4FLOW
Your supply chain solution

The guide to efficient material planning

How material planners can break down silos for more reliable supply chain planning

Contents

Introduction

This e-book provides a comprehensive guide for material planners, offering insights into the complexities of the role, the challenges they face and strategies they can employ to optimize their daily tasks. It serves as a valuable resource for both new and experienced material planners.

Additionally, the e-book emphasizes the importance of optimizing and considering transportation during the material planning phase. It highlights how this approach yields significant cost savings, facilitates actionable planning and fosters cross-departmental awareness of the mutual impact of material and transportation planning.

In the following pages, material planners will find best practices and practical case studies to help them boost their planning efficiency and see the impact of their work on transportation.

Today, it is critical for businesses to connect departments and processes, eliminate silos and improve overall transparency to ensure a competitive advantage in their supply chains. Bridging the gap between material and transportation planning is one key way to do this. Read on to discover how.

Challenges in material planning

Material planning is a critical function in supply chain and production processes, encompassing various complex tasks and responsibilities. Along with these tasks come specific challenges. From managing inventory and navigating supply chain dynamics to fostering effective communication and adapting to changing requirements, these challenges require careful consideration and strategic approaches to ensure smooth and efficient operations.

Let's take a closer look at these challenges and what they mean for material planners.

Challenges	Solutions
Production schedules and inventory management	
> Some production lines are more volatile than others, with frequently changing demand. This unpredictability might mean production lines cannot run as planned, and the schedule must be adjusted. In such scenarios, plants must adapt by running production of alternative products or rebalancing the production plan.	> In this dynamic environment, material planners must demonstrate **flexibility, adaptability and effective communication** to successfully navigate the challenges of meeting production schedules and managing inventory.
Communication gaps and supplier relationships	
> Material planners serve as the crucial central point of communication for various internal stakeholders, including production and quality teams, and various external ones, like suppliers. When quality issues arise, material planners must replan accordingly, ensuring that the affected materials are not used. Similarly, if a major production process shuts down, plants must temporarily run alternative materials, which requires effective communication with external suppliers.	> Managing multiple supplier relationships and ensuring strong partnerships can be a complex task, making **effective communication** vital for material planners.
Call-offs and demand for specific materials	
> Managing call-offs involves coordinating with various stakeholders to align production schedules, inventory levels and customer expectations. Furthermore, it encompasses cross-material planning, considering the requirements of different materials from the same supplier, and synchronizing deliveries – which is particularly challenging because it requires a synchronized and up-to-date delivery plan in the system for each material from a given supplier. > An additional challenge is accurately predicting and forecasting the demand for specific materials, which can vary due to changing market trends, customer preferences or unforeseen events.	> To handle fluctuation in demand and ensure the timely delivery of specific materials, planners need to take a **proactive approach, with flexibility to adapt** to changing circumstances in order to meet customer requirements effectively. > This requires effective **communication and collaboration** with both internal teams and external suppliers to ensure the availability of the required materials at the right time.

Optimization opportunities in material planning

Due to the high complexity and time pressure of material planning, with a large number of stakeholders and significant amounts of material to coordinate, optimizing processes is critical for material planners.

Let's zoom in on four opportunities to optimize material planning processes.

1. Calculation of net and cumulative requirements

Net requirements represent the immediate demand from customers, while cumulative requirements are the sum of all orders received up to a certain point in time. An inventory management system can be programmed to automatically compare net and cumulative requirements, flagging any deviations or discrepancies in demand. This real-time visibility allows material planners to proactively adjust production schedules, coordinate with suppliers and optimize inventory levels to meet customer expectations efficiently. Additionally, an automated system can generate alerts and notifications for low stock levels, enabling material planners to submit replenishment orders in a timely manner and avoid stockouts.

