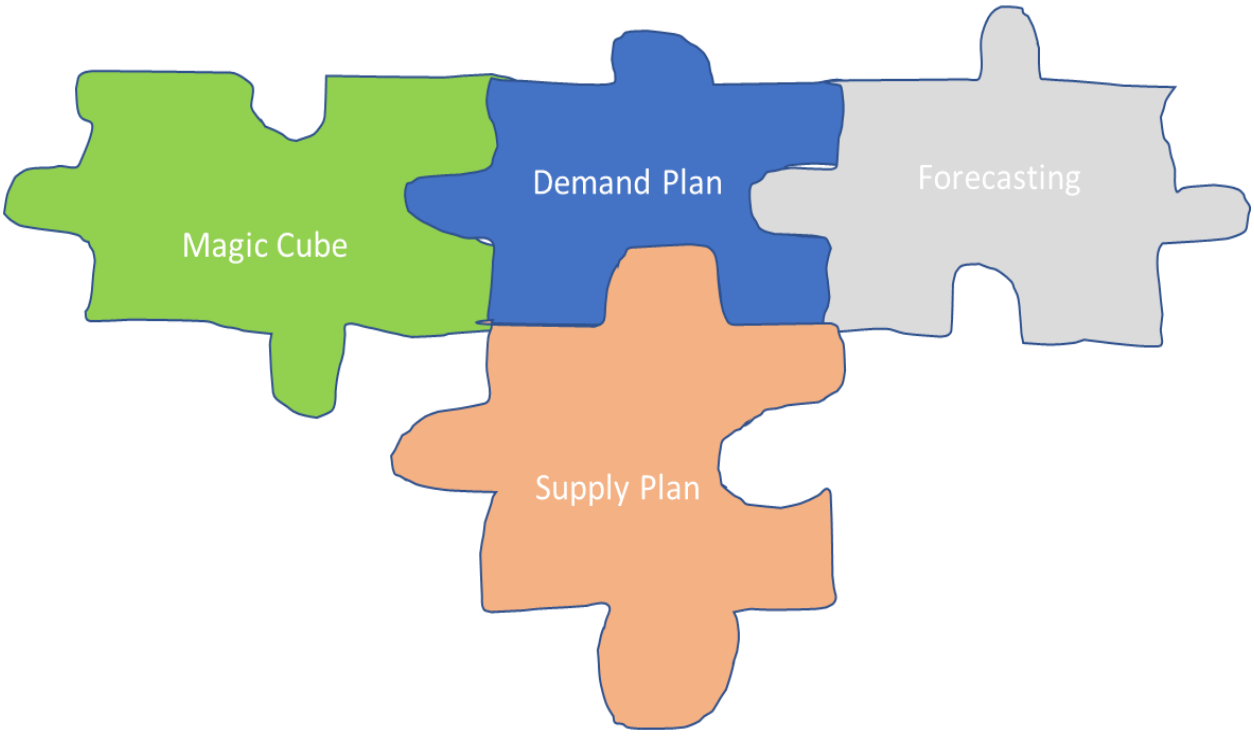
The Power of S&OP

A Practical Approach to Balancing Demand and Supply



Author: Anton Boonstra

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Content

Chapter 1: Introduction

What is S&OP?

In this booklet, we'll dive into the process of Sales and Operations Planning (S&OP). But first, let's clarify its purpose. Why do we actually do S&OP?

The purpose of S&OP: is to routinely review in a cross-functional and process-way of working, customer demand for various products and the sources of supply for those products, and then re-plan or adjust existing plans to balance supply with demand.

There are three key words in this definition that I'd like to highlight.

First: **process**. S&OP is not something you do just once. It's a monthly discipline. Month after month, you follow a structured path—step by step—to ensure continuity and alignment.

Second: **cross-functional**. This is critical. S&OP brings together people from all major departments: sales, marketing, operations, finance, and more. It's one of the few processes in a company where collaboration across departments isn't just helpful—it's essential.

And third: **balance**. At its core, S&OP is about striking the right balance between what customers want and what the business can deliver. That sounds simple, right? But in reality, it's often where the biggest challenges—and opportunities—lie.

So, in summary, the three essential pillars of S&OP are:

1. **Process**
2. **Cross-functional**
3. **Balance**

What can you expect in this booklet?

As mentioned, we'll explore the S&OP process in more detail. But before diving in, we'll ask ourselves a provocative question: *Why is S&OP suddenly such a hot topic?*

After all, balancing supply and demand isn't exactly new. We've always tried to do that, haven't we? So what makes S&OP so "hyped" these days? We'll start by unpacking this.

Next, we'll examine the major building blocks of S&OP:

- **Forecasting**
- **Demand Planning**
- **Supply Planning**

After that, we'll walk you through the different **steps of the S&OP process**—which, as noted, are essential to making S&OP work effectively.

Then we take a short detour into a few related topics that are often underestimated but very relevant, such as **data hierarchy**.

Of course, **systems and technology** will also be discussed. Don't worry—we'll keep it high-level, but we believe it's important to touch on the tools that support S&OP without getting too technical.

And finally, we'll cover **KPIs**, because measuring performance is vital. We'll introduce the KPI pyramid and highlight the most relevant metrics and formulas that support the S&OP cycle.

Naturally, we'll wrap everything up with a **concise summary**.

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Chapter 2: Why S&OP has become a topic?

S&OP isn't exactly a new concept. In fact, you might call it *"old wine in new barrels"*. That's often the case with business frameworks—new names for familiar ideas. So why is S&OP gaining more traction now than in the past?

That's the question we'll explore in this chapter. And it's an important one. Because if we understand the real drivers behind the growing success of S&OP, it becomes easier to grasp its value—and to implement it effectively.

Broadly speaking, there are four main reasons why S&OP is landing more successfully today:

1. The Presence of the "Magic Cube"

One of the key enablers behind modern S&OP is the ability to look at data from different angles—product, time, and location, for example. This so-called *magic cube* makes it easier to analyze and compare supply and demand from multiple perspectives. It brings structure to complexity, which is exactly what you need in a dynamic environment.

From Functional Pillars to Integrated Processes

Many companies have evolved from working in isolated functional silos toward more integrated, cross-functional processes. While functional expertise continues to grow, there's now a stronger orientation toward *end-to-end thinking*. S&OP thrives in this kind of environment, where departments no longer optimize for their own success, but for the success of the entire chain.

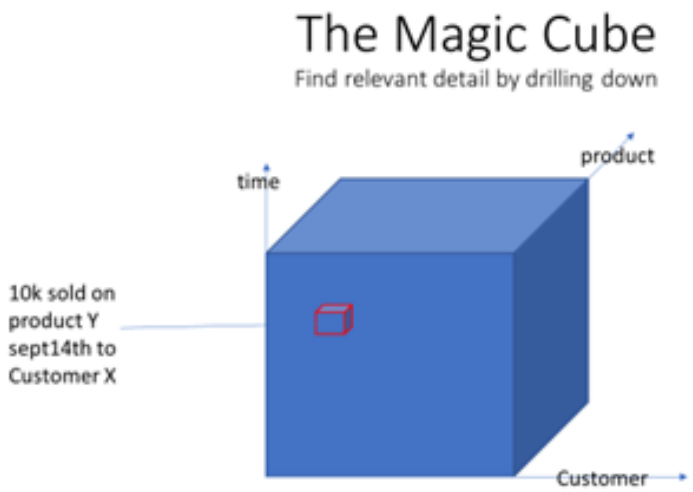
3. A Consistent KPI Pyramid

A well-defined and consistent set of Key Performance Indicators (KPIs) has emerged. These metrics help everyone speak the same language and work toward shared goals. The KPI pyramid—something we'll explore in a later chapter—provides a clear link between strategic objectives and operational execution. It helps turn S&OP from a discussion forum into a performance-driven process.

4. A Solid Meeting Structure

Successful S&OP implementations also benefit from a well-structured rhythm: fixed meeting calendars, clear agendas, and defined roles. This kind of structure supports regular alignment, ensures follow-up on actions, and brings discipline to the process. In other words: no S&OP without S&OP meetings.

In the rest of this chapter, we'll take a closer look at these four success drivers and explain why they make today's S&OP much more than just a rebranding exercise.



'The Magic Cube'

So, what exactly do we mean by the *"magic cube"*?

It refers to a setup where all relevant data is stored in a **single database**—but one that can be accessed and viewed from different **angles and dimensions**. This allows users from different departments to query the same underlying data, but in ways that are relevant to their specific needs.

For example:

- A **salesperson** might want to know the sales volume of a specific item, for a specific customer, within a specific timeframe.
- Meanwhile, a **supply chain manager** is more interested in the current inventory level of that exact same item (SKU).

Different questions, different perspectives—but all based on the same data.

This is what makes the cube so powerful: it enables **multi-dimensional access**. Everyone looks at the same source of truth, but from the lens of their own responsibilities. It reduces misunderstandings, aligns conversations, and makes cross-functional collaboration much easier.

The Technical Foundation

Technically, this works by feeding data from various systems and software into one centralized database or data warehouse. This consolidated structure supports real-time access and consistent insights across the organization.

And yes—**big data** can feel overwhelming. But the key to managing large volumes of information lies in how the data is structured. We use **layers** (also called **hierarchies**) and **groupings** to make navigation manageable.

Think of it like this: you don't look at every single transaction line by line—you zoom in and out. Sometimes you want a high-level overview, other times you need to drill down into the details. The "magic cube" allows for both.

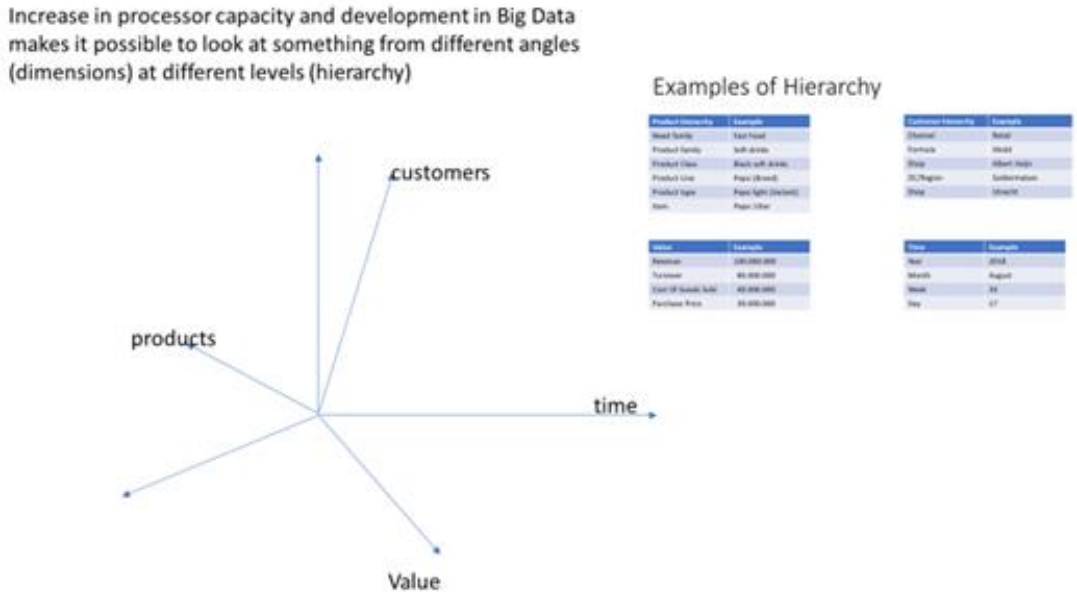
Real-Time Data: The Power of Point of Sales

Ideally, the data used for **Demand Planning** comes straight from the source: **Point of Sales (POS)**. This means using real-time data captured at the checkout in retail stores—aggregated directly from cash register systems.

The big advantage? You're working with **actual sales**, not forecasts, assumptions, or delayed reports. That's a huge step forward—both for the stores themselves and for demand planners.

For the **stores**, this data provides immediate insight. Inventory levels and financial positions can be updated in real time. Physical stock counts? Maybe once a month, just to double-check the accuracy of your systems. Gone are the days of daily manual checks.

For **Demand Management**, POS data is a goldmine. Not only is it real, it's often **very detailed**. In some cases, you can even link sales to individual shoppers—thanks to loyalty programs or customer cards. Of course, this comes with a note of caution: **privacy regulations** can be a barrier, and rightly so.



Managing Big Data = thinking in Groups and Categories

Master Data: First the Process, Then the Data

When implementing a new system, there's a common misconception: that we need to **restructure all our data** at the same time. While some cleanup is usually necessary, it shouldn't be the main focus during implementation.

Instead, focus first on understanding the **new system**:

- How are the processes set up?
- What are the key parameters?
- What values should be assigned?
- And most importantly: how do these values influence the behavior of the system?

Let's be honest—**you can only set up Master Data effectively once you've truly worked with the system**. That takes time. So during the implementation phase, the focus should be on building the **right process design**. Only then can you begin to understand what kind of data is needed—and how it should behave in the new environment.

This also means that **data migration** should be kept as simple as possible at the start. Transfer the necessary data from the old system, clean it up, but **don't over-optimize**. Don't try to perfect the Master Data while you're still learning how the system works.

In terms of project structure: the **data migration team** should follow the lead of the process owners (or stream leads). Their role is to deliver what's needed—**not** to reinvent or refine the data just yet. Six months after go-live is usually the right moment to kick off a **Master Data project**.

The Power of Grouping: Pareto and Practicality

Once you're ready to tackle Master Data properly, groupings and classifications are essential. And for that, I'm a big fan of the **Pareto principle**—also known as the 80/20 rule or **ABC classification**.

The logic is simple:

- **A-items**: 20% of the items account for 80% of the turnover.
- **B-items**: often around 30% of items, accounting for 60% of turnover.
- **C-items**: the remaining 50%, which generate just 20% of turnover.

You can apply this thinking to stock policy, for example:

- For **A-items**, you might produce weekly and aim for one week of inventory.
- For **C-items**, you might produce every three weeks, and keep four weeks of stock to avoid stockouts.
- For **B-items**, this is the group sitting between A and C. Mostly B-items have similar characteristics as A-items, only your focus shouldn't be on them, because these are not the money-makers. So in this case produce them every 2 weeks and keep 2-3weeks of stock.

And here's the golden rule for setting up Master Data:

Link parameters to categories—not to individual items.

So, if an item is classified as A, its production frequency is **1 week** and its stock level is also **1 week**. If it's a C-item, production frequency is **3 weeks**, and stock level is **4 weeks**.

Avoid the temptation to fine-tune every single item. It creates confusion and inconsistency. If you need more nuance, **create an extra category**—don't break the logic within existing groups.

This same principle applies to **marketing groups**, **customer segmentation**, and beyond. Clear, consistent classification makes your data reliable and manageable.

Excel: Still Your Best Friend

For many companies, **Excel remains the best tool** to manage Master Data—especially when setting it up or cleaning it. You can:

- Download the current data,
- Sort and filter by group or classification,
- Apply rules consistently,
- And upload the sheet back into your system.

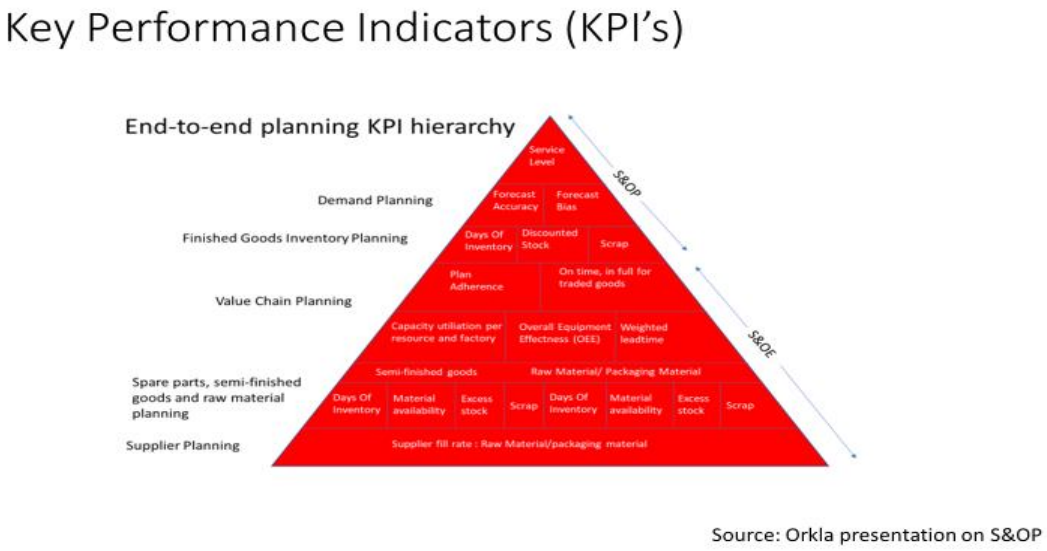
It's simple, it works, and it gives you transparency and control.

In summary, two key lessons for getting Master Data under control:

1. **Don't rush it**—wait until you truly understand the processes and system behavior before finalizing your Master Data setup.
2. **Classify and apply rules**—use groupings and stick to the rules you define. You can always refine them later, once the foundation is solid.

‘KPI-pyramid’

A consistent pyramid of KPI’s is available to support the process. So, in every meeting these KPI’s are input for discussions and actions. In chapter 9 we will elaborate more on these KPI’s.



Source: Orkla presentation on S&OP

From Hierarchies to Processes: The Rise of the Cross-Functional Rhythm

While technology has advanced rapidly, we’ve also seen major shifts in how organizations function—particularly in areas like **Supply Chain**, **Marketing & Sales**, and beyond. We’ll explore these developments in more detail in **Chapter 8**, but one key trend is already clear: the move from **hierarchical structures** to **process-oriented ways of working**.

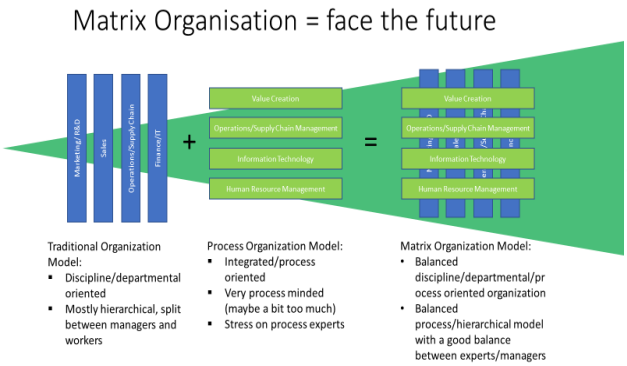
S&OP is a perfect example of this shift.

