

WHY ADVANCED PLANNING AND SCHEDULING SOFTWARE CAN IMPROVE SUPPLY CHAIN STABILITY

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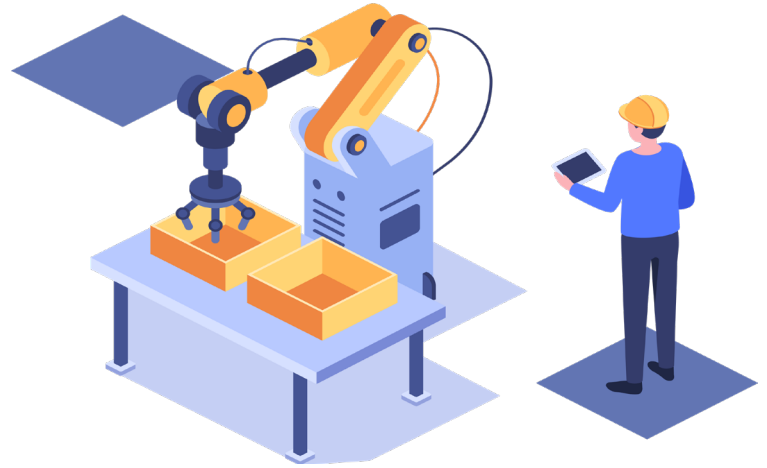
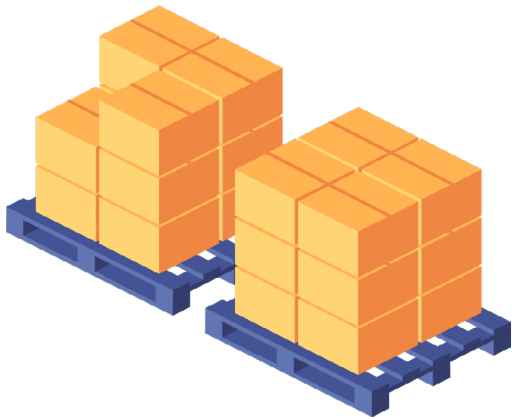
EXECUTIVE SUMMARY

For almost three years, the supply chain has been anything but stable. Ports stacked with container ships, suppliers going bankrupt, and a shortage of parts and raw materials has dominated the news cycle worldwide.

Frustrating for both manufacturers and their customers, the instability looks to continue for months – or even years – to come.

For manufacturers, this situation has led to costly downtime – idle factories, idle workers – profits melting away by the minute.

This paper will look at the causes of this downtime and contend that advanced planning and scheduling (APS) software can provide a solution that can turn the chaotic into an organized, profit-generating process.



INTRODUCTION

The COVID-19 pandemic and the 2021 Suez Canal incident brought the need for supply chain stability to the world's attention. Even Western nations, used to having everything they want or need only a click or a short drive away, felt the pinch. Empty shelves faced even the wealthiest shoppers.

Certainly, the shock echoed throughout the world. Only 15% of people not involved in the supply chain industry lacked basic knowledge of the supply chain, according to a March 2022 Supply and Demand Chain Executive (SDCE) study (1). Compared to five years earlier, when 31% of non-industry professionals lacked such knowledge, that increase in knowledge represented a stunning change.

Indeed, congestion at major ports, suppliers forced out of business due to pandemic-related issues, and a lack of raw materials due to locked-down nations or political kerfuffles impacted both manufacturers and consumers alike.

Furthermore, the SDCE study reported that manufacturers and other supply chain professionals experienced longer order arrival times, an increase in canceled and incomplete orders, and more materials out of stock.

Add to all those issues the rising cost of raw materials and no foreseeable end to the shortages, and manufacturers could well have a crisis on their hands. The real impacts on the factory level could ultimately lead to increased downtime – the death knell for a thriving business.

But there is a solution to ease the impact of these supply chain shocks. This paper will examine the impact of these issues on manufacturing plants and look at the benefits of advanced planning and scheduling software to ease these issues' impact on the manufacturing process.

THE CHALLENGE

Over the past three years, supply chain shocks have struck the manufacturing industry, causing shockwaves that have driven downtime through the roof. The major challenges include:



Shock #1: Supplies to produce goods are stuck on a container ship and can't get to manufacturers.

As the New York Times' Peter Goodman (2) points out, "what once seemed like a temporary phenomenon — a traffic jam that would eventually dissipate — is increasingly viewed as a new reality that could require a substantial refashioning of the world's shipping infrastructure."

According to Goodman, American manufacturers wait an average of 92 days to receive and assemble all the raw materials and parts they need to produce their goods. With a shortage of containers in China, a major source of parts and other materials, manufacturers will likely see no relief from this crisis.

Although some ports, including the Port of Savannah that Goodman cites, plan to expand their facilities, the expansion won't solve the container shortage, nor will it deal with the stacks of containers piled up, making it difficult for cranes to move them for unloading. Nor will it solve the shortages of raw materials that many manufacturers face.



Shock #2: One or more of a manufacturer's suppliers is no longer in business.