2. Adjustment of relevant parameters to meet customer needs

Parameters such as safety stock and transit times can be adjusted in material planning tools to account for factors like transit delays and fluctuations in demand. These adjustments help optimize inventory levels and ensure sufficient stock is available to meet customer needs. However, it's important to note that such adjustments and optimizations are not usually automated in planning systems. The software relies on material planners to provide input and make decisions. Similarly, tracking supplier OTIF (rate of deliveries on-time in full) to monitor delivered quantities and delivery dates also requires manual action. Another critical parameter to be adjusted is the supplier lead time. It is crucial to align with the purchasing department to ensure the supplier lead time is taken into account when planning deliveries. Anticipating and adjusting such parameters is important to ensure a realistic production timeline.

3. Utilization of interfaces to streamline communication

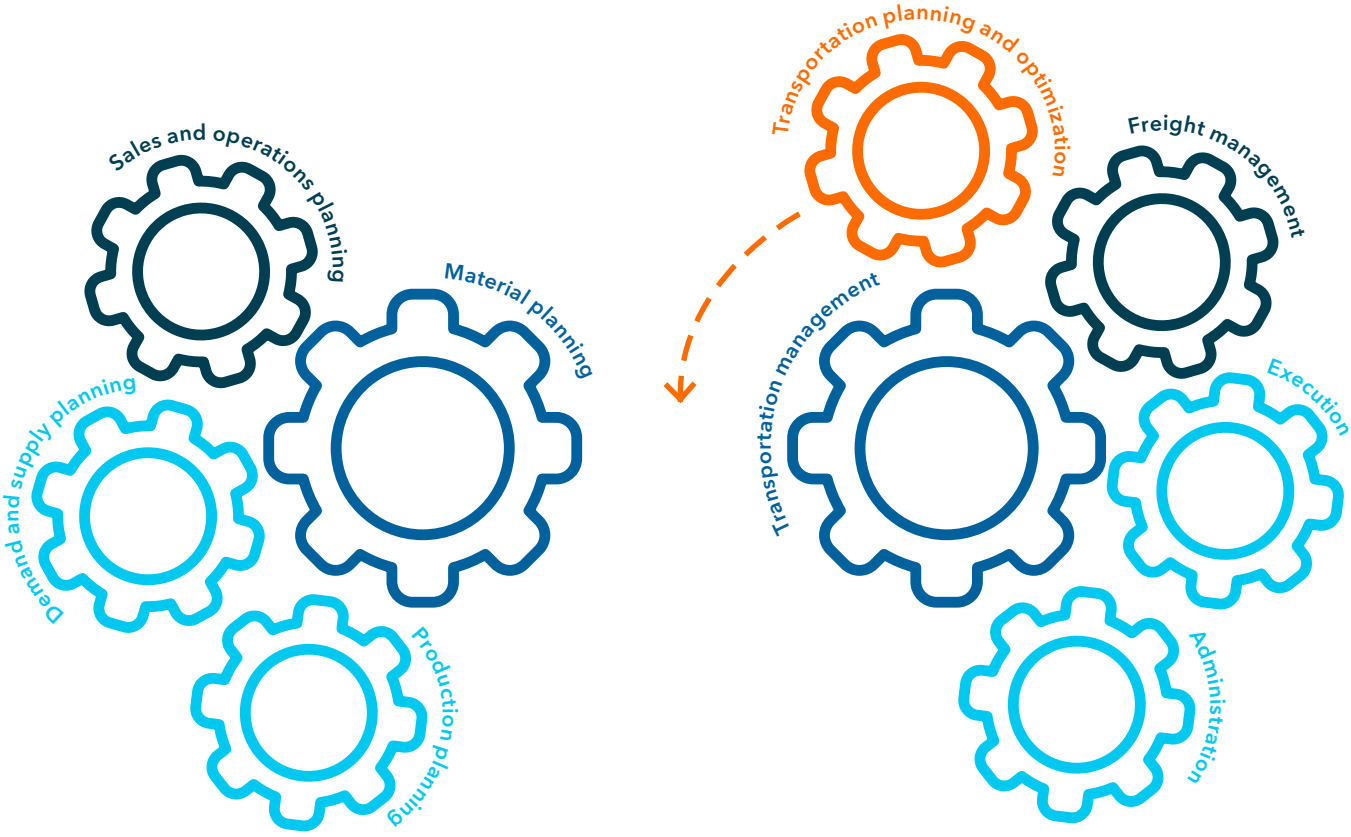
Organizations can introduce EDI (electronic data interchange) for receiving orders from customers. This streamlined communication method allows customers to transmit demand information electronically, which is then processed automatically by the system. This eliminates the need for manual data entry and reduces the chance of error or misinterpretation. However, customers may send orders in other formats, such as Excel lists, which need to be converted into a readable file before being uploaded into the planning system.