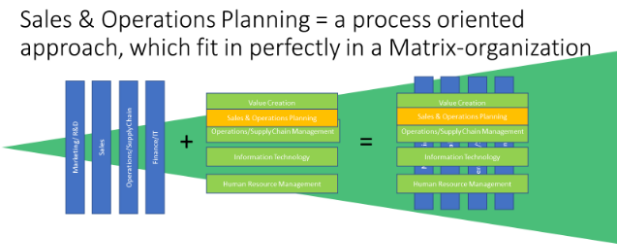
It’s a textbook case of how to connect **long-term planning** with the **day-to-day reality** of supplying products to customers. And it’s not just a collection of meetings—it’s evolving into a **mature, structured, and cross-functional process**.

One of the most important success factors? The **monthly rhythm**—sometimes called the **“drumbeat”** of S&OP.

That steady, recurring cadence creates alignment and accountability. Everyone knows what’s coming, when it’s coming, and what their role is. Meetings follow clear agendas, and the issues discussed are directly tied to business decisions—no vague talking points, just targeted discussion that supports action.

In other words: structure doesn’t kill flexibility. **It enables it**—especially when it’s built around real business priorities and collaborative engagement.





Summary

When **Supply Chain**, **Sales**, and **Technology** each matured—and started coming together at the right time—**S&OP** became more than just a concept. It became something that could truly be **put into practice**.

S&OP is now recognized as a **fundamental business process**:
one that integrates key functions across the organization, driven by collaboration, and supported by the right systems and data.

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Chapter 3: Forecasting

In Football: 'With a good assist the chance on a goal is higher'.

In S&OP: 'with a good forecast the chance on a good demand plan is higher'.

Introduction

Forecasting and **Demand Planning**—two terms often used interchangeably. But in reality, they're **not the same**.

Let's clarify the distinction:

- **Forecasting** typically refers to a **statistical tool or program** that generates predictions based on historical data. This is why it's often called *statistical forecasting*—to clearly distinguish it from the more subjective, business-driven activity of demand planning.
- **Demand Planning**, on the other hand, is a more **deterministic process**. It's driven by human insight—how well a salesperson, supported by the demand manager, is able to translate **market potential into concrete figures**.

Forecasting can support demand planning, but **not the other way around**. The forecast is an input; the demand plan is the refined output.

How It Works in Practice

In most companies, the process looks something like this:

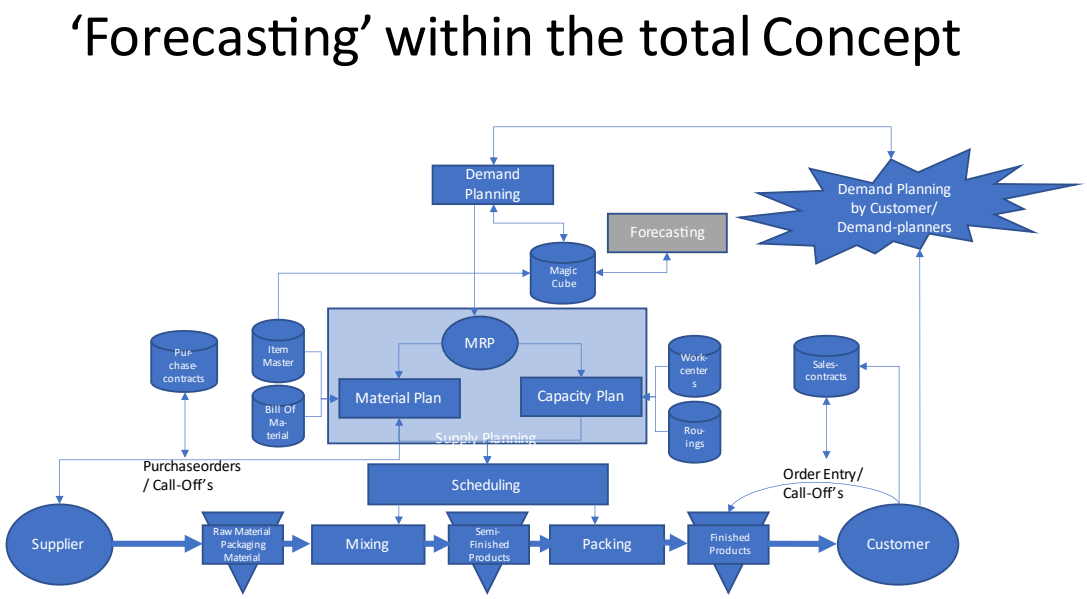
1. A **forecasting tool** uses historical sales data to generate a base forecast.
2. This forecast is then loaded into the **demand planning system**.
3. From there, a **salesperson or demand planner** adjusts the numbers based on their knowledge of the customer, the market, and any upcoming events or promotions.

So, you could say that the forecast is a **proposal**—a starting point—which is then enriched and corrected through human insight. The final result is the **demand plan**, which forms the basis for supply planning and inventory decisions.

Measuring and Improving the Process

In this chapter, we'll introduce a **simple set of KPIs** that can help you evaluate and improve your forecasting and demand planning efforts. These metrics provide valuable insight into how reliable your predictions are—and where the biggest gaps exist.

I'm personally convinced that **forecasting plays a crucial role** in analysing sales patterns and understanding demand behaviour. That's why we'll also take a closer look at how to approach this analysis, and how it can help improve your overall planning process.



Start with the End in Mind: KPI's first

In many projects—including S&OP implementations—the definition of KPIs tends to be one of the **last steps**. The typical sequence? First you design the process, build the systems, implement the tools… and **only then** do you think about how to measure success.

I believe we should turn this around.

You should **start your S&OP process by defining the most relevant KPIs first**. These metrics will not only help you track performance—they will also guide your improvement efforts from day one. Especially when it comes to **Forecasting and Demand Planning**, your KPIs will show you where to focus and how much progress you're making.

Keep It Simple: Two Classic KPIs

If you dive into the academic literature on forecasting, you can quickly get overwhelmed. The theory is vast, and there are dozens of advanced models and metrics to choose from. But unless you're publishing a research paper, you don't need to make it overly complex.

Instead, I recommend focusing on a **small, proven set of KPIs**—ones that have stood the test of time. You don't need to reinvent the wheel.

The two most commonly used—and most useful—metrics are:

- **MAPE (Mean Absolute Percentage Error)**
- **Bias / Forecast Accuracy**

These form a solid foundation for measuring and improving forecasting performance. In the next section, we'll briefly explain how these metrics work and how they can help sharpen both your forecast quality and your demand planning process.

Key Performance Indicators Forecasting

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Totaal
Forecast	84	52	63	68	91	104	121	583
Actual	75	62	80	70	81	125	98	591
MPE	-12,0	16,1	21,3	2,9	-12,3	16,8	-23,5	1,3
MAPE	12,0	16,1	21,3	2,9	12,3	16,8	23,5	15,0

MPE = Mean Percentage Error

MPE = ((Actual – Forecast) / Actual) x 100

MAPE = Mean Absolute Percentage Error

MAPE = (Absolute Value(Actual – Forecast) / Actual) x 100

	Forecast	Sales	ABS variance |=ABS(Forecast-Sales)|	Bias |=Sold/Forecast|	Accuracy |= 1-(ABS variance/Forecast)|
A	100	105	5	105%	95%
B	50	50	0	100%	100%
C	30	29	1	97%	97%
D	40	25	15	63%	63%
	220	209	21	95%	90%

Forecast in the month for May (= Actual)									
	Jan	Feb	Mrch	Apr	May				
Jan	30	35	32	31	29				
Feb		34	31	30	28	32			
Mrch			30	30	30	31	29		
Apr				30	31	32	29	32	
May					30	32	29	32	30
ACTUAL					30				

The "Big Mouth of Sales": Forecasting with Ambition

From a technical standpoint, there's an interesting forecasting pattern sometimes referred to as **"the big mouth of Sales."** It reflects how forecasts often behave over time—especially when Sales is involved early in the planning cycle.

Here's how it works:

- **Early in the planning horizon**, when you're still one or two months away from actual sales, the forecast tends to be **optimistic**—sometimes even inflated.
- As you get closer to the **month of realization**, the forecast gradually becomes more **conservative** or realistic.

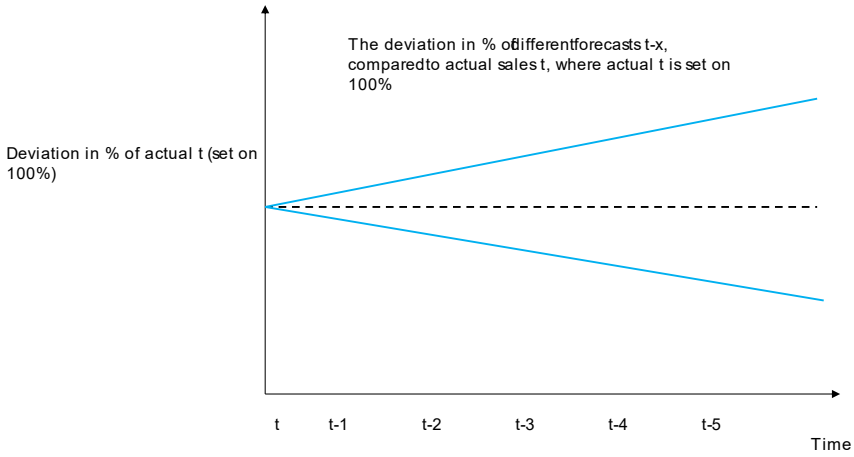
Why does this happen? It's not necessarily a bad thing. In fact, there's a strategic rationale behind it.

The idea is to **be ambitious up front**—aim high, build some buffer stock, and secure supply early. That way, if sales do turn out to be strong, you're ready. And if the demand turns out to be lower than expected? You can correct by slowing down replenishment or reducing stock levels later on.

In short, **it's easier to correct from a position of surplus than from a shortage**—especially in industries with long lead times or capacity constraints.

This kind of thinking illustrates why forecasting isn't just about numbers—it's also about **behavior**, **strategy**, and how departments like Sales and Supply Chain align their actions.

‘The big mouth of Sales’: farer away from the actual period the deviation is higher and the nearer you come the actual the deviation becomes lesser.



Forecast KPI’s: From Awareness to Action

Two of the most useful KPIs in the context of forecasting are **Bias** and **Forecast Accuracy**. Together, they help you detect whether your forecast is structurally too high or too low—and by how much.

In many cases, these KPIs are the **easiest first step** to improve your forecasting process. They give immediate insight, and with just a few changes, you can often make a noticeable impact.

One particularly effective tactic is to **report these KPIs per relevant salesperson**. That’s right—name-specific feedback. It may sound a bit risky, but it can work surprisingly well. Sales teams are not always naturally drawn to Forecasting or Demand Planning. Often, this work ends up solely in the hands of demand planners or forecasters. Yet the **input from Sales and from Customers is essential**, especially when it comes to non-statistical, hard-to-forecast demand.

A simple truth:

If you don’t forecast it, you won’t get it.

And another:

The earlier you lock in the right demand, the easier it is to realize.

Turning Reluctance into Engagement

To be honest, I was sceptical myself. In one UK-based company, we decided to report Bias and Accuracy per individual salesperson—and even tied them into their **bonus structure**. It reminded me a bit of the "worker of the month" boards from former East Germany, with names and photos on the wall. Not really my style.

But… it worked.

Salespeople began adjusting their demand figures directly—supported by demand planners—and we saw dramatic improvements in forecast KPIs. The numbers didn't just improve—they became **part of the conversation**.

One unexpected benefit was that it **exposed communication gaps**. For instance, we learned that **sales promotions** and **price discounts** were not being properly reflected in the demand plans. Sales teams thought they had communicated everything clearly, but demand planners hadn't adjusted the customer forecasts accordingly. The result? Sales came in 5–10% below expectations.

At first, this led to some tension—a bit of a **blame culture**. But over time, transparency and open dialogue helped shift the focus from blame to improvement. And as the KPIs improved, so did motivation and engagement across teams.

What Can You Realistically Achieve?

People often ask: *What kind of accuracy is actually possible?*

In the UK project I mentioned, we started with forecast accuracy **below 70%**. With some targeted effort, we reached around **75%** relatively quickly. Eventually, we stabilized at a solid **83%**. Could we reach 90%? In most industries, I'd say that's **unrealistic**. An accuracy of **85%** would already be **exceptionally good**—and of course, your market conditions play a big role.

Completing the KPI Set

To round out the KPI set for Demand Planning, you should also consider:

- **Delivery Performance** – both on **order level** and **order line level**.

  On the line level, 98.5% is achievable. On full order level, anything above 95% is already strong.

- **Inventory** – measured in **days of stock**.
  Apply the **Pareto principle** again:
  - A-items: produced frequently, low safety stock.
  - C-items: produced less frequently, higher safety stock.
  - B-items: somewhere in between.

As a rule of thumb, an average of **three weeks of stock** is reasonable. And a personal tip:

Don’t take too much risk by cutting stock too low.

Out-of-stocks are expensive—not just in terms of money, but also customer satisfaction and firefighting effort. Prevention is far more efficient than correction.

A New Perspective on What Matters Most

Before I got involved in S&OP—around five years ago—I used to think that **Delivery Performance** was the most important KPI in Supply Chain. But S&OP taught me something new:

If you get your **forecasting KPIs** under control,
your **delivery performance** will follow.

Stability in forecast leads to stability in supply. And that, ultimately, is the foundation of a well-functioning supply chain.

Analysis

How to Analyse Your Forecast

If you want to improve your forecasting, the first step is to **analyse it properly**. And to do that, I recommend a two-fold approach:

1. Use the **KPIs** we discussed earlier—**Bias**, **Accuracy**, and **MAPE**.
2. Don’t just rely on historical data. Also include **past forecasts** in your analysis.

A common method is to perform what's known as a **“forecast back-test.”**
Let’s say it’s currently May. You pretend you're in **January**, and take the forecast that was made back in **December** for the period **January to May**. Then you compare that forecast with the **actual sales** for that same period.

This gives you a practical sense of how accurate (or off) your forecasts really were—not just in hindsight, but from the perspective of when they were made.

Don’t Overcomplicate It

There are plenty of **advanced software tools** available today that can support forecast analysis. And while some of them are excellent, I’m personally **not a big fan** of overcomplicating things.

My advice:

Stick with simple statistical tools.
Use basic formulas like **mean**, **standard deviation**, and **exponential smoothing**.

They may not be flashy, but they're effective—and much easier to explain and understand across teams.

Most importantly, forecast analysis should never be done in isolation. Sit down with **Sales and Marketing**. Talk through the figures. Because in the end, **better forecasting is not about formulas—it's about understanding the market**.

The Human Factor in Forecasting

Take **seasonal or campaign-driven products**, for example—Christmas items, for instance. These are typically manufactured during the summer months, with inventory gradually built up over time. By early December, the shelves need to be stocked.

No statistical model can fully account for these kinds of dynamics on its own. Yes, formulas help you see trends, but **demand planning** is about **deterministic figures**—real decisions based on market knowledge. That's what sets it apart from pure forecasting.

Recognising the Pattern

When looking at historical demand, you'll come across various **demand patterns**. Some are regular and stable, others are:

- **Trending**
- **Seasonal**
- **Sparse or lumpy** (irregular with lots of zero values, followed by sudden spikes)

Statistical forecasting only works well if the data per period is relatively consistent. When the pattern gets more erratic, it becomes much harder to apply standard models.

That's where simple descriptive statistics help:

- Calculate the **mean**.
- Measure the **standard deviation**.
- See how much of the data falls within **1 or 2 standard deviations (1*STD, 2*STD)**.

This approach helps you **understand the shape and variability** of long rows of numbers, which is especially useful when demand is unpredictable.

And again—don't underestimate the power of **Excel**. In my experience, Excel remains one of the most **valuable tools** for this kind of hands-on analysis. Often more useful than some of the sophisticated software on the market.

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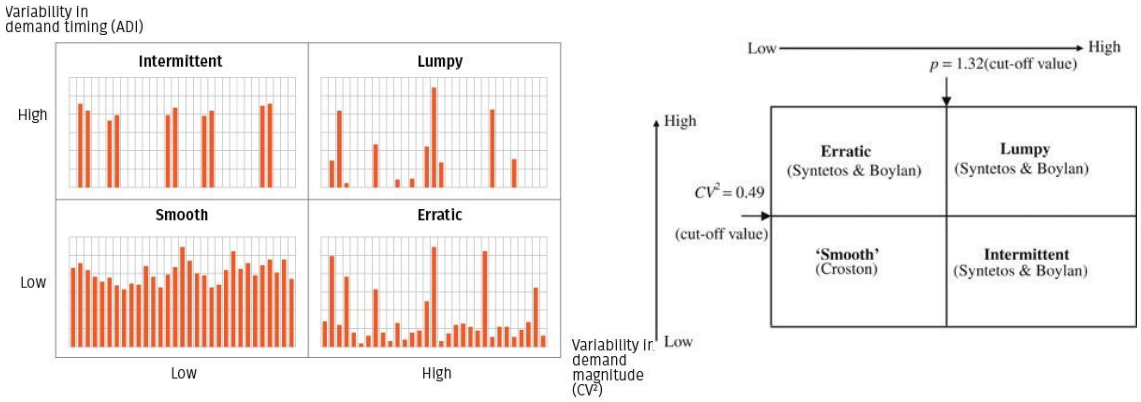

Pareto Analysis: Focus Where It Matters

A powerful tool to sharpen your demand planning efforts is the **Pareto Analysis**, often referred to as the **80/20 rule**. It states that:

- Roughly **20% of your products** generate **80% of your turnover**.
- Conversely, the **remaining 80%** of products only generate **20%** of the turnover.

The same logic can be applied to **customers**: 20% of customers typically account for 80% of your revenue.

So why is this relevant to **forecasting and demand planning**?

Because it tells you **where to focus your time and effort**.
For the top 20%—your **A-items**—you want to plan and monitor demand carefully. These products deserve the most attention. For the rest, you can rely more heavily on **automated forecasting algorithms**.