EDI can also be helpful in facilitating automatic checks for short-term demand changes or significant fluctuations. With EDI, companies can efficiently monitor and align various requirements and demands from different customers. This big-picture perspective helps ensure smooth production planning, rather than focusing on meeting each demand instantly.

Additionally, EDI can be used to monitor changes in demand over a fixed period of time. This helps ensure that production planning remains aligned with evolving demand patterns, enabling companies to adapt and respond accordingly.

4. Potential benefits of considering transportation requirements

Conventionally, material and transportation departments work as two silos. Most material planners have no visibility on the real-world transportation constraints that affect operational transportation planning. The opposite is also true: most transportation planners have no visibility on the impact of their plans on inventory levels or material availability. As a result, back-and-forth communication and last-minute changes are often necessary to make plans actionable – reducing the efficiency of both departments. Integrating transportation earlier in planning can ensure greater transparency and actionable plans while increasing efficiency, achieving significant cost savings.



Integrate transportation optimization into material planning ensures feasible planning and smoother supply chain operations

Tools and techniques for efficient material planning

In material planning, techniques and processes like MRP (material requirements planning) are regularly carried out using an ERP (enterprise resource planning) system such as SAP. Yet the industry often lacks standardized processes, compelling planners to resort to Excel for data manipulation and causing overall inefficiency.

In this chapter we will discuss the most commonly used tools and techniques for efficient material planning.

Common tools used in material planning

Material planning relies heavily on a variety of tools to ensure the availability of materials for production schedules. Among the most prevalent in the industry are sophisticated ERP systems like SAP and other similar solutions. These systems are designed to manage complex data and facilitate planning. However, the lack of a standardized platforms and processes across different organizations has led planners to rely on tools such as Excel. Planners often extract data from SAP into Excel spreadsheets, using conditional formatting to highlight discrepancies and identify missing materials. This approach, while adaptable, points to a fragmented landscape where a truly efficient integration of digital tools is still yet to be achieved.

Common techniques in material planning

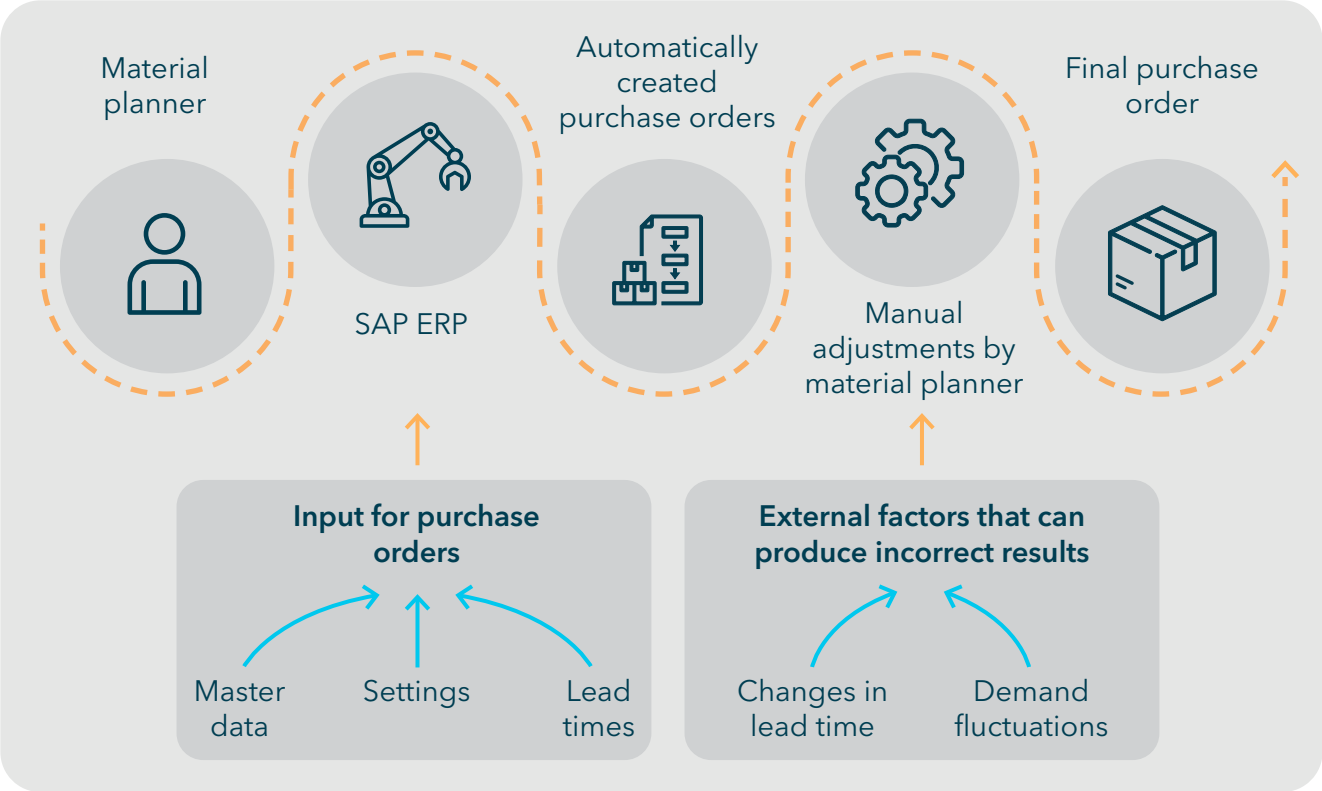
Balancing manual adjustments and automated processes

The interplay between manual adjustments and automated processes is a delicate balancing act in material planning. While automation can help streamline operations, a significant amount of manual intervention is still required. The extent of this manual effort is largely dependent on the chosen ERP system and its level of automation.

For example, SAP is capable of automatically calculating purchase orders by analyzing safety stock levels and consumption patterns. This theoretically enables planners to anticipate and place orders with enough lead time for delivery. However, this automation depends on the data and settings within the system, such as the lead time to place a purchase order for a supplier, which may not always be accurately reflected in SAP. Consequently, planners often find themselves correcting these automated suggestions manually. This is especially true in cases of partial deliveries or missing pieces, where manual adjustments are necessary to split delivery lines and input supplier performance data.

Another critical issue that can require manual adjustment: rapid changes in demand from the production lines. If the material is needed very quickly, this can lead the system to create new deliveries with dates in the past, and manual adjustments are needed to make feasible plans.

On the other hand, automating some of the most repetitive tasks like approval processes can significantly improve overall efficiency. By implementing digital solutions that optimize and automate workflows like confirmation requests, planners can eliminate the need for manual intervention and expedite the decision-making process. This automation reduces delays and ensures timely responses, streamlining the overall planning process.



The importance of accurate inventory and demand forecasting

At the heart of material planning lies the critical need for accurate inventory and demand forecasting. The equation is seemingly simple: the material requirements are equal to the demand minus what is already planned in inventory. However, if the inventory data in the planning system is inaccurate and shows more stock than is actually on hand, the result can be catastrophic. In the worst case, this could lead to a production stop.