That doesn't mean you shouldn't forecast A-items statistically. On the contrary—if you have a reliable algorithm, you should use it. But your focus and fine-tuning should be on the items that **matter most to the business**.

Complexity in the Long Tail

Many companies—especially manufacturers—have thousands of SKUs. In retail, **20,000 items** is not unusual.

What you often see in the **tail of the product range** (your B- and C-items) is more irregular demand:

- Spiky or **lumpy demand**
- Long periods with zero sales
- Hard-to-predict behaviors

These items usually don't contribute much to profit. They're often kept for **service reasons**, to meet customer expectations or ensure full assortments. The good news: these products are typically less sensitive to stock-outs, and holding inventory for them is relatively inexpensive.

For this group, a **90% service level** may be acceptable, rather than >98% which is often the norm for A-items.

In these cases, even if statistical forecasting doesn't work well, you can still use **simple rules**, such as:

- Use **last year's sales** plus a 10% growth assumption.
- Take the **average pattern over the past three years**, then apply an uplift factor.

A Practical Approach to Forecast Analysis

Let me be clear—this isn't a strict method or dogma.

It's trial and error. Every case is a bit different.

But here's a **practical process** I often use to analyse forecasts:

Step 1: Download the Data

Pull the relevant data from your ERP system into Excel:

- Get at least **three years of historical sales data**
- Preferably **per day**, but weekly or monthly can also work

Why per day?
Because some customers have **fixed delivery or order days**, which can create artificial weekly patterns that are not true demand signals.

Why three years?
To detect **seasonal trends**, which usually emerge over a multi-year period.

Step 2: Perform Pareto Analysis

Calculate each item's contribution to annual revenue:

- Multiply annual **volume × price**
- Divide by total turnover to get the contribution percentage

Be mindful of whether you're using **selling prices** or **cost prices**. For inventory analysis, cost prices are more relevant—they reflect the real value and cost impact of keeping stock.

Step 3: Understand the Pattern

For A-items, start analyzing:

- **Mean**
- **Standard deviation**
- Check how values fall within **1×STD or 2×STD** range

This helps you determine the **predictability** of each item. From there, you can use a **quadrant model** (like the one shown in the PowerPoint slide) to classify your items:

- **Stable vs. irregular demand**
- **High vs. low volume/value**

Step 4: Match Forecasting Method to Pattern

Some products have a **regular, predictable pattern**—these are easy to forecast and don't need much manual intervention.

Others are **irregular, lumpy, or low-volume**. For these, traditional statistical methods may actually make things worse by flattening the output. In such cases, **use simple logic** instead:

- Last year's figures + a fixed uplift
- Or even: no forecast at all, just reorder when needed (for very low movers)

In Summary

Pareto analysis helps you **prioritize**.
Statistical models help where patterns are stable.
And for everything else: **pragmatism beats perfection**.

Excel remains your best friend here.
It gives you visibility, flexibility, and control—often more than fancy tools can.

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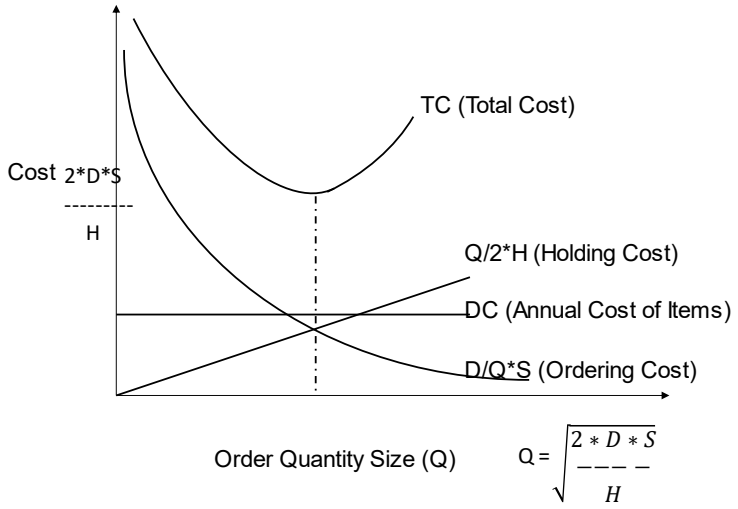
Camp-formula



From Forecasting to Stock Optimization: Using Camp's Formula

Once you have your **forecasting and demand planning** process under control, the next step is to use that data to **optimize your inventory**—especially your **order and production frequencies**.

One practical method I often use is **Camp's Formula**. It helps you determine the **optimal stock level and production/ordering frequency**, based on a few key inputs.

The Data You Need:

- **Annual demand** per item
- **Conversion costs** (setup, production, or ordering costs)

  I typically vary this in the model to test sensitivity and get a better feel for the impact

- **Inventory holding cost**

  I generally assume **15% of the cost price** as a standard percentage

Camp's formula helps you find the balance between **holding stock** and **ordering/producing more frequently**. It gives you the insight to answer questions like:

- What does it cost to improve my service level?
- How often should I produce or order this item?
- How much safety stock do I need to maintain?

Translating Strategy to Action: A-Items vs. C-Items

Here's how I typically apply this in practice:

A-items

These are your high-value, high-volume products—the ones you want to keep **tight control over**.

- Review them **at least weekly**, based on recent sales
- Produce or order **every week**
- Keep **stock levels low**, with just enough **safety stock** to maintain a **>98% service level**

C-items

These are the low-volume, low-priority items.

- Review them **monthly**, or even less frequently
- Accept that you need a **reasonable forecast**, but perfection isn't necessary
- Produce/order them with **lower frequency**
- Hold **more inventory** to buffer against demand variability
- Use a **lower service level target** (e.g. 90%) if that's acceptable for your business

Camp's formula helps you model these differences and **quantify the trade-offs**.

Work in Classes, Not Individual Items

A key lesson I've learned:

Think in terms of classes, not individual items.

Instead of fine-tuning parameters for each SKU, **define rules per class**—for example:

- All **A-items**: set frequency to weekly, safety stock to one week
- All **C-items**: set frequency to monthly, safety stock to four weeks

This simplifies your work dramatically. You can update the **Item Master** in your ERP system in one go, telling it: "All A-items get this value; all C-items get that value."

How Often Should You Do This?

In the beginning, you'll do this type of **stock and frequency analysis** more often—possibly even weekly. But as the process matures, you'll move into a **maintenance rhythm**:

- A full review **quarterly or semi-annually**
- With ad-hoc updates as needed when product ranges or volumes change

Eventually, you'll reach a point where you **feel in control**—you know which models you need, what levers you can pull, and where the biggest savings or investments lie.

Connection to Demand Planning directly or via the Magic Cube.

A Note on Data Architecture: Keep the Cube central

Having worked on multiple **S&OP implementations**, I've developed a clear preference when it comes to **data management**:

Store all historical and forecast data in the magic cube, not in separate forecasting tools or tightly integrated systems.

Why? Because the cube gives you **flexibility**.

When all data—**history, forecast, and demand plans**—is stored in the same dimensional model, you can:

- Compare data across the **same dimensions** (e.g. product, time, customer)
- Select exactly the **level of detail** you want to work on
- Move more easily between **analysis, planning, and reporting**

Of course, you *can* go directly from history into a forecasting tool and then push the result into a demand plan. That setup is often promoted by software vendors. But in my experience, it tends to become **more complicated and less transparent**.

By keeping everything in the cube, you **decouple the data** from the tools—so you can switch tools, update your models, or run multiple planning streams in parallel, without losing your grip on the data itself.

It's a more **modular and scalable** approach—and especially helpful if you're serious about building a robust, long-term S&OP process.

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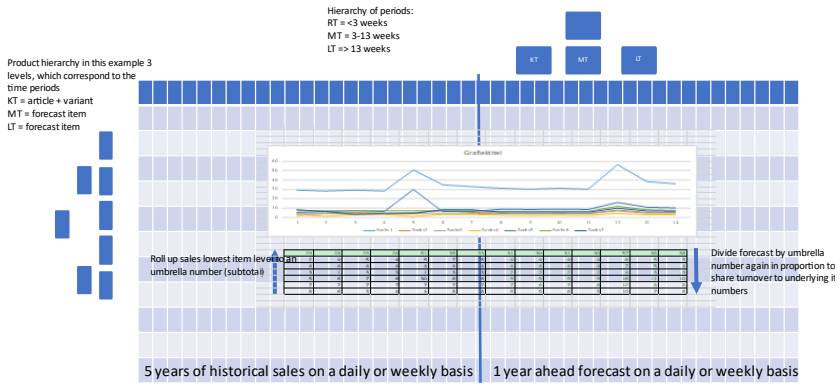
Input-Output table from which data is sent to planning tool in the desired format



The Input-Output Model: Rolling Up and Down

In one of my assignments, I developed an **Input-Output model** (see diagram above), which helped structure the flow between **historical data**, **forecasting**, and **demand planning**.

Here's how it worked:

- **Historical sales data** came from the ERP system, typically on **invoice level**.
- Using the **product hierarchy**, this data was **rolled up** to a higher level—say, the **product group level**.
- That aggregated data was then **exported to the forecasting tool**, where the statistical forecast was created.
- Once forecasted, the results were sent **back to the model**, still on the same aggregated level.
- Finally, the numbers were **rolled down** again to the lower level—**mirroring the earlier roll-up**.

This setup allowed us to maintain **dimensional integrity**. On the **vertical axis**, we could work with product hierarchies—SKU to product group and back. On the **horizontal axis**, the same principle applied to time: from **daily data**, rolled up to **weeks or months**, depending on the need.

Why Rolling Up and Down Works

There are several practical reasons to use this roll-up/roll-down approach:

- **Insufficient data at lower levels**: For many SKUs, there are too many **zero values** or simply not enough volume to create a reliable forecast. Grouping them at a higher level provides more stable data to work with.
- **Scalability**: Forecasting **every individual item** becomes overwhelming—especially if you have thousands of SKUs. Grouping simplifies the process and reduces the operational burden.

A customer I recently spoke with had **6,000 items**, grouped into just **60 forecast groups**. It made the process manageable and gave them better control.

- **New or phasing-out products**: For items without historical data—or products being phased out—individual forecasting is often meaningless. Grouping them with similar products helps estimate demand in a more realistic way.

In short, **grouping makes forecasting not only possible but practical**. And the **roll-up/roll-down principle** ensures you can shift between detail and aggregation without losing the connection.

Embedding in BI: A Visual Magic Cube

After some discussion, we eventually embedded this input-output model into a **BI dashboard**. That way, users could **select any dimension they needed**—product, customer, time period—and view the data dynamically. Essentially, we created a **visual interface for the magic cube**, making it much easier for users to work with the data and stay in control.

Summary

To build a solid S&OP process, **start by defining a simple set of KPIs** for Forecasting and Demand Planning—such as **Bias**, **Accuracy**, and **MAPE**. These give you the insights you need to improve your forecasting process from day one.

Apply the **Pareto principle** to focus your efforts where they matter most:

- Use **manual demand planning** for the **top 20%** of products (your A-items).
- For the remaining **80%**, implement an algorithmic forecast to **automate** and **streamline** the process.

Use the **forecast** as a starting point—a statistical proposal.
From there, work together with Sales, Marketing, and Customers to **fine-tune the demand plan**, making sure it reflects not just the past, but the actual market potential ahead.

With this approach, Demand Planning becomes both **data-driven** and **market-sensitive**—a smart balance of system and human insight.

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Chapter 4: Demand Planning – Staying Focused

Introduction

Demand Planning can be simply described as: **Demand plotted over time.**

But in practice, it's rarely that simple.

With a wide variety of product versions, multiple time horizons, and all kinds of demand patterns, it's easy to **lose focus**. The result? Demand plans become overly complex, hard to communicate, and difficult to act upon.

The challenge is clear:

Keep it simple. Keep it clear.

If we can achieve this level of simplicity in **both Demand Planning and Supply Planning**, we create a powerful overview—a clear picture of where demand meets supply, and where tensions arise. This then becomes the **core discussion document** for S&OP meetings: a tool for management to understand the trade-offs and make informed decisions.

Timing Is Everything

Demand Planning is mostly about **operational decision-making**—and that happens primarily in the **medium term**.

Why the medium term?

- Because in this timeframe, **you can still influence both demand and supply**.
- On the **short term**, flexibility is close to zero. Orders have been placed, production has started, and logistics are underway.
- At best, you can make **minor adjustments**—but large shifts often come at a cost, usually in the form of **disappointing one customer to serve another**.
- On the **long term**, of course, you have more strategic flexibility—but that's a different playing field.

So, the **medium term** is the sweet spot for Demand Planning. It's where planning is both **relevant** and **actionable**.

Keeping Focus with Pareto Logic

In the next section, we'll return to the **Pareto analysis** introduced earlier.
We'll use it to explain how you can **stay focused on the right products**—without neglecting the

rest. It's all about creating a planning structure that allows you to **prioritize without losing control**.

From Forecast to Demand Plan: The Deterministic Step

Demand Planning begins with a clear view of two things:

1. The **current valid demand plan**
2. The **forecast proposal**—statistically generated based on historical data

The process starts with comparing these two. The key question is:

Do I accept the forecast as it is, or do I have valid reasons to adjust it?

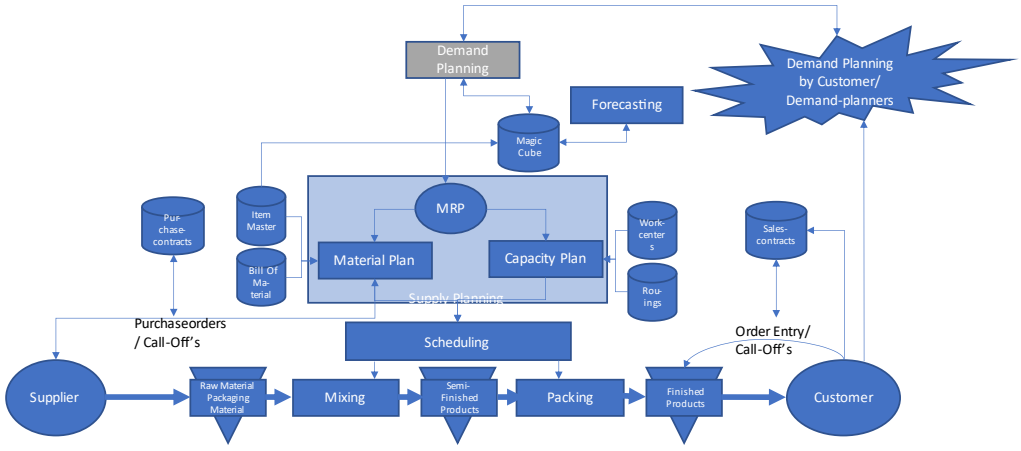
This is where **demand planning becomes deterministic**.
You bring in human judgment and market intelligence—things the system doesn't know.

Maybe a customer is planning a **promotion**, or you know a large **project order** is coming in. These are exactly the kinds of factors that justify a deviation from the statistical forecast.

And ideally, these decisions aren't made in isolation.
You sit down with **Sales**—and if possible, even with the **Customer**—and you discuss what's coming. This collaborative dialogue is at the heart of good demand planning.

It's where data meets experience, and where planning becomes truly value-adding.

'Demand Planning' within the total Concept



Demand Planning as Matrix

Demand Planning, when stripped down to its core, is essentially a **matrix**:

- On the **vertical axis**: the **customer-product combinations**
- On the **horizontal axis**: **time**

Let's start with the **vertical axis**—we'll explore the time dimension in the next section.

Vertical Axis: Focus on the Right Combinations

On the vertical axis, you're dealing with **products, customers, or customer-product combinations**. And here's the challenge:

- A typical **manufacturing company** might have **700 finished goods**.
- A **retailer** could easily be working with **20,000 SKUs**.
- Combine that with customer segmentation, and the number of planning combinations becomes overwhelming.

So what do you need? **Focus.**

Apply the **Pareto principle** once again to keep it **manageable**.

A-Products: Where the Real Action Happens

These are your high-value, high-volume items—often made for specific, large customers. Think 20% of the customers, generating 80% of your turnover.

In practice, this might look like:

- 5 major customers
- Each with ~6 specific products
- Resulting in ~30 high-priority combinations

30? Yes, **just 30**.
And **that's your focus area**.
This is where your organization should spend at least **60% of its time and effort**—especially at the start of your S&OP journey.

This is the heart of your business.
These are the relationships that matter most.

Over time, and with trust, these customers may even allow you to **gradually take over more control** of the supply process:

- You start by using their **Point of Sales data**
- Then you manage the replenishment
- Eventually, you become responsible for **their inventory levels**

That's what a **true supply partnership** looks like.

In these cases, demand planning becomes a shared process—discussed monthly, fine-tuned through occasional emails or calls. Often, the **supplier takes full responsibility for availability**. And customers actually appreciate that—because it removes complexity and risk from their side.

C-Products: Keep It Light

C-products make up **80% of your items**, but only **20% of your turnover**.

They're not unimportant—but you simply **can't give them the same level of attention**.

- These items are typically forecasted **automatically**
- You keep a **slightly higher stock level** to compensate
- You **don't manage them per customer**, but rather on an aggregate level
- Your **service level target** may be lower—say, 90% instead of 98–99%

The key is to let these items **"run in the background"** with as little manual intervention as possible.

B-Products: In Between and Flexible

The B-category sits between A and C.
Sometimes it's helpful to have this **intermediate class** with slightly different parameter settings.

I often use B-items for products that:

- Are **new**, with potential to become A-items
- Are **being phased out**, needing just enough attention to manage their decline

Depending on the nature of your business, it may be useful to keep all three classes—or in some cases, a **two-class system (A/C)** works just fine.

Decoupling point / lead time / delivery time

Before we move on to the **horizontal time axis** of the demand planning matrix, there's an important step we need to take:
We must first understand three key elements that influence both **where we plan** (vertical axis) and **how far ahead we can plan** (horizontal axis):

1. **Decoupling Point**
2. **Lead Time** (for make-to-stock or make-to-order)
3. **Delivery Time** (for purchased items)

These factors determine:

- The **level in the product hierarchy** where planning makes most sense
- The **flexibility** we can offer to the customer in terms of timing

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Decoupling point

The **decoupling point** is where your supply chain switches from **push** to **pull**:

- Everything **before** the decoupling point is **forecast-driven**
- Everything **after** is **customer-order-driven**

Where you place this point determines how much risk you take and how responsive you can be. Typical examples:

- For standard products: decoupling happens at **finished goods level**
- For configurable products: it may be at **assembly** or **component level**
- For engineered-to-order: it's all the way back to **design**

The **closer to the customer**, the **more flexible** you need to be—but also the **higher the inventory risk** you carry upstream.