This principle is not limited to raw materials but extends to finished goods and inbound materials as well. The repercussions of inaccurate forecasting can ripple through the supply chain, causing delays and financial loss. Ensuring that inventory levels are meticulously recorded and demand forecasts are as precise as possible is not just a matter of operational efficiency, but also a strategic imperative with a significant impact on the overall health of the supply chain. Additionally, capacity planning is another large part of the equation. Ensuring material demand does not exceed the available storage capacity is an equally important part of a material planner's role.

Communication and supplier management in material planning

The importance of effective communication with suppliers and plants

Effective communication between material planners, suppliers and plants is essential for ensuring smooth operations and planning. By establishing clear lines of communication, planners can foster collaboration, address issues promptly and build strong relationships with suppliers. Additionally, consider the value of working with a logistics service provider (LSP) in the material planning process. LSPs can offer expertise in managing transportation and logistics, enabling streamlined communication and coordination between suppliers, plants and other stakeholders.

Material planners as central communication points

Material planners play a crucial role as a central communication point within the organization. They act as a bridge between various internal stakeholders, including production, quality teams and procurement. When unexpected challenges arise, such as major process disruptions or quality issues that render materials unusable, it is the responsibility of the material planner to replan and communicate necessary adjustments. This includes managing alternative production methods, engaging with external suppliers to address payment issues and promptly handling critical situations with suppliers. In addition, it is essential to consider follow-up on deliveries as an integral part of the material planner's responsibilities – especially for inbound shipments, which require invoice validation to ensure the delivered quantities align with the supplier invoices. This task is critical for financial accuracy and operational efficiency.

It is important to address existing silos and ensure that material planners are informed promptly of any changes or challenges in workstreams to avoid delays or miscommunication. This comprehensive approach allows material planners to effectively navigate unexpected situations and maintain seamless communication across various internal and external stakeholders.

In the following pages, we'll look at three case studies that demonstrate how smooth communication with stakeholders across the supply chain supports material planners.

Case study

Managing communication and demand for specific materials

Background

At the company Mega Manufacturer, weekly delivery schedules are exported from SAP and sent to the supplier. During a frozen period of four weeks, all deliveries need to be confirmed by the supplier to ensure timely arrival. Once the goods are delivered, manual entry into SAP MRP is required for production to verify the quantity and quality of the materials and ensure plans are still feasible.

Challenge

Manual confirmation of deliveries causes delays and errors, leading to disruptions in production schedules. Additionally, confirming deliveries is a time-critical process that cannot always be done promptly, as both the suppliers and material planners at Mega Manufacturer have many other tasks demanding their attention.

Solution

When working with key suppliers, effective communication is vital, particularly in terms of escalating and addressing delays promptly. Mega Manufacturer decided to implement the Supplier Network Collaboration (SNC) add-on to SAP to streamline this process. This new interface allows suppliers to confirm deliveries directly, eliminating the need for manual entry. Additionally, alerts programmed in the system help monitor confirmation status and notify planners if any issues arise, ensuring proactive management of the material plan.

Case study

Managing shortages and line stops in production

Background

The business Allstar Automotive is facing a shortage of critical components including engine parts and electronic modules due to supply chain disruptions connected to flooding near key plants. This shortage led to line stops in the assembly process and as a result, the entire production line may come to a halt. Allstar Automotive is concerned about how to ensure the timely delivery of vehicles to customers and avoid financial losses.

Challenge

Managing shortages and line stops in production is one of the most critical challenges for material planners at Allstar Automotive, as line stops can negatively impact customer satisfaction and increase overall costs – for instance, due to penalties or higher fees to expedite shipments of missing parts.