Lead Time

Lead time is the time it takes to **make or assemble** a product after a customer order is received:

- Short lead times give you more agility
- Long lead times require **earlier planning decisions** and better forecasting

Understanding lead times helps determine **how much of your demand you need to lock in early**, and **how far in advance** you need to commit to production or procurement.

Delivery Time

For **purchased goods**, you're dependent on suppliers' delivery schedules.
This includes:

- **Transport time**
- **Inbound handling**
- Any additional **buffer or safety time**

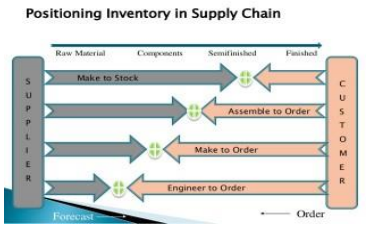
Long delivery times again push planning decisions further into the past, reducing flexibility.

In short:

These three elements—**decoupling point**, **lead time**, and **delivery time**—are critical for shaping both the **structure** and the **timing** of your Demand Plan.

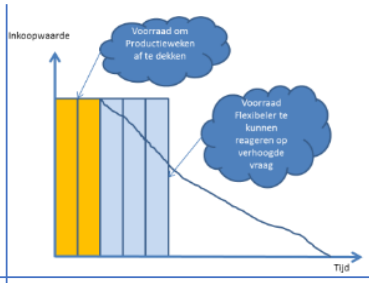
They define what's **realistic**, what's **negotiable**, and what's **set in stone**—both for you and your customer.

Determining: decoupling point/lead time/ delivery time



Decoupling point:
- If you do 'engineer to order ', you start engineering once you receive the order, so that means longer leadtimes and almost no stock. In line with this choice the risk of obsolete stock is also zero.
- If you do on the other end of the spectrum 'make to stock', you go for shorter leadtime, more on stock and also risk of obsolete becomes higher.

Determination of lead time / delivery times:
- Make a graph like above, with delivery times offset against cumulative purchasing value
- Cut-off point in the chart is around 40 days, stock value is still acceptable to there? Can you "sell" that to your customers? If not, you should choose to have relatively more in stock, so that you can shorten the delivery time to the customer



Determination of lead time / delivery times:
- In the third and last picture , 2 weeks lead time Production and 3 weeks in stock have been chosen, which means that your delivery time is 5 weeks. What you keep in stock is the "tail" after 5 weeks.

Decoupling Point

Let’s start by referring to the illustration on the right. Imagine a situation where your company chooses **not to hold any inventory at all**. In that case, your **delivery time becomes equal to your full lead time**—let’s say **12 weeks**.

So when a customer places an order, the message is:

“You’ll receive your product approximately 12 weeks from now.”

Now, whether this is a problem or not depends entirely on the **type of product** and the **market you’re in**.

Long Lead Times: Acceptable or Not?

Take, for example, a **piece of furniture**.
If you’ve ever ordered a custom sofa or dining table, you’ll know that a 12-week delivery time isn’t unusual. As a consumer, you accept it—it’s part of the deal. You might not like it, but you know there’s not much you can do about it.

Now contrast that with a much more **standard, fast-moving product**—say, a **coffee machine**.

In that case, your expectations are completely different:

- Your current machine just stopped working.
- You need a quick replacement.
- You want it **off the shelf**—ideally delivered the **next day**.

If the brand you prefer can’t deliver it quickly, what do you do?

You’ll probably switch to another brand—**simply one that’s available**.

This example shows how **product characteristics, customer expectations, and delivery times** are closely connected—and how they influence your **inventory strategy**.

Some products **can afford to be made-to-order**, others must be **available on demand**. And that reality directly impacts how you structure your **demand and supply planning horizons**.

Leadtime

Continuing our discussion on the **time axis** of demand planning, we now turn to a fundamental topic:

How do you determine lead time, and what are the consequences for your planning strategy?

A Practical Example

Let's consider a simple case from the illustration above.
Suppose your internal **production lead time** is **2 weeks**, and your **material delivery time** is **3 weeks**.
That gives you a total lead time of **5 weeks**.

This means that if you don't hold any inventory, your customer would face a **5-week delivery time** from the moment they place the order.

In many markets, that would be problematic.
That's why companies often choose to **hold stock** to cover the "tail" beyond a certain threshold.

Typically, inventory costs are estimated at **15% of the product's cost price**, covering interest, warehousing, and risk (e.g. obsolescence or damage).

But how do you determine that **5-week threshold**?
Interestingly, it's not a matter of pure calculation—it's more of a **strategic judgment** based on several factors.

What Influences Lead Time Decisions?

1. **Economic Considerations**
   The classic **EOQ (Economic Order Quantity) formula** helps balance the cost of holding stock with the cost of ordering or producing. In this model, lead time is often treated as a given—but in reality, it's part of the decision process and influenced by assumptions that don't always hold up in practice.
2. **Product Shelf Life**
   In industries with perishable goods, a common rule of thumb is:

   > One-third of the product's shelf life belongs to the **supplier**, and two-thirds to the **retailer or consumer**.

3. **Market Standards**
   Sometimes, the decision is driven by **industry norms**:

   > "What's considered a 'normal' delivery time in our market?"
   > Do you conform, or differentiate?

4. **Supplier Performance and Flexibility**
   In many cases, **supplier lead times** account for the bulk of your total lead time—especially for components or raw materials.

Don't Accept Supplier Lead Times Blindly

In one project I did for a metalworking company in Germany, we analysed actual supplier lead times:

- Some stretched to **120 days**
- The bulk hovered around **40 days**

While the material costs were moderate, these long delivery times severely **limited flexibility**. Of course, stock could compensate for this—but a better question is:

"Do we really need to accept these delivery times as fixed?"

In my experience, many supplier lead times are **arbitrary** or **historically set**, not based on real constraints.
That's why I always recommend:

- **Challenging long lead times first**
- Asking suppliers what's truly feasible
- Making this a **recurring part of S&OP reviews**

It's one of the **cheapest and fastest improvements** you can make—yet few companies consciously and consistently do it.

For more on this, I refer to an article I wrote for *Logistiek* (Netherlands, 2019):

"Delivery Time Reduction Means Saving Money."

Moving the Customer Decoupling Point

Another important lever is the **decoupling point**—the point where your supply chain shifts from **make-to-stock** to **make-to-order**.

- **Furniture** is a classic **make-to-order** case.
  Basic materials may be in stock (e.g. wood, fabric), but the final product isn't assembled until a customer order comes in.
- **Coffee machines**, on the other hand, are typically **make-to-stock**.
  They're produced in batches, held in inventory, and distributed through retailers for immediate purchase.

In the **food industry**, a common variant is **assemble-to-order**:

- Large batches of semi-finished product (e.g. sauces, oils) are kept in tanks or bulk containers.
- Final packaging—into bottles, sachets, etc.—is **customer-specific** and done on demand.

This approach:

- Keeps **finished goods inventory low**
- Preserves **flexibility** with regard to customer-specific packaging
- Aligns well with **shelf life requirements**

As a result, demand planning is done more effectively at the **semi-finished level**, where volume is consolidated and variability is lower.

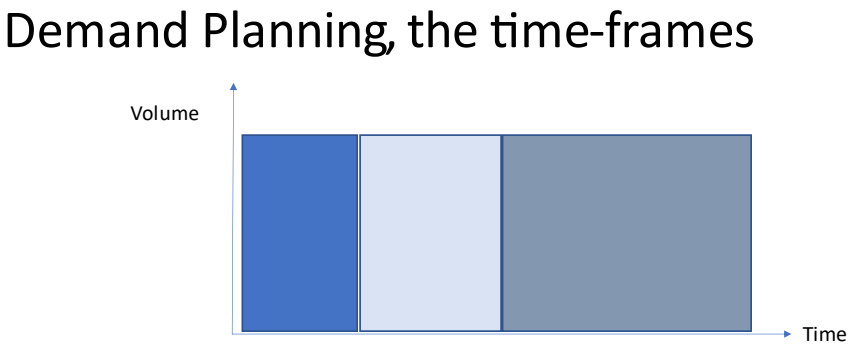
The timeframes

Now that we've discussed **at which level** we should plan (the vertical axis), and how to **manage lead times and decoupling points** (which determine our flexibility), it's time to look at the final key element of the Demand Planning matrix:

The **timeframes**—or **planning horizons**—along the **horizontal axis**.

This is where we define **how far ahead** we plan, and in what **time buckets**—days, weeks, or months—we do so.

Each timeframe has its own purpose, level of detail, and degree of flexibility. In the following section, we'll break this down and explain how to structure your planning horizon in a way that aligns with your product characteristics, market dynamics, and internal lead times.



	Short Term	Mid Term	Long term
Horizon	0-4weeks	5-12 weeks	12wk-1,5year
Timebucket	day	week	Week
Frequency	Daily/weekly	Weekly/monthly	Weekly/ monthly

Planning Horizons in Demand Planning

Demand Planning works across **three distinct timeframes**—each with its own characteristics, objectives, and degree of flexibility. Let's walk through them one by one.

Short-Term Planning

Typical horizon: 1–4 weeks ahead

In this timeframe, **most of the decisions have already been made**:

- Orders have been placed
- Production is scheduled—or even completed
- Materials are on their way

From a demand planning perspective, there's **very limited room to manoeuvre**. You're no longer planning—you're executing what's already been planned.

This period is important to:

- **Ensure stability** for operations
- **Fix small issues** if they arise
- Provide a **solid starting point** for future planning

But if you're adjusting forecasts or debating volumes here, **you're too late**.
This is the domain of **Scheduling**, not Demand Planning.

Medium-Term Planning

Typical horizon: 1–3 months ahead

This is the **core planning window** for demand planners. It's where:

- You still have time to **adjust demand** without major consequences
- **Supplier call-offs** and **production schedules** can still be changed
- **Capacity** can be flexed—for example, by adding or cancelling a shift

This is also the timeframe where:

- **Discussions with Sales and Customers** should happen
- **Forecasts are reviewed and adjusted**
- Key decisions are made during **S&OP meetings**

In short:

This is the window where Demand Planning delivers its real value.

Long-Term Planning

Typical horizon: 3 months to 2 years (or more)

In industries like **food**, where I do much of my work, the long term plays a crucial role—often shaped by:

- **Seasonal harvests**
- **Annual contracts**
- **Strategic sourcing agreements**

This is the period where you think in **quarters or years**, not weeks.

It allows you to:

- Detect **shifts in overall demand**
- Identify **structural trends**
- Align **strategic planning and procurement decisions**

This horizon is also a key part of the **S&OP process**, but the focus is less on immediate action and more on **direction-setting**.

Connection with Forecasting and Demand Planning

As discussed earlier in the chapter on **Forecasting**, filling in the Demand Plan is often **less glamorous** than some books and academic articles might suggest.

If no forecast is available at all, a common starting point is to:

- **Copy last year's volumes**, and
- Apply a **growth percentage** for the upcoming year

Want more sensitivity to **seasonal patterns**?
Then take the **average of the last three years** and adjust from there.

Yes—forecasting can be improved with more sophisticated **formulas and algorithms**. That's certainly true. But in my experience, its importance is sometimes **overstated**.

There are many **real-world uncertainties** you simply can't capture in a model.
That's why a **deterministic, future-oriented approach**—based on real customer insights—often proves to be **more valuable**, especially for your high-impact products.

Forecasting is for C-Items. Planning is for A-Items.

Strangely enough, this leads to a bit of a paradox:

Forecasting is most useful for your C-items.
Demand Planning is most critical for your A-items.

Why?

- **C-items** are low in value and volume, but too many to manage manually.
  So if your statistical forecast is solid, you can trust it and **forget about them**.
- **A-items**, on the other hand, require **attention, dialogue, and market insight**.
  These are the products where **customer input** makes the real difference. That's where **demand planning earns its stripes**.

So yes, **good forecasting tools** are important.
But they're **no substitute** for human insight—especially when it comes to your most critical items.

Communication, communication, …

While **Forecasting** is mostly a **technical and statistical** process, **Demand Planning** is something else entirely. It's about **dialogue, collaboration, and shared understanding**—not just numbers.

Forecasts are useful—particularly for **C-items**, where you don't want to spend too much time or attention.
But for your **A-items**, the real value comes from collaboration, especially with the **customer**.

Knowing what's happening in the market today—and what's likely to happen soon—is far more valuable than the most refined forecast based on historical data. A statistical forecast is a **starting point**, but it must quickly be **validated, challenged, or adjusted** through insight and discussion.

Often, it's helpful to first review the forecast internally:

- What's the current pattern?
- What's realistic from a **supply capability** point of view?

Only then should you take the discussion **externally**—to Sales and the Customer. This brings you naturally into the structure of the **S&OP process**, where such alignment is formalized and repeated on a regular basis.

We'll go deeper into that in the next chapter on S&OP.
But from the **Demand Planning** perspective, the key steps are:

Practical Steps in Demand Planning

1. **Generate a new proposal**
   Use the forecast as a starting point to create a first draft of the Demand Plan.
2. **Review the proposal internally**
   Check the forecast, adopt what looks right, and flag what needs further review.
3. **Prepare and discuss the Demand Plan**
   Sit down with Sales and, where relevant, the Customer—especially for **A-items**.
4. **Address customer-specific needs**
   For **A-customers**, even the lower-value items (C-products) may deserve attention—at least to detect major deviations.
5. **Bring it into the S&OP cycle**
   The finalized Demand Plan should feed into the S&OP process, where **feasibility is tested**, and adjustments are made collaboratively.

In the end, effective Demand Planning is **not just about having the right numbers**—
it's about **getting the right people to talk about the right numbers**.

Summary

Demand Planning is built on three pillars:

1. A **statistical forecast**
2. **Internal deterministic knowledge** about future events
3. **Customer input** on expected future demand

We distinguished between **A- and C-items** to keep the planning process focused and effective.

- For **A-items**, internal and external insights play a crucial role—the demand plan must be shaped through active collaboration.
- For **C-items**, statistical forecasting is often sufficient, allowing automation and reducing manual effort.

To improve **flexibility**, we discussed the importance of:

- Strategically positioning the **decoupling point**—further downstream means more responsiveness, but also more risk and cost.
- Actively reviewing and challenging **long supplier lead times**, which often have the biggest impact on total delivery time and agility.

Finally, we emphasized that the **medium term** is the most critical planning horizon in Demand Planning:

- It offers enough time to influence demand and adjust supply.
- It enables meaningful conversations between Demand Planning, Sales, and Operations.
- And if changes are needed, they can usually still be made—without significant cost or disruption.

-/-/-

Chapter 5: Supply Planning

Introduction to S&OP – Where Demand meets Supply

At its core, **Supply Planning** exists to answer one essential question:

Can we meet the demand that has been planned?

The essence of S&OP lies in identifying and understanding the **tension** between what the business **wants to deliver** (the Demand Plan) and what it can **actually realize** (the Supply Plan).

To assess this tension properly, the Supply Plan must be presented in the **same unit of measure** as the Demand Plan. Only then can you compare apples to apples and evaluate feasibility with confidence.

Sometimes, it's useful to present Supply Planning from a slightly different perspective—for instance, in **machine hours** or per **machine group**. This is particularly relevant when discussing **capacity**, with questions such as:

- *How much do we want to produce?*
- *How much can we realistically produce per shift, per machine, or per plant?*

The role of Supply Planning in the S&OP Process

The Supply Plan that enters the S&OP cycle is the **outcome of MRP (Material Requirements Planning)**—the core engine of your ERP system. It represents a **realistic estimation and translation** of both **material and capacity requirements** based on the Demand Plan.

Here's how it works:

1. The **Demand Plan** triggers the **MRP run**.
2. This generates a **first version of the Supply Plan**, including:
    - Planned production orders
    - Purchase proposals
    - Capacity load per work center

This first draft will almost certainly reveal **bottlenecks or shortages**—and that's exactly what you want. It creates the starting point for productive discussion.

One of the advantages of modern ERP systems is the use of **action messages**:

"Advance material A to meet production order X, so customer order Y can be delivered on time."

As a Supply Chain Planner, you **review and respond to these messages**, applying real-world logic and constraints. This process transforms the first version of the plan into a **realistic, balanced Supply Plan**.

And yes—sometimes you'll keep a bit of ambition in the plan. That's fine.
Because it's exactly this **tension between ambition and feasibility** that fuels the discussions in an S&OP meeting.

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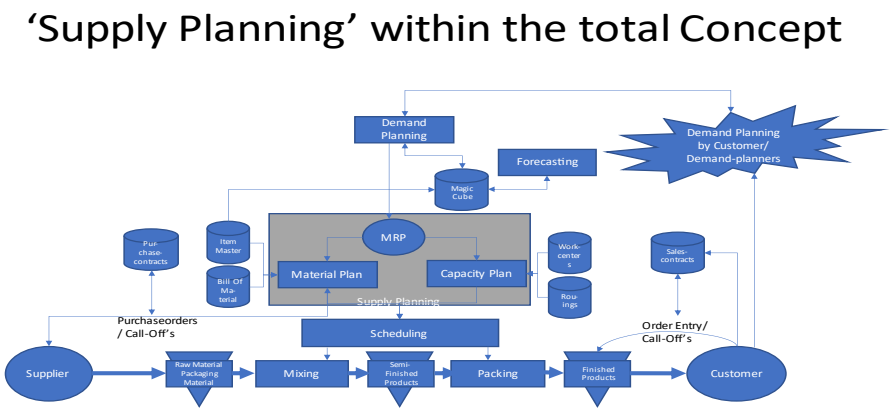


What is MRP?

We won't go into all the technical details of **MRP** here, but it's important to at least understand the basics—because MRP is central to how **Supply Planning** works in practice.

In fact, MRP is often called **the heart of ERP**. And rightly so.

Here's how it works in essence:

MRP (Material Requirements Planning) takes the **Demand Plan** as input and calculates, through the **Bill of Materials (BOM)**, what materials and capacities are required to fulfil that demand.

This process forms the basis of the Supply Plan—and it runs deep into the logic of the ERP system.

Unfortunately, in many companies, MRP is either underused or misused. That's a missed opportunity, because when used correctly, MRP can be **immensely powerful**.

Stick to the Standard

A common mistake is trying to **modify or customize** the standard MRP logic.
My advice?

Stick to the default.
The standard is there for a reason—and it works.

MRP doesn't just calculate material requirements. Once you start walking through the **BOM structure**, you can do much more:

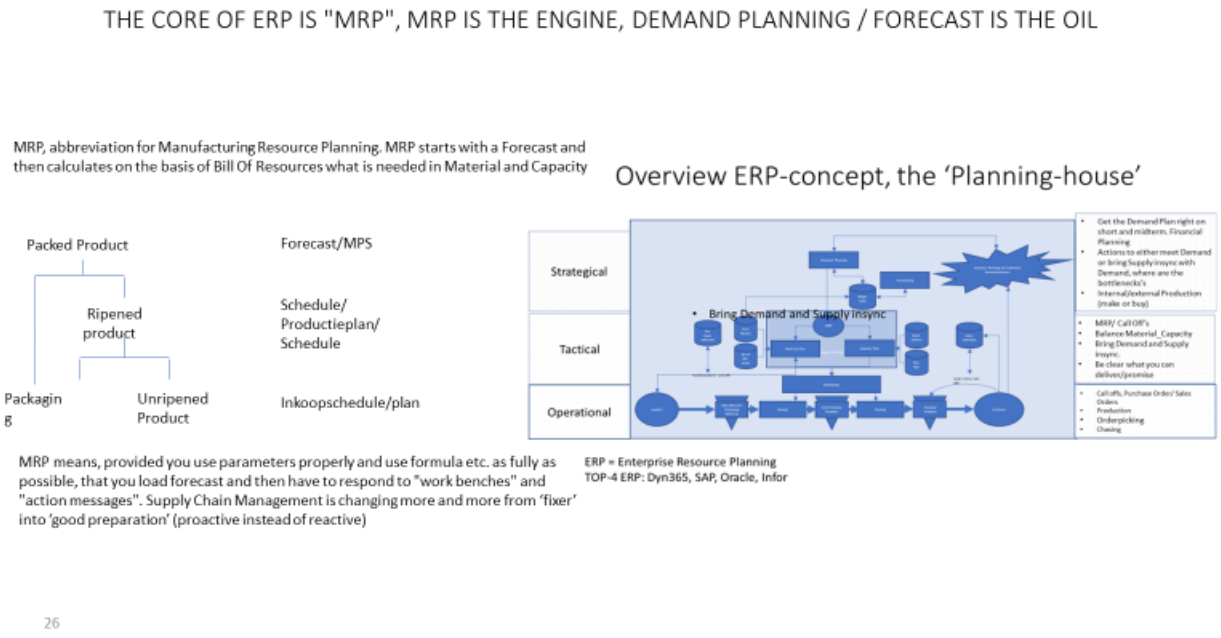
- You can perform a **Cost Roll-Up**, starting at the bottom of the BOM with raw material purchase prices and adding costs as you move upward—resulting in a complete, calculated **cost price for finished goods**.
- You can enable **lot tracking and tracing**, using the same underlying structure, ensuring full **traceability** throughout the production process.

Originally, MRP was all about material planning (MRP-I).
But over time, as systems became more integrated, the logic evolved into **MRP-II: Manufacturing Resource Planning**—encompassing not only materials, but also **capacity, labour, and production resources**.

Most modern ERP systems have this full **MRP-II logic built in**.

Don't reinvent the wheel—**use it**.

When configured properly, MRP gives you a clear, system-driven view of what needs to happen, when, and with which resources. That's exactly the kind of visibility and structure you want in a mature S&OP process.



Let's stay focused here on how **Supply Planning** links directly to **Demand Planning**.

Typically, the Demand Plan is imported into the ERP system as a **forecast**.
The first thing MRP does is to **subtract existing inventory** from the forecast. While this seems logical, it's **not always desirable**. That's why more modern ERP systems often allow the Demand Plan to be **converted directly into planned orders**, skipping the stock deduction step.

These **planned orders** are proposals generated by the system. Every time MRP runs, the old planned orders are discarded and replaced based on the latest situation—forecast, inventory, and open production or purchase orders.

You can:

- Convert planned orders into **firm planned** orders, which remain fixed during MRP runs
- Directly convert them into **production**, **transfer**, or **purchase orders**
- Mark them as **confirmed**, which is increasingly used to reflect committed production based directly on the Demand Plan

Createe a Supply Plan that mirrors Demand

As mentioned earlier, it's important to express the Supply Plan in the **same units** as the Demand Plan, so they can be directly compared.

Here's a practical example:

Suppose you have two key machines—**Machine A** and **Machine B**—which are bottlenecks in your process. You want to know:

- How many hours of production are required?
- How many hours are actually available?

To do this, you link product X to Machine A and product Y to Machine B, **in hours**. Now, your Supply Plan can express available capacity in hours per machine, and you can directly compare that with the required hours from the Demand Plan.

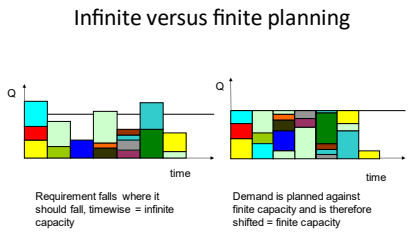
This gives you a clear picture of **supply vs. demand per resource**, and forms the basis for S&OP discussions about feasibility.

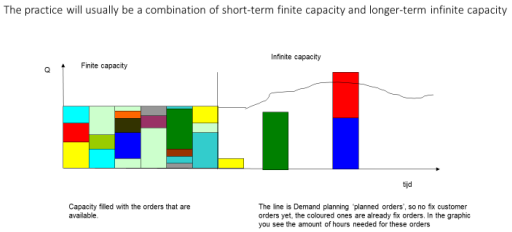
Role of Scheduling: from Plan to Execution

To complete the planning hierarchy, we need to mention **Scheduling**—the link between planning and execution.

Scheduling software works on the **short term** (typically 0–2 weeks) and is designed for **finite capacity planning**.
Unlike ERP systems, which plan against infinite capacity and use **days** as the smallest unit, scheduling tools often allow planning in **hours or even minutes**.

Scheduling determines the **actual production sequence per line**, using real-time capacity constraints. It's where the planning becomes tangible





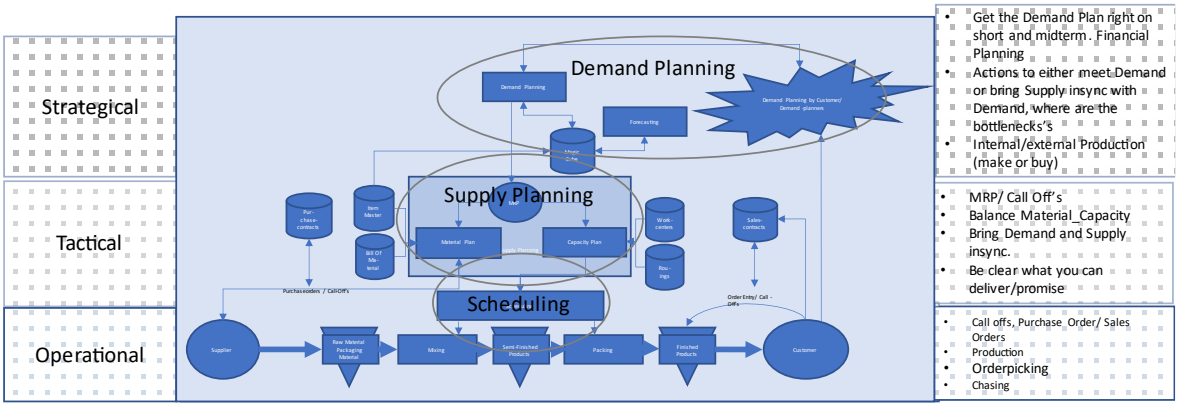
The three levels of Planning

In summary, we distinguish **three levels** of planning:

1. **Demand Planning**
   Starts with a forecast and is refined through deterministic insights from Sales, Planners, and Customers.
2. **Supply Planning**
   Uses MRP to translate the Demand Plan into material and capacity requirements. The result is a realistic Supply Plan per machine or work center.
3. **Scheduling**
   Translates the Supply Plan into an executable sequence of orders per production line, under finite capacity conditions.

If Demand and Supply Planning are done well, Scheduling should be smooth and focused purely on execution.

Planninglevels within the planninghouse



ERP = Enterprise Resource Planning
TOP-4 ERP: Dyn365, SAP, Oracle, Infor

ERP = The 'backbone' of your planning system

In theory, ERP vendors claim their systems can cover everything—but in practice, they don't.

That's why it's best to treat your **ERP system as the backbone** of your IT landscape:

- Use standard ERP functionality for core processes like **MRP, MPS, and CRP**
- Avoid customizations wherever possible
- For areas that require specialization—like **forecasting**, **grower portals**, or **scheduling**—use **dedicated third-party software** that integrates with ERP

This approach offers **flexibility, future-proofing, and easier upgrades**.
Customizations may seem helpful short-term, but they often reduce transparency and complicate system maintenance. Standard software, used smartly, will support your business for 10–15 years without major issues.

Summary

Supply Planning is the result of MRP logic, translating the Demand Plan into a feasible set of material and capacity requirements. The Supply Plan allows us to **mirror Demand**, creating visibility into possible gaps and tensions.

A little **tension** is good—it fuels growth, ambition, and improvement.

The S&OP discussion that follows should center around:

- **Delivery performance**
- **Forecast accuracy and bias**
- **Balanced inventory**

- **Operational efficiency**

We also touched on:

- The role of MRP and how it evolved into MRP-II
- The distinction between **infinite** and **finite** capacity planning
- The importance of treating ERP as the **standardized foundation** of your planning architecture

With these principles in place, we're now fully equipped to explore the **core S&OP process** itself.

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Chapter 6: S&OP Steps

Introduction

At its core, **Sales & Operations Planning (S&OP)** is about finding the right **balance between supply and demand**—and discussing this openly and constructively across the organization.

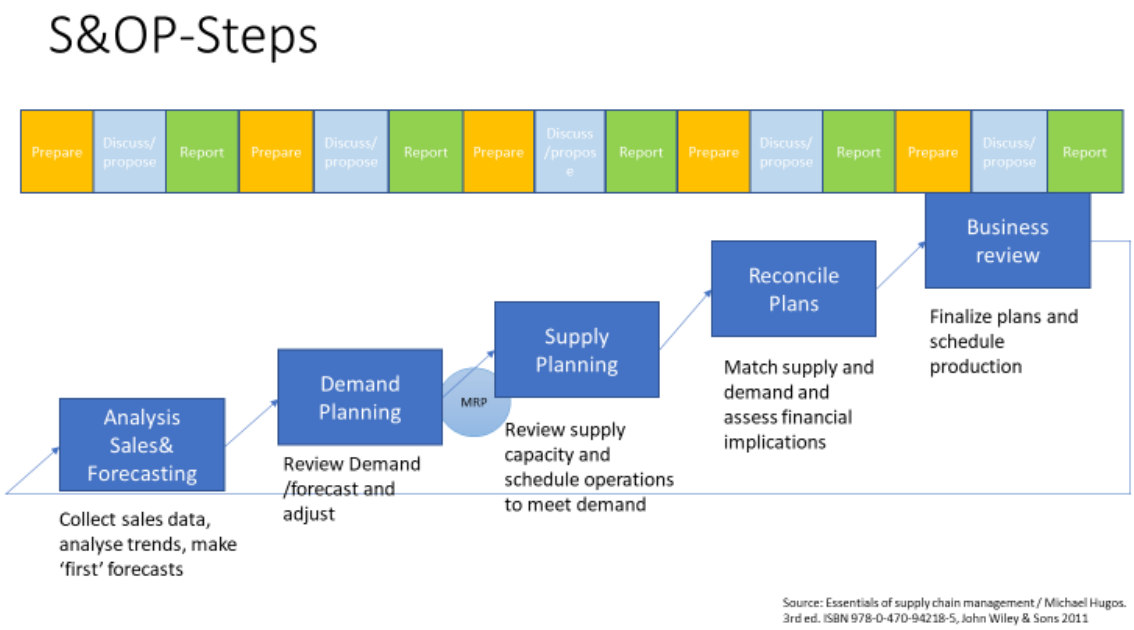
The keywords here are:
Honest and **Balanced**.

- **Honest** means putting relevant issues on the table—without hesitation. Only when all perspectives are shared transparently can the team work towards effective solutions.
- **Balanced** means that the Demand Plan must be realistically challenged by the Supply Plan. Too often, demand is pushed through the system even when key stakeholders already know it isn't feasible. That serves no one.

The five steps.

Different models exist, but in this booklet, we combine several proven approaches into one unified, monthly S&OP cycle with **five key steps**:

1. **Sales & Forecast Analysis**
2. **Demand Planning**
3. **Supply Planning**
4. **Reconciliation**
5. **Business Review**



Before going into each step, let's highlight two important points:

- These meetings are only effective if they are **well-prepared and well-documented**. That includes pre-read materials and post-meeting reports.
- The **monthly cycle is cumulative**. Each step builds on the previous one. What starts as an issue in Step 1 should evolve and progress until it is resolved—or decided on—in Step 5.

It's critical to **track issues throughout the cycle**:

- Add new issues as they emerge
- Enrich them with facts and insights
- Remove them when resolved
- Always document why decisions were made

This "issue stream" is one of the most important recurring agenda items.

At the end of each cycle, the organization should not only have made progress—it should have **learned how to do things better**. Even small improvements—like higher forecast accuracy or faster decision-making—are steps forward.

The Role of the Linking Pin

It's helpful to appoint a **linking pin**—a person who connects the steps and ensures continuity. This person should:

- Understand the process in depth
- Be able to clarify content when needed
- Prepare presentations and track progress
- Be a trusted facilitator—not a senior manager or final decision-maker

Often, the **Demand Manager** is best suited for this role:
They have no hierarchical bias, understand the content, and are closely involved in both commercial and operational planning.

Step1: Analysis Sales & Forecasting.

his step is **SKU- and product-category-focused**. It typically starts with input from the **Product Managers**, with the **Demand Manager** coordinating and consolidating the data.

Key questions to answer:

- Are we meeting the budget?
- Are we achieving expected turnover, margin, and profit?
- If not: *Why?* What can be done to improve the situation?

Also, review the status of **new product introductions and innovations**:

- Are we hitting targets?
- Did we follow through on the action points agreed last cycle?
- What worked, what didn't—and why?

It's helpful to **separate the budget from the Risk & Opportunity list**.
The R&O list includes potential upsides and downsides that are not yet certain but should be monitored and flagged for potential action.

Important: Discuss with Supply whether risks/opportunities should be included in MRP or not. For instance, should materials or capacity be reserved for an opportunity?

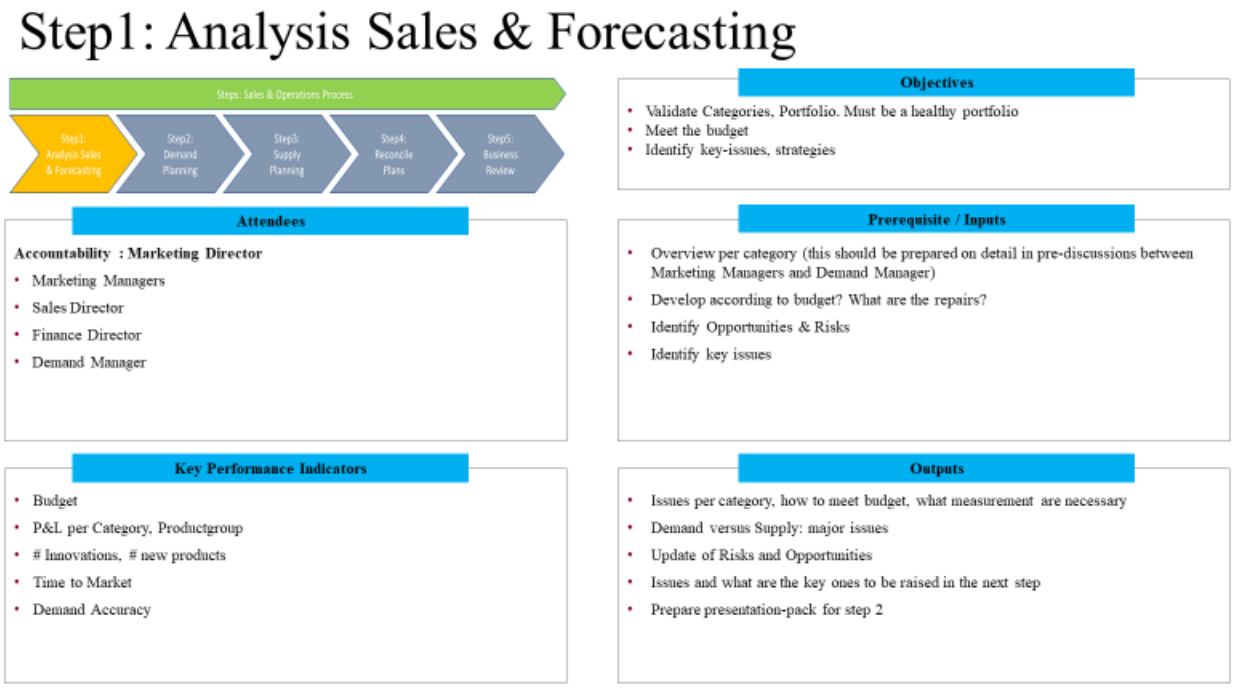
You may also include **KPI overviews** here—such as **Forecast Accuracy** and **Bias**.

Output

Step 1 should result in a **clear summary of key issues**, to be taken into Step 2.
Preparation is everything. Meetings should be short—**90 minutes max**—and should focus only on what's not already clear or agreed.

In many organizations, the **Demand Manager prepares 80% of the presentation** in advance, so the actual meeting focuses on validation, discussion, and team alignment.

Marketing chairs the meeting, but it's a joint effort across Sales, Demand Planning, and Product Management. The goal: ensure everyone understands and agrees on the key issues that will shape this month's cycle.