Solution

Material planners at Allstar Automotive work closely with operational and purchasing departments to address shortages promptly. Effective communication with suppliers, including price negotiations, is crucial for escalating issues and imposing penalties, if necessary. Planners consider sourcing materials from alternative suppliers to mitigate the impact of shortages and prevent line stops, ensuring uninterrupted production. Identifying top-performing suppliers and awarding them with continued business is equally important to maintain a robust supply chain network.

Case study

Bridging the gap between material and transportation for planning and operational efficiency

Background

The business Consumer Goods & Co. is going through a full supply chain transformation with a focus on greater visibility over their wholesalers. Their main opportunities are related to automating manual transportation planning efforts.

Challenge

Consumer Goods & Co. knows aligning material planning and transportation execution is crucial for seamless operations and a cost-effective supply chain. However, the lack of visibility and coordination between these two siloed processes often leads to inefficiencies and increased transportation costs. Last-minute changes and low truck utilization further exacerbate the challenges faced by Consumer Goods & Co. in optimizing their supply chain operations.

Solution

To address these challenges and bridge the gap between material and transportation planning processes, Consumer Goods & Co. integrated transportation optimization and load building early in supply chain processes. This integration ensures smoother operations, cost savings and improved efficiency. This kind of optimization is simple with software tools like 4flow TORO. By eliminating the silos in material and transportation planning, Consumer Goods & Co. secured a competitive edge in today's challenging market landscape.

The future of material planning

Emerging trends and technologies

Technology advancements introduce new trends that redefine conventional approaches to material planning. Here are some key areas to watch.

Demand-driven material requirements planning (DDMRP)

DDMRP focuses on overcoming difficulties like overstocks and shortages that occur in conventional planning, especially for complex supply chains. This approach relies less on forecast data and helps planning teams figure out where to add inventory buffers and how big they should be. By reducing the dependency on forecasts and introducing inventory buffers based on actual demand signals, DDMRP aims to mitigate the risks associated with inaccurate forecasts. This reduces lead times and enhances the overall responsiveness of the supply chain.

Eco-friendly practices

Sustainability is no longer an afterthought in supply chains; it's a strategic imperative. Material planners are exploring eco-friendly options by minimizing waste and prioritizing suppliers with sound environmental practices. Principles of circular economy are gaining traction, emphasizing the importance of recycling and reusing resources, as well as reducing resource consumption.

Transportation is a significant lever for supply chain sustainability, and even material planners can help reduce its impact. If transportation is already considered during material planning, the resulting call-offs can consolidate demands to maximize utilization and reduce the number of trucks needed.

End-to-end visibility across the supply chain

Achieving visibility across the entire supply chain is becoming increasingly important. To enhance overall supply chain efficiency and reduce costs, businesses are eliminating silos between teams, for instance with the use of cross-functional supply chain platforms. The impact of the material planning team's work on overall supply chain planning needs to be made transparent to make way for optimization.

The benefits of leveraging software like ASN or transportation optimization applications

ASN (advanced shipping notice)

ASN is a straightforward tool that plays a pivotal role in communication and collaboration. Suppliers confirm delivery times, allowing plants to align production schedules precisely. Most material planners are familiar with shortage reports and ASN documentation. When faced with zero quantities, direct communication with suppliers becomes essential. However, visibility into suppliers' production capacity is often limited. Systems like SNC (supplier network collaboration) platforms bridge this gap. Efficient electronic data interchange (EDI) between distribution centers and SNC strengthens collaboration across distribution centers so they can ensure shipments are ready on time. Implementing these different systems supports smoother communication and visibility across the supply chain.

Transportation optimization applications

Transportation optimization bridges functional areas to unlock greater supply chain resilience. In most supply chains, product and material deliveries are still planned without taking real-world transportation constraints into account. Examples of these constraints include truck capacities, delivery schedules or incompatibilities that prevent materials from being shipped together. This approach can result in an infeasible plan that requires significant last-minute changes before transportation execution.

At the same time, transportation is planned and executed without considering material availability, inventory levels or storage capacity. This can create further delays and require additional transportation arrangements if material is not ready at the plant. To boost resilience and reduce inefficiencies related to adjusting plans, innovative organizations are starting to connect material planning seamlessly with transportation, harmonizing supply and demand.

Broadening the horizon: the impact of transportation

To keep pace with these upcoming trends and requirements, material planning must broaden its horizon, extending visibility beyond warehouses and factories. Connecting material and transportation can unlock efficiency in end-to-end supply chain planning. Here's how:

Integrated strategies

Material planners must collaborate closely with transportation teams. By aligning strategies, they bridge gaps and optimize routes. A holistic view ensures timely deliveries, reduces transportation costs and minimizes environmental impact.

Visibility and agility

Real-time visibility into shipments empowers material planners to do their jobs better. Tracking goods from factory to customer enhances agility. Whether it's road, rail, air, or sea, understanding transportation intricacies enables proactive decision-making.

Continued innovation

The future of material planning will depend on innovative approaches. By broadening the scope of their work to consider the adjacent area of transportation, material planners can break down silos and unlock efficiency across the supply chain.

Conclusion

Looking ahead, material planners should keep in mind best practices to keep pace with trends and technology.

Communication with suppliers and plants is crucial

Strategic network design should consider the entire supply chain from end to end, including suppliers, manufacturers, distributors and customers. This holistic approach will help identify opportunities for optimization and cost savings across the entire supply chain.

Aim for a good balance between manual and automated planning

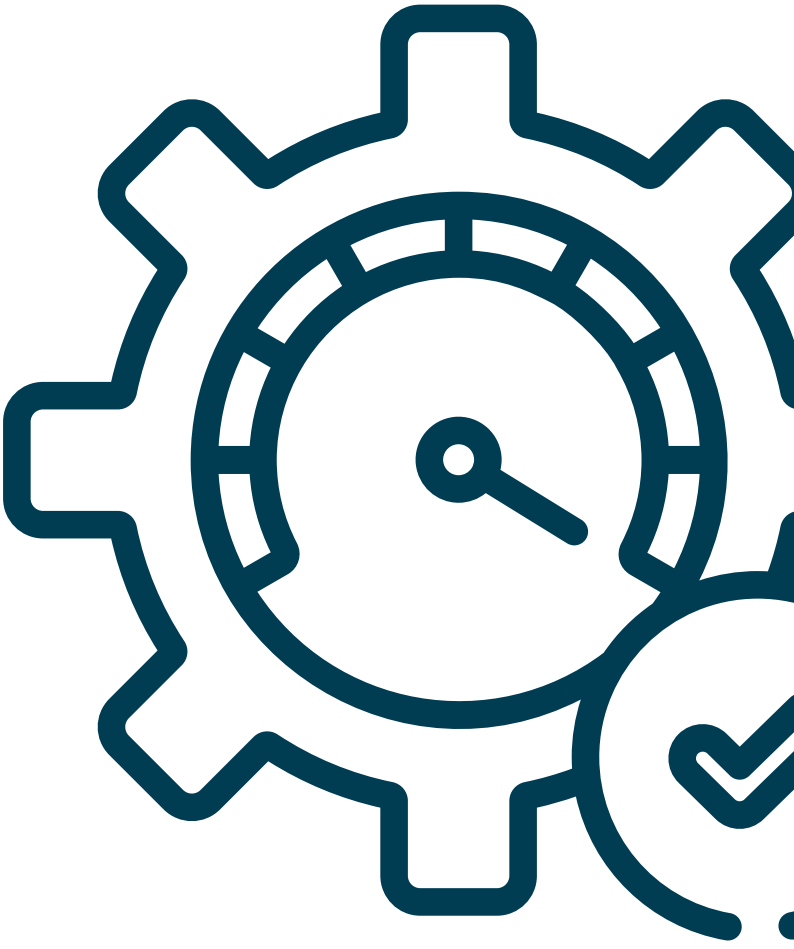
Automating some repetitive planning tasks with digital solutions is a valuable time-saver and lets planners focus on more complex tasks. At the same time, a certain level of manual adjustment and correction is often needed. Finding the right balance between the two increases productivity.