Step2: Demand Planning

Where Step 1 focused on **product categories and SKUs**, Step 2 shifts the perspective to **Sales and Customers**.

This step is led by the **Sales department**, and chaired by the **Sales lead**. The **Demand Manager** again plays a key role in preparing the presentation and coordinating the content.

From Product to Customer

The challenge here is translation:

- Step 1 produces insights at **category/SKU level**
- Sales thinks in terms of **channels and customers**

This translation is not always easy—many companies still struggle to convert category-level insights into customer-level planning.
Modern systems are improving in this area, but it often still requires some manual work.

Key questions to explore:

- Are we reaching our goals in terms of turnover, margin, and profit—**per channel and customer**?
- Which customers or channels are **underperforming or overperforming**?
- Why is that?
    - Are there promotional opportunities?
    - Are there payment issues?
    - Are service levels influencing customer behavior?

This is the moment for Sales, Marketing, and Demand Planning to come together and **build solutions**—not just diagnose problems. It's a **team effort** to find realistic, actionable ways to close gaps and capture opportunities.

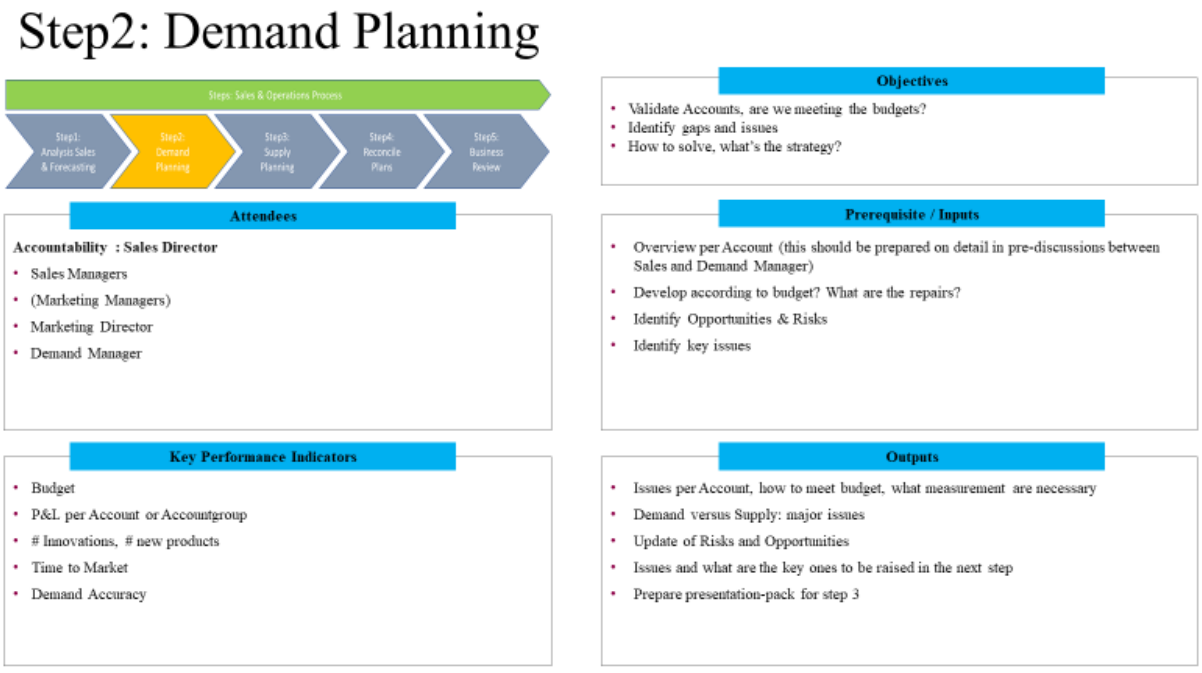
Risk & Opportunity List

The **R&O list** from Step 1 should now be updated:

- What new risks or opportunities emerged from the customer/channel discussion?
- What are the expected revenues or investments?
- Are adjustments to the Demand Plan needed?

This ensures that the plan reflects not only statistical and product-level insights, but also **market reality** as seen from the field.

Again, this step should end with a well-documented **issue list** and updated input for the next step: **Supply Planning**.



Step3: Supply Planning

Now that we've examined the demand side in detail, it's time to shift focus to **what's actually possible** from a supply perspective. This step provides the **counterweight** to the demand ambitions defined in Step 2.

The meeting is **chaired by the Supply Chain Director**, and **prepared by the Supply Planner**, who works closely with the **MRP engine** in the ERP system.

The Starting Point: Is the Demand Plan in the System?

Before MRP can do its job, the most realistic version of the **Demand Plan** must be entered into the ERP system.

That sounds easier than it is.

Often, the best approach is to work with **scenarios**. ERP systems today typically support this functionality.

Example: "If we want to run a promotion from week XX to week YY, then the system will show us what's needed—e.g. more expensive materials or switching to 3-shift operations on Machine ZZ."

These types of decisions need to be explored in this Supply Planning step first—then brought into the final S&OP meeting as well, fully prepared and backed by data.

MRP Logic in Practice

MRP is not as complicated as it sometimes seems. At its core, it calculates:

- **Material requirements**
- **Capacity needs**

...based on:

- The **Demand Plan**
- The **Bill of Materials (BOM)**

To make this work, you need:

- Accurate product numbers
- A BOM that includes materials, labor time, and machine hours

Once MRP is run, the system will generate **action messages** and highlight:

- Shortages
- Bottlenecks
- Lead time issues
- Capacity overloads

It's up to the Supply Planner to assess these and build a **realistic Supply Plan**, taking ambition into account—but grounded in operational feasibility.

Planning Horizons: What Can Still Be Influenced?

One of the most misunderstood areas in planning is the **time horizon**. Supply Chain professionals know this intuitively, but for others it's often unclear.

Here's a breakdown:

Long-Term (12–18 months)

Used for:

- Securing harvests or raw materials
- Planning structural capacity changes (e.g. new shifts)
- Launching new products (requires early BOM creation and item setup)

If the information isn't in the system, it likely won't happen—so enter it early.

Mid-Term (8–16 weeks)

This is the **most critical timeframe** for supply planning.

- Most **supplier lead times** fall here—especially for packaging, ingredients, or specialized components
- Capacity must be secured: people, shifts, and machine time
- For new products, add another 3 months of development and trials on top

This is where **real planning decisions** are made: load balancing, production scenario testing, material reservations.

Short-Term (0–2 weeks)

This is the **execution window**.

- Machines are scheduled
- Production sequencing is fixed
- Change is still possible—but costly and disruptive

Think of this like a flight schedule: at this point, the gate is closing.

Summary of Step 3

Supply Planning is the **response to the demand ambitions** raised in Steps 1 and 2.

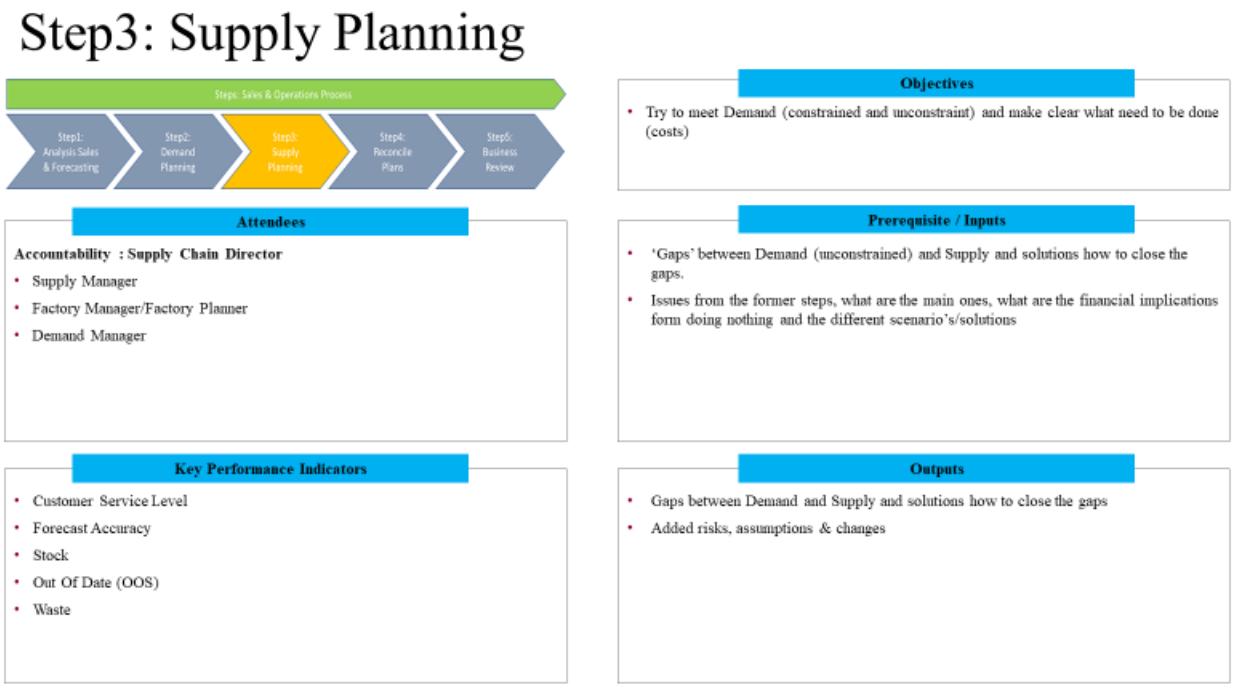
It answers the question:

"What's possible—and what's only possible if…"

This meeting delivers the **realism** and **counterbalance** needed for good decision-making.

Its outcome? A **supply plan** that is:

- Feasible, scenario-based, and ERP-supported
- Anchored in real material and capacity logic
- Ready for consolidation in the next step: **Reconciliation**



Step4: Reconcile plans

This meeting serves as the pivotal moment where the outcomes of the previous meetings are consolidated, financially validated, and aligned. It is essentially the final preparation for Step 5 — the Executive Business Review — which should focus solely on making decisions. Therefore, a thorough and structured preparation is key.

At this stage, the focus is not on re-opening debates or delving too deeply into the pros and cons of each issue. Instead, the task is to present a balanced view, weighing the trade-offs and implications. Finance plays a crucial role in this process by ensuring that assessments are objective and as fact-based as possible.

This is where the effectiveness of the S&OP process truly becomes visible. By this point, key issues identified in earlier meetings have been discussed and analysed. Now, it's time to bring these issues to the surface — especially those that may be blocking progress — and support them with clear overviews of the benefits, costs, risks, and opportunities. You are nearing the summit, and this step helps to bring everything into focus for final decision-making.

To do this effectively, it's important to ensure all relevant issues from the previous steps are clearly on the table. Strengthen each case by presenting its pros and cons, the required investments, and the potential gains. There are several useful tools to support this analysis. Personally, I often use root cause analysis. In one organization I worked with, the 6-box model was a standard approach. There are many valid methodologies available — choose one that aligns with your business standards and use it consistently.

But remember: these tools are exactly that — tools. Don't let them stifle the creativity or engagement of the people involved. The goal is to enable structured insight, not rigid thinking.

6-Box Analysis Tool

Step4: Reconcile Plans

Attendees

Accountability : Finance Director

- Marketing Director
- Sales Director
- Supply Chain Director
- Controller
- Demand Manager

Key Performance Indicators

- P&L
- On the 'key' issues what's the solution and what their effect on P&L

Objectives

- Prepare the Business Review agenda (Step5)
- On the key-issues: solutions, possible decisions (scenario's), financial impact of different solutions (mainly on P&L)

Prerequisite / Inputs

- On a high level 'gaps' financially between Demand (unconstrained) and Supply.
- Issues from the former steps, what are the main ones, what are the financial implications form doing nothing and the different scenario's/solutions

Outputs

- Financial reconciliation of all plans
- Main risks, assumptions & changes compared to last cycle
- Presentation of all gaps and financial impacts
- Decisions on consensus plan and recommendations for unsolved issues to escalate
- Prepared presentation-pack for step 5

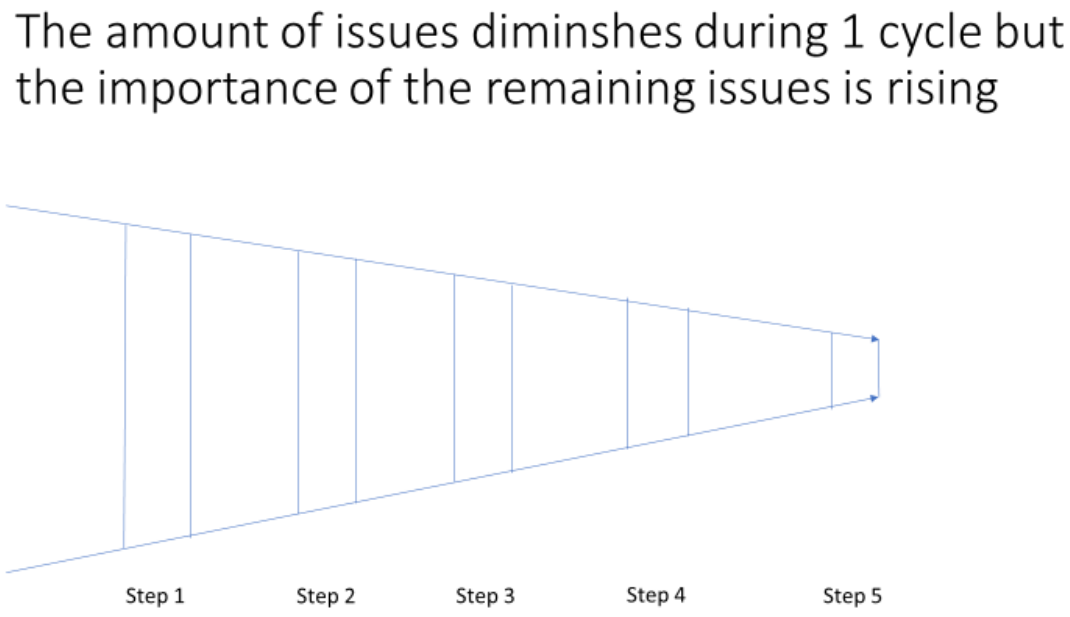
Step5: Business review

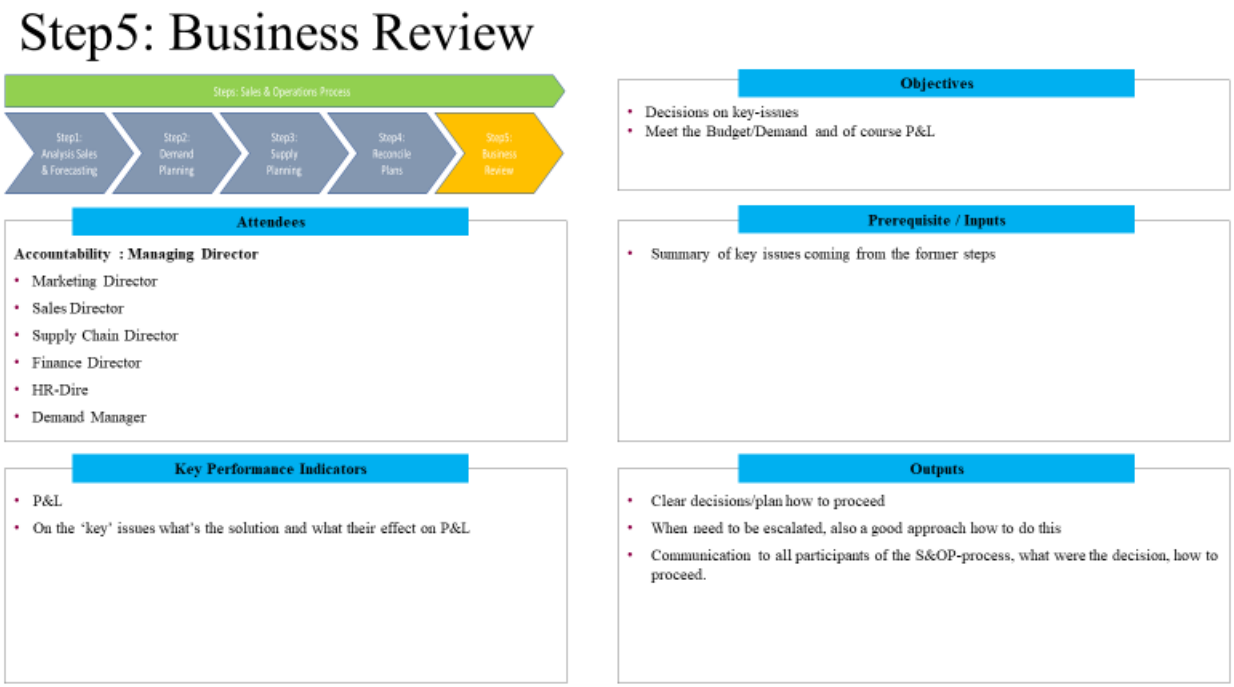
The Business Review marks the culmination of the S&OP cycle — the moment where all prior steps come together for decision-making. This meeting is typically attended by the Management Team or an equivalent decision-making body. Its purpose is clear: to make well-prepared, well-informed decisions that steer the organization forward.

By this point, the decision-making process should be streamlined. Key Performance Indicators, major issues, action items, risks, and opportunities are all on the table, clearly structured and supported by the groundwork laid in the earlier steps. With each step up the mountain, the view has become clearer — sharpening the understanding of which issues truly matter, how they can be addressed, and what decisions are needed.

Decisions taken during the Business Review are thoroughly documented and, most importantly, communicated effectively throughout the organization. This ensures that implementation is not only well-coordinated but also grounded in alignment and legitimacy.

With the Business Review complete, the organization rolls into the next monthly cycle — returning to Step 1 with renewed focus and insights, ready to build further on the foundation laid.





Summary chapter 6: The monthly S&OP cycle

hapter 6 outlines the core structure of the Sales & Operations Planning process, built around a monthly five-step cycle. This cycle enables organizations to align sales expectations, operational capabilities, and strategic objectives.

The process begins with an **analysis of sales and forecasting**, where historical data and market insights are reviewed. This is followed by **demand planning**, during which the expected future demand is determined in close collaboration with commercial teams.

In the third step, **supply planning**, the organization assesses whether it can meet the projected demand, taking into account production capacity, inventory levels, and supply reliability.