Broaden your horizon

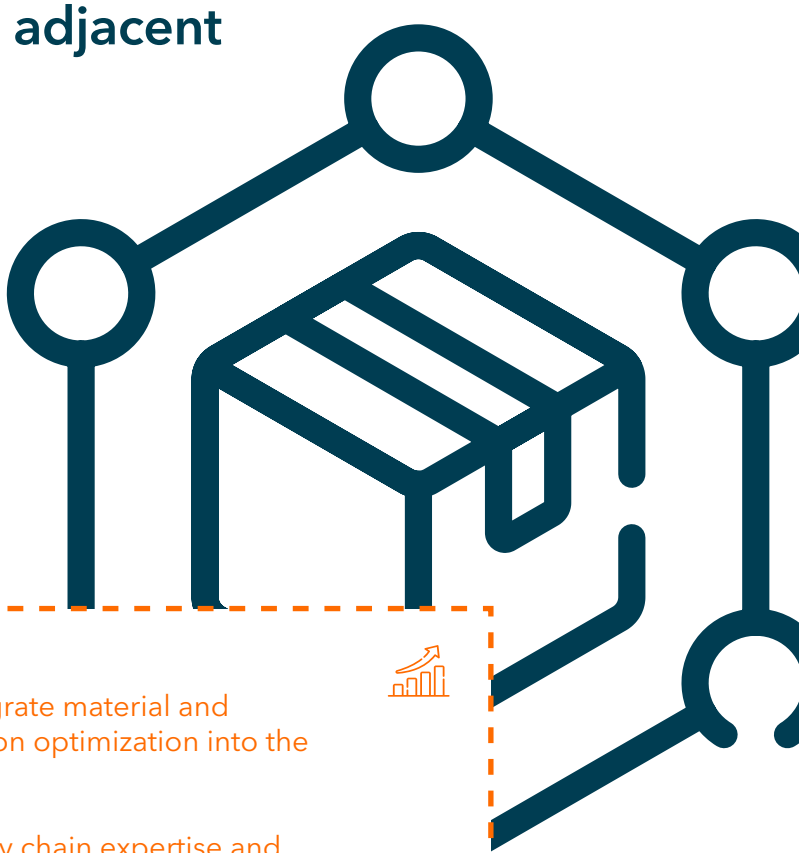
Material planners' impact is not limited to tasks like production scheduling and inventory management. Today's environment demands planners look beyond these traditional boundaries and work across the supply chain to ensure smoother operations, increase resilience and ensure overall business success.

Don't underestimate the impact of transportation

Transportation factors are often overlooked in the material planning phase, yet they can greatly impact business performance. Considering transportation constraints to optimize demands earlier saves costs and avoids unfeasible planning that slows down production and decreases customer satisfaction. Tools like 4flow TORO help material planners optimize demands without putting the production line at risk.



Material planning is critical to supply chains, and those in this role need to balance high complexity, time pressure and many different stakeholders in their day-to-day work. Already a complex role, material planning will demand an even more holistic approach in the future, transcending its traditional boundaries to consider the adjacent facet of transportation.



Did you know?

4flow offers various software solutions to integrate material and transportation planning, bringing transportation optimization into the earliest stages of material planning.

Our software is built on over 20 years of supply chain expertise and optimization algorithms developed in-house. This enables faster run times, sustainable cost reduction, and improved transportation utilization, all while considering material availibility.

Visit our website to learn more about these solutions.

Interested or have questions?
Contact us!

Get in touch to have your questions answered or to schedule a live demo of our software solutions.