Step four is about **reconciling plans** — integrating the outcomes of the previous steps, validating them financially, and preparing them for decision-making. This step is focused on weighing options, presenting trade-offs, required investments, potential gains, and associated risks and opportunities.

The cycle concludes with the **business review**, where the management team makes decisions based on the structured preparation of previous steps. Clear communication and thorough documentation of decisions ensure that the organization can act in a well-coordinated and legitimized way. From there, the cycle starts again — this time with fresh insights and updated priorities.

This structured and repeatable approach not only supports operational alignment but also strengthens strategic execution across the organization.

Chapter 7: Systems/technology

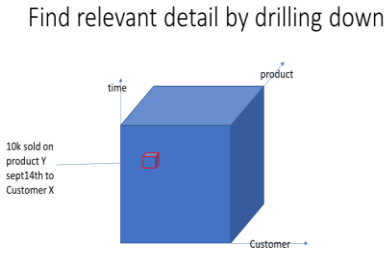
Introduction

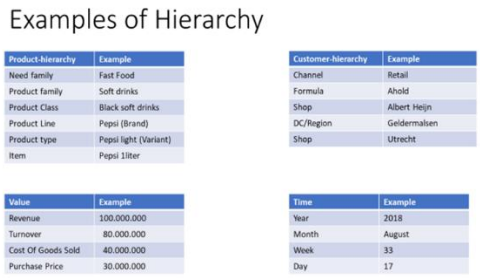
In this chapter, we revisit the S&OP process — this time from a systems and technology perspective. What should a software solution be able to support? And what are the key conditions such a system should meet? At the end of each section, we will summarize the main system requirements and preferences. These can serve as input when selecting software to support the S&OP process.

Analysis Sales & Forecasting.

The S&OP process starts with analysing sales history and generating initial forecast versions — a kind of outlook. Some say you shouldn't look back, but I disagree. Learning from the past is essential to preparing for the future, especially in forecasting.

Begin by collecting historical sales data and creating an initial forecast. If you notice a strange forecast pattern, the first question is likely: *"Can I explain this based on past data?"*





It helps to start with the bigger picture and then zoom in. One practical approach is to compare sales and budget figures at various levels — product group, category, and total. Start at the total level. If discrepancies appear, you drill down into specific product groups or individual products to identify the root cause.

For collecting and analysing data, tools like the earlier-mentioned "Magic Cube" can be useful. Excel can be sufficient in early stages, but it quickly becomes limiting. Specialized software offers essential capabilities such as:

- **Drill-down and bottom-up functionality**: The ability to move between levels of detail. For instance, view total turnover per week, then drill down to identify whether a specific customer or product is causing deviation from budget.

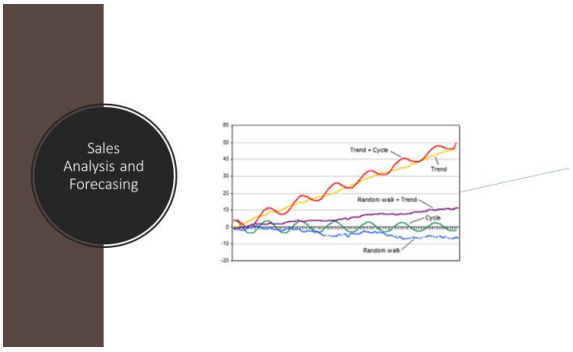
- **Multi-dimensional analysis**: The option to combine views — for example, turnover by product, by customer, and by week.

Software requirements:

- Drill-down / bottom-up analysis of sales data
- Support for combining different data dimensions

Demand Planning/Forecasting

It is important to distinguish between **normal demand** and **special demand**. Normal demand refers to regular ordering patterns, which may include seasonality. Ideally, you work with at least 2–3 years of historical data to detect such patterns and measure growth. Special demand includes events like Easter, Christmas, or promotions.



Adjusting History

Before forecasting, historical data often needs adjustment. Special events may need to be removed or compensated for. This ensures a cleaner base for forecasting. At the same time, you want to keep track of original data and any changes made.

Forecast Models

Various forecasting models are available — from exponential smoothing to Holt-Winters. A simple and effective approach: take three years of history, calculate the average seasonal pattern, apply a growth figure — and you have a solid base forecast. You can refine this further, but it's often enough to start.

Some systems automatically select the best algorithm. Personally, I like to know which model was used — just as some people like to know how a car engine works. But maybe it's becoming less relevant: if the system performs well and delivers accurate forecasts, does everyone really need to know what's under the hood?

Constrained vs. Unconstrained Demand

Constrained demand takes supply limitations (e.g., capacity or material shortages) into account. Unconstrained demand represents true market demand, without limitations. Ideally, a system lets you view both side by side.

On the short to mid-term, constrained demand is often used. But for longer-term planning, you need more flexibility — hence, unconstrained demand becomes more relevant. Many systems allow for a mix: the first 2–3 weeks may be constrained, while longer horizons are unconstrained. This highlights potential gaps between supply and demand.

Software requirements:

- Ability to correct historical data
- Version control: track original data and all changes
- Automated algorithm selection
- Transparency: clearly display which algorithm was used
- View constrained and unconstrained demand for the same period
- Use constrained demand for the short term and unconstrained for the long term (hybrid approach)

Supply Planning

The main goal of supply planning is to assess capacity and material requirements, and to schedule operations to meet demand. ERP systems are typically used for this purpose.

The demand plan is loaded into an MPS (Master Production Schedule), which considers actual inventory. Through MRP (Material Requirements Planning), the system distributes demand as follows:

- **Capacity planning**: Based on routings, the system calculates the load per machine or work center and compares it to available capacity.
- **Material planning**: Based on the Bill of Materials (BOM), raw and packaging material needs are calculated and compared to availability.

ERP systems have been around for decades and are now mature. Major vendors (SAP, Oracle, Infor, Microsoft) offer broad ERP platforms, complemented by specialized tools for scheduling, forecasting, CRM, etc., which can be integrated.

Choosing the right parameters and settings is often more challenging than the software itself. It’s also important to determine the right combination of ERP and best-of-breed solutions to support end-to-end planning — from strategic to operational.

Capacity Planning

Short-term planning (first 2–3 weeks) typically requires **finite capacity scheduling**. Dedicated scheduling tools help assign work orders to machines at a detailed level.

Mid- and long-term planning may use **infinite capacity**, ensuring you can see capacity demand exactly when it's needed. This is called CRP (Capacity Requirements Planning).

CRP relies on:

- **Routings**: How a product is manufactured
- **Work centers**: The actual machines or production lines

Material Planning

This is the classic domain of ERP: calculating material needs using the BOM. MRP then proposes purchase orders and call-offs, which can be automatically sent to suppliers. As always, correct master data is key.

Cost Price Roll-up

A final element of the supply side is cost roll-up. Starting from purchase prices, the system calculates the cost price through the BOM structure — and eventually the sales price. This enables a tight integration between demand planning and financial budgeting.

Software requirements:

- Support for capacity constraints at machine or work center level
- Support for material constraints (raw and packaging materials)
- Ability to calculate both finite and infinite capacity (short- and long-term, or a mix)
- Short-term scheduling tools that translate demand plans into financial plans

General on technology

Processing Power & Memory

Perhaps the most fundamental technological development is the increase in processor capacity. Modern processors can easily handle the algorithms and software developments required for today's S&OP processes.

Memory is no longer a limiting factor — storage is widely available and relatively inexpensive. From a technical standpoint, there are no longer any real constraints. The challenges we now face are on the software and solution side — not the hardware.

Software selection and implementation

The traditional selection process starts with defining requirements — many of which we have listed throughout this chapter. These form the basis for an initial **long list** of around ten potential vendors. Each is approached with a short list of functional and technical requirements, along with a standard set of questions, such as:

- Can your system interface with our ERP?
- Where are you located?

- Who are your clients?
- Which industries do you serve?

Based on the responses, the long list is narrowed to a **short list** of 3–4 vendors. With these vendors, you enter into deeper discussions, including workshops.

Workshop Approach

Best practice is to provide your own data to the vendors for the workshop, rather than letting them present generic demo cases. This ensures that both your team and the vendor invest time and energy in a realistic and relevant scenario.

During the workshops, score the vendors against your requirements list. Also, define a set of **knock-out (KO) criteria** in advance — minimum standards that, if not met, eliminate a vendor from further consideration.

In practice, however, final decisions are often influenced less by KO criteria and more by qualitative impressions:

- Does the vendor understand our business?
- How intuitive is the user interface?
- What was the general “look and feel” of the software?

ERP Suite or Stand-Alone?

One recurring question is whether to go for ERP-integrated solutions or stand-alone tools. Many organizations still fear integration challenges. I believe this is outdated. Today’s systems interface well — and demand and supply planning are well-suited to best-of-breed solutions.

That said, ERP-integrated solutions offer benefits:

- No need for duplicate data entry
- A consistent user interface
- A single vendor relationship

But stand-alone tools often provide deeper functionality. Ultimately, it’s about making the right trade-off based on your context.

Summary of chapter 7: System & Technology

This chapter explored the S&OP process from a systems and technology perspective. For each phase — from sales analysis to supply planning — we identified key functional requirements that software should meet in order to effectively support S&OP.

Modern software solutions must enable users to analyse historical sales data, generate accurate forecasts, distinguish between constrained and unconstrained demand, and translate demand into feasible production and procurement plans. Key system capabilities include drill-down analysis, algorithm transparency, historical data correction, capacity planning, and material requirements planning.

We also discussed the role of ERP systems and best-of-breed applications, noting that integration challenges are no longer a major barrier. The real challenge lies in selecting the right combination of tools and ensuring proper configuration and data quality.

A structured software selection process was outlined, including requirement definition, long- and shortlisting, and vendor workshops using real data. Although hard criteria are essential, final decisions often hinge on qualitative factors like user experience and domain fit.

The chapter concludes with a consolidated list of requirements that can be used during software selection and implementation.

Complete List of Requirements

Below is a summary of all requirements and wishes discussed in this chapter. This list can serve as a solid basis for software selection and system design.

1. Sales Analysis

- 1.1 Drill-down and bottom-up analysis of sales data
- 1.2 Support for combining different data dimensions

2. Demand Planning & Forecasting

- 2.1 Ability to adjust historical data
- 2.2 Version control: track original data and changes
- 2.3 Automatic algorithm selection
- 2.4 Visibility of the selected algorithm per forecast
- 2.5 View both constrained and unconstrained demand for the same period
- 2.6 Hybrid approach: use constrained demand short-term and unconstrained long-term

3. Supply Planning

- 3.1 Capacity constraints at machine or work center level
- 3.2 Material constraints for raw and packaging materials
- 3.3 Finite and infinite capacity calculation (short- and long-term)
- 3.4 Short-term scheduling tool to convert demand planning into financial planning

Chapter 8: Organization

Introduction

Organizations are evolving at a rapid pace. Technological advancements continue to accelerate, enabling new possibilities almost daily. The world is becoming more complex — yet at the same time simpler and more transparent. Routine tasks are increasingly automated. People are better educated and take on more specialized roles.

As a result, we see a shift from traditional functional and hierarchical structures to more process-oriented ways of working. To maintain control and coordination in this new environment, we must rethink our consultation and decision-making structures.

Sales & Operations Planning (S&OP) is one such structure — a cross-functional process that helps organizations stay aligned and agile.

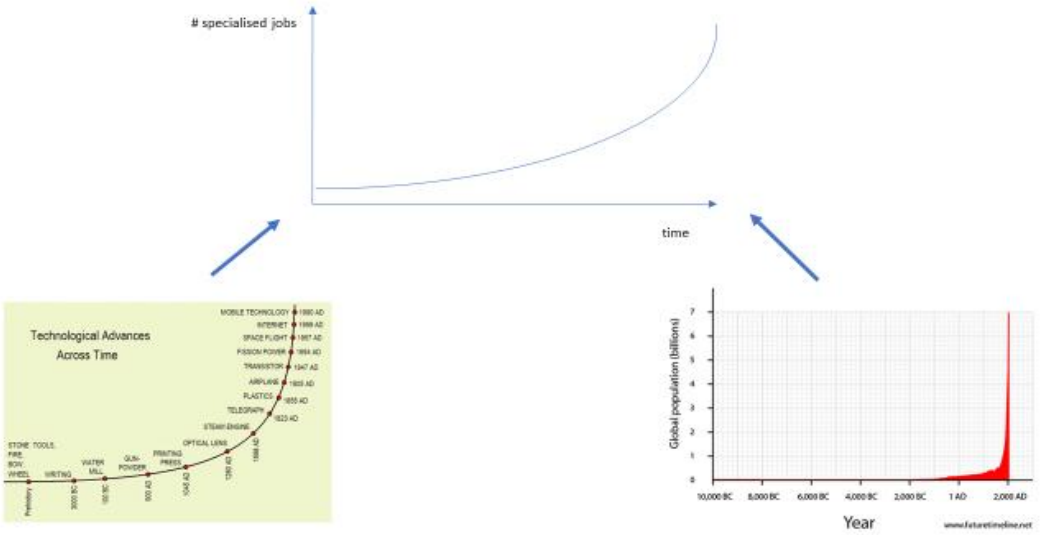
In this chapter, we examine the transition from a traditional functional-hierarchical organization to a process-oriented one. We begin with the driving force behind this shift: technological progress. We then reflect on the traditional organizational model, which has dominated for nearly a century, and finally explore the process organization and how S&OP fits into that framework.

Growth of Information Technology and People.

One of the most significant changes of recent decades has been the development of information technology — closely followed by the exponential growth of the global population. These two trends have reinforced each other, driving rapid societal and organizational change.

Together, they have enabled an increasing level of specialization. New roles and job titles continue to emerge at a rapid pace. Today, we have experts operating at levels of detail we could hardly have imagined just a few years ago.

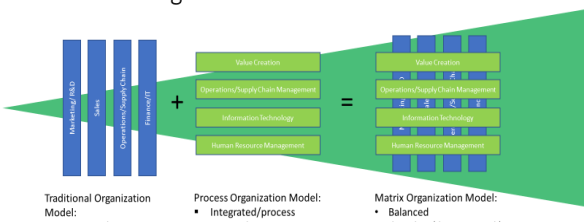
With the 'exponential' growth of Information Technology and Human Population new and more specialized jobs are being created



Evolving functional roles & the rise of process thinking

There is clearly a shift from a more functional organization to a more process organization. Processes become more important than the functional/hierarchical structures. Specialisms become more professional, more important, and more self-sufficient; people need less hierarchical structures to work in. Team-approach is becoming more needed. We worked already a lot in Matrix-structures, but this will become more predominant.

Matrix Organisation = face the future

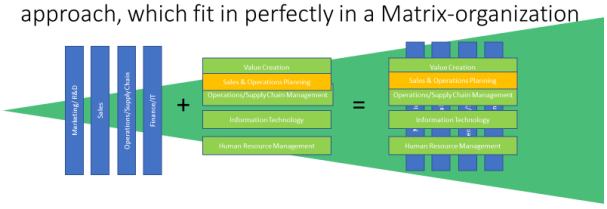


Traditional Organization Model:
- Discipline/departmental oriented
- Mostly hierarchical, split between managers and workers

Process Organization Model:
- Integrated/process oriented
- Very process minded (maybe a bit too much)
- Stress on process experts

Matrix Organization Model:
- Balanced discipline/departmental/process oriented organization
- Balanced process/hierarchical model with a good balance between experts/managers

Sales & Operations Planning = a process oriented approach, which fit in perfectly in a Matrix-organization



In parallel with the rise of information technology, we have seen the traditional functional pillars of organizations begin to shift. Let's explore how these changes affect the way we work — and what they mean for Sales & Operations Planning.

Traditionally, organizations were built around well-defined functional departments: **Marketing**, **Research & Development**, **Sales**, **Supply Chain**, and **Human Resources**. These pillars shaped corporate structure for nearly a century. But in recent decades, their roles have evolved significantly.

Marketing

In the 1970s and 1980s, marketing was heavily focused on **segmentation**. The idea was simple: if you could divide customers into meaningful groups, you could better identify trends and develop products or services tailored to each segment.

However, consumers have become more individualistic. **Mass customization** has become the norm. Segmentation, while once useful, now seems outdated. With the rise of **Big Data**, we are no longer limited by the amount of information we can collect or analyse. Today, it's possible to understand and target customers at an individual level — down to their personal shopping behaviour.

Thanks to IT, companies now have access to **Point-of-Sale (POS)** data: we can know exactly when, where, and by whom a product was purchased — even down to the address level. This allows organizations to approach consumers in a highly personalized way, using tailored offers, promotions, and communication.

Technologies like **3D printing** will further accelerate this trend, making it possible to produce one-off, personalized products cost-effectively. This directly affects the role of R&D.

Research & Development

R&D is undergoing a major transformation. Tools like **CAD/CAM** and 3D printing reduce the need for large-scale production runs and allow for faster, cheaper prototyping of individual designs.

In the past, R&D was often confined to a highly technical role, driven by the economics of mass production. Now, **design** and **customization** are gaining prominence again. Universities are producing engineers with strong technical and digital skills who are also capable of translating consumer needs into product innovation.

The gap between **Marketing** and **R&D** is shrinking. These departments increasingly understand one another and collaborate more closely, thanks in part to shared data and insights.

Sales

Manufacturing companies have become more international and professional — and the same is true for Retail. Traditional sales roles have evolved into **account management**. Selling is no longer about persuading someone to buy a product face-to-face. Instead, it's about creating the right environment for the customer to choose your product.

In the current retail landscape, **buyers** — not consumers — often decide which products make it onto the shelves. **Category management** has become central: how and where your product appears in-store matters immensely. Major suppliers even help design the layout of entire retail shelves.

As Retail organizes itself around **channels and categories**, Sales must mirror that structure. Account managers now deal with retail buyers who manage the same category/channel combinations. Their goal is to get their product listed — once listed, the customer will begin ordering.

Customer service teams handle those orders, which are increasingly processed automatically via **EDI (Electronic Data Interchange)**. This brings us to Supply Chain Management.

Supply Chain Management

The entire supply chain is becoming more automated. EDI is driving order intake, and manual order processing is being phased out.

Demand Managers now play a key role in linking large retailers to manufacturers. They understand product trends, anticipate regular demand patterns, and support promotional planning. In this way, they have become an important service function to Sales.

Once the demand picture is clear, **Supply Planners** translate it into production and procurement plans. This is where **Sales & Operations Planning (S&OP)** enters the picture — as the key process that enables coordination between Marketing, Sales, and the operational functions that support them.

From Functional Silos to Process Thinking

For decades, organizations were built around functional departments. Each department had its own goals, its own KPIs, and often its own systems. While this model created deep expertise within functions, it also introduced silos — making cross-functional collaboration more difficult.

Today’s business challenges, however, rarely fit neatly within one function. Bringing a new product to market, managing a promotion, or responding to a supply disruption all require input and alignment across multiple departments.

This has led to a shift in how organizations are structured. We now see a movement from **functional hierarchies** toward **process-oriented thinking**. In a process organization, the focus lies not on department boundaries but on **end-to-end flows** — from customer need to delivery, from forecast to financial plan.

These end-to-end processes cut across traditional silos and demand collaboration. They require new ways of working and new coordination mechanisms.

S&OP as a cross-functional process

Sales & Operations Planning (S&OP) is a clear example of this process-oriented approach. It connects different functions — Marketing, Sales, Supply Chain, Finance, and even R&D — through a structured monthly cycle of planning and decision-making.

Instead of optimizing each function in isolation, S&OP aims to create one **integrated plan** for the company — balancing demand and supply, aligning financial targets, and supporting strategic decisions.

S&OP can therefore be seen as both a **coordination mechanism** and a **change enabler**. It helps organizations move from siloed thinking toward integrated execution. In doing so, it supports agility, customer responsiveness, and long-term value creation.

Summary of Chapter 8: From Functions to Processes

This chapter explored the transition from traditional functional-hierarchical organizations to modern process-oriented structures. Technological advancements and societal shifts — such as the rise of information technology, the explosion of data, and the increasing specialization of work — have driven fundamental changes in how organizations operate.

Functional pillars like Marketing, R&D, Sales, Supply Chain, IT, and HR are no longer operating in isolation. Their roles have evolved, and their boundaries have become more fluid. Cross-functional collaboration has become essential for delivering value and staying competitive.

In this new landscape, process thinking is replacing siloed optimization. Organizations are shifting their focus from departmental performance to **end-to-end process performance**. This demands new structures for consultation, decision-making, and planning.

Sales & Operations Planning (S&OP) is a clear expression of this shift. It functions as a cross-functional process that brings together strategic and operational perspectives. S&OP enables alignment across departments, ensures a unified plan for demand and supply, and supports faster and better-informed decisions.

In short: S&OP is not just a planning tool — it is a **platform for integration and transformation**, helping organizations navigate increasing complexity with greater clarity and control.

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Chapter 9: KPI's etc.

This chapter highlights the importance of selecting and monitoring the right KPIs to manage the S&OP process effectively. While many metrics are available, the key is to choose a small, focused set of KPIs that offer insight into broader performance — and allow for drill-down analysis to quickly identify root causes when deviations occur.

The following KPIs are identified as most relevant for S&OP:

1. **Budget vs. Sales**: Compares actual sales to budget on a monthly basis, enabling trend analysis and forward-looking performance tracking. Weekly sales meetings are recommended to influence in-month results and monitor promotional performance in real time.
2. **Innovation Rate**: Tracks the introduction of new products, essential for long-term growth. As product lifecycles are on average three years, a continuous flow of innovation is needed to refresh the portfolio.
3. **Promotion Effectiveness**: Measures the success of planned promotions against targets. Since forecasting promotion-driven demand is highly complex, high-frequency monitoring and close collaboration between Sales and Supply Chain is required.
4. **Customer Service Level (CSL)**: A crucial KPI that reflects delivery performance. Best measured at the order level (rather than order line), CSL is influenced by forecast quality and inventory accuracy. Missed sales — the inverse of CSL — can be even more impactful to communicate.
5. **Forecast Accuracy and Bias**: These KPIs indicate the reliability and neutrality of forecasts. While demand planners support the process, Sales should ultimately take responsibility. Linking these metrics to Sales incentives is becoming more common.
6. **Waste Reduction**: Waste is not only a sustainability concern but also a signal of process control. Reducing waste improves profitability and reduces disposal costs.
7. **Out-of-Date Risk**: Managing products nearing the end of their shelf life requires proactive steering. A categorization strategy — including discounts, redistribution, or donation — helps avoid unnecessary destruction and stockouts.
8. **Organizational Efficiency (OEE)**: On the supply side, factory performance is key. Overall Equipment Effectiveness (OEE) measures the true output of production lines, accounting for planned downtime, malfunctions, speed losses, and quality issues. It is a comprehensive metric for operational efficiency.

KPI	Purpose	Key Considerations
Budget vs. Sales	Track monthly and weekly sales performance against budget; detect trends and deviations.	Use drill-down tools; analyze by dimension (e.g., product, region); act weekly.
Innovation Rate	Ensure long-term growth by monitoring product portfolio renewal.	Define yearly targets (e.g., # of new products); track monthly progress.

Promotion Effectiveness	Evaluate success of planned promotions; support in real-time adjustments.	Track plan vs. actual sales; involve Supply Chain to support Sales.
Customer Service Level (CSL)	Measure delivery reliability; identify missed sales opportunities.	Measure at order level; target 98%; report missed sales as a mirror metric.
Forecast Accuracy / Bias	Assess forecast quality and neutrality; assign accountability.	Link KPIs to Sales incentives; monitor both short-term and structural bias.
Waste Reduction	Improve sustainability and cost control by reducing production and supply waste.	Identify root causes (e.g., incorrect orders, start-up losses); track trends.
Out-of-Date Risk	Prevent product write-offs by managing expiry risk proactively.	Use warning signals before critical thresholds; apply stepwise intervention.
Overall Equipment Effectiveness (OEE)	Monitor factory performance across availability, speed, and quality dimensions.	Break down into A-F phases (downtime, malfunctions, speed loss, quality loss).

Budget vs. Sales

Most organizations break down their annual budget into monthly targets. A common challenge here is that some months have five weeks, while others have four. Some companies choose to work with uniform four-week periods to avoid this, but the monthly calendar remains the most common approach.

In the S&OP process, it's essential to evaluate whether you're meeting your monthly budget targets — and to look ahead at projections for the coming months. You should also analyze deviations from previous months to identify trends, which serves as input for the first step in the S&OP cycle. The key is to focus on trends and not get lost in unnecessary details.

Modern analytics tools can provide powerful visualizations for comparing sales and budget figures. However, even Excel can be sufficient in the early stages — as long as the tool allows for **drill-down analysis across different dimensions**, such as product, customer, or region.

To stay in control, it’s best to **review sales performance weekly** rather than waiting until the end of the month. By then, it's often too late to take corrective action. A weekly review — focusing especially on Customer Service Level and promotional performance — helps keep the team alert and allows you to influence results during the month.

Innovation Rate

To ensure future growth, continuous innovation is crucial. Although product lifecycles vary by industry, a typical product remains relevant for around three years. This means that roughly one-third of your assortment should be renewed annually.

Tracking the innovation rate can be simple and effective. Set a clear goal — for example, launching five new products per year — and monitor progress throughout the year. Use a monthly tracking system to keep it top-of-mind within the organization.

Promotion Effectiveness

Alongside product innovation, **promotions** are an important lever for driving sales. A key question to ask is: *Were promotions executed as planned?*

Suppliers typically have more experience with product promotions than retailers, who juggle many campaigns at once. Don't be too modest — your expertise is needed to ensure effective execution.

Promotions are difficult to forecast, as many external factors influence their performance. That's why **high-frequency monitoring** is critical — watch the numbers closely, and be ready to act fast. Supply Chain teams can support Sales in this by tracking performance versus plan.

Measuring promotion effectiveness is straightforward: you have a weekly volume target, and you check whether it's being met.

Customer Service Level (CSL)

As discussed earlier, CSL is one of the most powerful KPIs in the S&OP process. It represents the **tip of the iceberg** — a visible outcome that reflects the effectiveness of planning, forecasting, and inventory management.

CSL measures whether you are able to deliver what customers are ordering. It's important to distinguish between **order-level** and **order-line-level** measurement. While line-level CSL can appear high even with partial deliveries, order-level CSL gives a clearer picture of true customer satisfaction.

Predictability is key. To reach a high CSL (typically 98% or more), customers must order what you expect — which underlines the importance of accurate forecasting and disciplined order behavior.

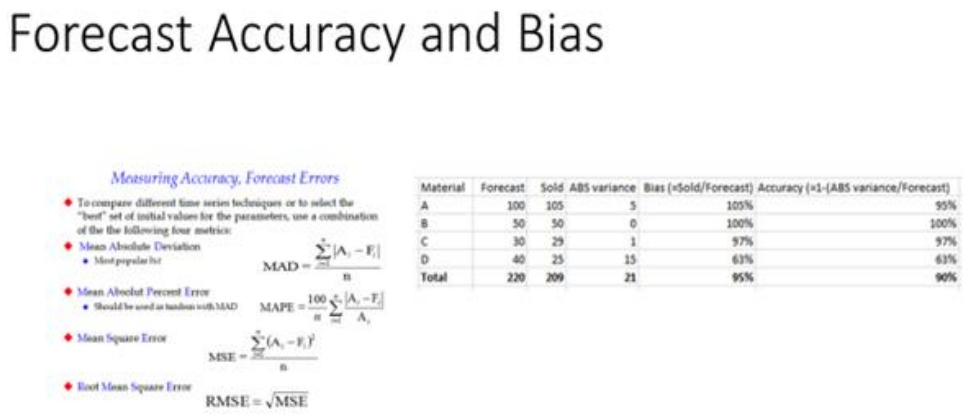
It’s highly effective to monitor CSL **daily**, so you can take immediate action when targets are missed. Additionally, consider tracking **missed sales**, the inverse of CSL — this term often carries more impact within the organization.

Forecast Accuracy & Bias

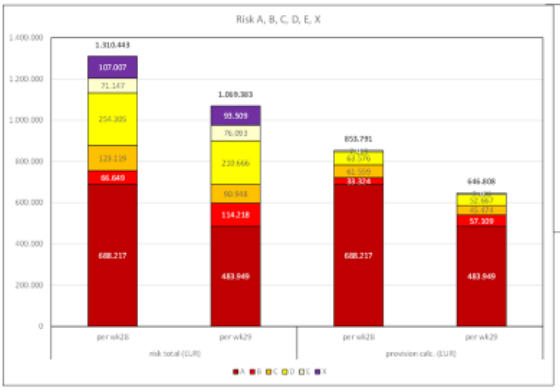
Forecast Accuracy and Bias are critical indicators of forecasting performance. **Accuracy** shows how close the forecast was to actuals, while **bias** reveals whether forecasts are consistently too high or too low.

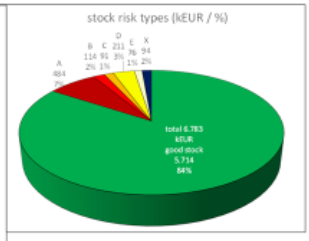
When bias is identified, future forecasts can be adjusted accordingly. These KPIs are essential tools for demand planners — but it’s important to emphasize that **Sales should ultimately own the forecast**.

Demand planners support the process through analysis and insights, but Sales has the market knowledge to guide realistic forecasting. In fact, many companies are now incorporating forecast accuracy and bias into the **targets and bonus structures** for Sales teams — helping to strengthen accountability.



FP Obsolete Stock Risk Analysis

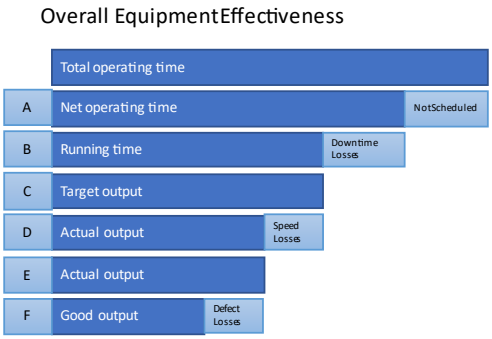




Type	A	B	C	D	E	X
Stock Status	Blocked oder internes MHD >8 Wo. Vergangen	internes MHD vergangen seit 2 - 8 Wo.	Internes MHD +/- 2 Wo.	Internes MHD in 2 - 12 Wo.	Internes MHD in >12 Wo. bis JE	Risiko ab nä. Jahr
Risk valuation	100%	50%	50%	25%	10%	0%

OEE (= Overall Equipment Effectiveness)

. On the supply side, factory performance plays a crucial role in ensuring product availability. **Overall Equipment Effectiveness (OEE)** is a widely used KPI to measure how efficiently a manufacturing operation is running.



OEE = B/A x D/C x F/E x 100

OEE = Availability x Performance xQuality

OEE captures the full picture by combining three key performance drivers:

- **Availability** (how often the machine is running as scheduled)
- **Performance** (how fast the machine runs versus its ideal speed)

- **Quality** (how much of the output meets quality standards)

The following breakdown illustrates how OEE is built up:

- **Total operating time**: For example, 16 hours per day over two shifts.
- **A: Net operating time** = total time minus planned downtimes (vacation, maintenance, etc.).
- **B: Running time** = A minus unplanned downtime (e.g., breakdowns, changeovers).
- **C: Target output** = the planned output in the scheduling system.
- **D: Actual output** = the real production, including small stops and speed losses.
    - **Speed losses** are often underestimated but can have major cumulative effects — especially in process industries.
- **E: Actual output (continued)** — representing total units produced.
- **F: Good output** = the number of units meeting quality standards.
    - The difference between A and F reflects total losses: downtime, inefficiencies, rework, and waste.

OEE provides a strong, consolidated view of factory effectiveness — and is therefore a powerful KPI to link to supply performance within the S&OP process.

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Chapter 10: Why should you do S&OP, what are the benefits?

As discussed in the introduction, S&OP is not a new concept. But in today's environment, it has become one of the most valuable and integrated processes an organization can adopt. This chapter outlines why S&OP is more relevant than ever — and why there are really no excuses left not to implement it.

S&OP is:

- A **logical process** that can now be supported by modern technology,
- An **integrated framework** that connects commercial and operational functions,
- A **disciplined routine** that drives accountability and alignment,
- And a process that requires visible **management support** to succeed.

Let's walk through each of these four aspects.

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1. A Logical Process

Two major developments have made S&OP more feasible than ever:

a) Technology is no longer a barrier.
The S&OP process consists of logical, structured steps — and until recently, the main limitation was the lack of tools that could connect demand planning with execution systems like ERP. Today, robust ERP platforms and advanced analytics tools with drill-down and multi-dimensional analysis are widely available and reliable. The excuses based on system limitations no longer apply.

b) Sales and Supply Chain are now aligned.
Sales has shifted toward an account management role, which depends heavily on reliable operational support. Meanwhile, Supply Chain and Operations have evolved into true service functions that support Sales with demand translation and execution. The two sides now depend on each other — creating fertile ground for integrated planning. Again, no excuses.

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2. An Integrated Approach

S&OP is fundamentally a **cross-functional process**. It links different departments — Sales, Marketing, Finance, Operations, and Supply Chain — into one cohesive planning framework. Each function has an equal role to play, and none is more important than the other.

- Assign **each S&OP step to a member of the management team**, with step 5 (Business Review) chaired by the Managing Director.
- Introduce a **linking pin role** between steps. This person ensures continuity and clarity of open issues and facilitates handovers between steps. Often this is someone from Supply

Chain — due to their central role and systems knowledge — but it can be even more powerful if this person comes from Sales or another department.

This structure fosters ownership, mutual respect, and better collaboration across teams.

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3. A Routine and Disciplined Cycle

S&OP must be executed as a **structured, recurring process** — not an ad-hoc initiative.

- Hold regular monthly meetings, and ensure each of the five steps (plus preparation) is conducted at fixed points in the calendar.
- A typical rhythm could be:
  - Weeks 1–3: Steps 1–3 (Demand Review, Forecasting, Supply Planning)
  - End of Week 3 or start of Week 4: Step 4 (Reconciliation)
  - Week 4: Step 5 (Executive Business Review)
- Set these dates well in advance and add them to calendars. If someone is unavailable, they should arrange for a substitute — personal schedules should not disrupt the process.

Use a **clear agenda** for each meeting, with well-defined:

- **Inputs**: typically, open issues from previous steps plus relevant data
- **Outputs**: decisions or issues passed to the next step

Documenting meetings (even briefly) ensures continuity and context for those not in attendance.

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4. Management Support Is Critical

While this may sound obvious, **visible support from top management** is essential. Having each step chaired by a senior leader — and the final step by the Managing Director — creates accountability and reinforces commitment.

When management actively participates and takes ownership of decisions, S&OP becomes more than just a process. It becomes a **management discipline** that aligns commercial ambitions with operational realities — and turns strategy into execution.

Article the journal of business forecasting, fall 2004, 'Sales and Operations Planning Part1: the process' by Larry Lapide

- Figure 1: success factors of sales&operations planning (S&OP) process

1. Ongoing, routine S&OP meetings
2. Structured meeting agendas
3. Pre-work to support meeting inputs
4. Cross-functional participation
5. Participants empowered to make decisions
6. An unbiased, responsible organization to run a disciplined process
7. Internal collaborative process leading to consensus and accountability
8. An unbiased baseline forecast to start the process
9. Joint supply and demand planning to ensure balance
10. Measurement of the process
11. Supported by integrated supply-demand planning technology
12. External inputs to the process

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Summary

In this booklet we started with ‘why is S&OP such a topic nowadays. I made clear that the possibility of having the Magic Cube, the KPI’s very clearly present and a very sound process of structure around the S&OP make S&OP really interesting to implement.

Then we took you through the major building blocks of S&OP: Forecasting, Demand Planning and Supply Planning. We took up the steps which makes the S&OP-process extraordinarily strong. We covered some specific issues like the surroundings of S&OP, the technology-part which makes S&OP possible and of course some points around the organizational part.

I hope I made clear what S&OP meant. It isn’t new what I said in the beginning of this booklet. Of all the parts ‘the technology underlaying S&OP’ and ‘the sound process and structure,’ are the real key successes of S&OP.

I had the honor to implement S&OP 4 times the last 5 years and I must say it’s S&OP extraordinarily strong concept which really adds value to the business. Thank you for your attention.

With kind regards,

Anton Boonstra

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