Even though the COVID-19 pandemic seems to be winding down, the risk of supply chain disruption remains constant. As a Procurement and Supply article (3) shows, risk mitigation is a must for manufacturers and supply chain professionals. With a recession looking more and more likely, manufacturers need to prepare now for the likelihood that some of their critical suppliers will go out of business.

And, with inflation at 9.1% in the U.S. (4), and frequent trading partners, such as Mexico, Canada, and India not far behind (5), it's essential for manufacturers to keep an eye on their suppliers' financial health, prepare an action plan if worst comes to worst, and develop a back-up plan to deal with future challenges.



Shock #3: One or more suppliers can no longer support a manufacturer’s needs due to too many requests against their available supply.

Diminishing manufacturing sources and material sources, as a Defense Acquisition University paper points out (6), can ultimately “endanger mission effectiveness” if a company manufactures items for the Armed Forces.

After all, business security worldwide depends on robust national security. If the war in Ukraine has taught businesses anything, as Bloomberg’s Enda Curran (7) advises, it’s that mission effectiveness has a direct impact on businesses that depend on abundant supplies from sources that have decreased production after falling victim to the chaos of war.

Furthermore, the lack of adequate supplies affects “mission effectiveness” in civilian life as well. Manufacturers that sell their products to civilian customers, too, see their “mission effectiveness” drop during parts and material shortages.

A significant part of the drop in manufacturing “mission effectiveness” is downtime. According to IIoT World’s Graham Immerman (8), the cost of downtime can run as high as \$260,000 per hour.

Atlassian (9) calculates manufacturing’s potential losses from downtime even higher – up to \$5 million per hour for industrial giants. Regardless of a manufacturer’s size, downtime is a manufacturer’s worst nightmare. Definitely a danger to a manufacturer’s “mission effectiveness,” regardless of the sectors to whom they sell their products.

But there’s a silver lining in the cloudy weather that seems to be ahead for the manufacturing industry. Leading-edge advanced planning and scheduling software provides a workaround that can stabilize the supply chain and reduce costly downtime.



THE SOLUTION

While advanced planning and scheduling (APS) software isn't a magic bullet that can solve all of a manufacturer's problems, deploying the right APS will help the company deal with most supply chain shocks and other real-world constraints (10).

Specifically, regarding supplies stuck on a container ship, an ideal APS can help manufacturers stay operational since the software provides them with the ability to see what they can still make with resources that are readily available. Additionally, a leading-edge APS solution can replan and reschedule around delayed delivery dates of inventory replenishment shipments.

For suppliers that have gone out of business, an ideal APS solution will enable operational leadership to see at a glance all the jobs and orders that the supplier's loss has impacted, allowing them to formulate a contingency plan faster than ever before.

APS software can also help manufacturers find a workaround on the fly for situations where a supplier can only send a partial order of parts or raw materials. In such cases, the software allows operational leaders to see what they can produce either partially or fully with the available materials.

Bottom line, the right APS will keep a manufacturer's machine and laborers working instead of sitting idle despite constraints on the supply chain system.

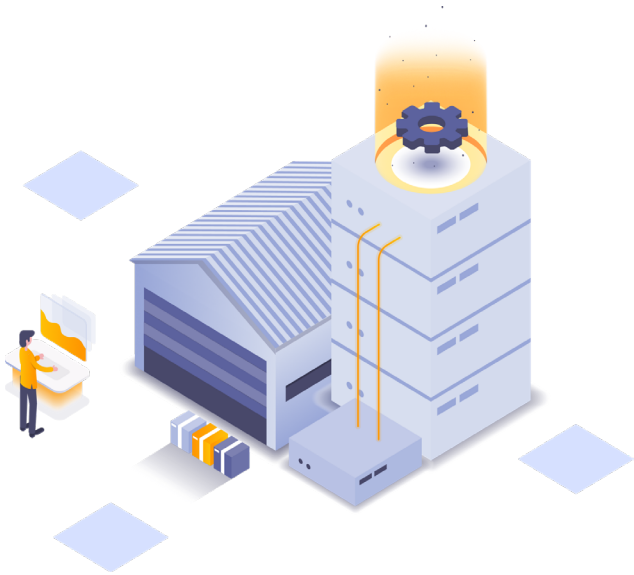
However, there are a couple of myths about APS software that are worth looking at so manufacturers don't get an exaggerated picture about what even the top APS software can do.

Myth #1: An APS can help manufacturers secure new suppliers when they need them.

This myth is **false**. However, an APS can provide manufacturers with the visibility to see the impacts supply chain disruption brings to the enterprise, giving them better insight into devising a workaround.

Myth #2: An APS can help forecast changes in demand.

This myth, too, is **false**. An APS relies on data and other inputs to power the software. If manufacturers can predict a change in demand – usually due to seasonality or securing a new customer or order – then they can use the APS to examine the future impacts on their production plans and schedules.



CONCLUSION

While supply chain shocks continue to rock the manufacturing world, having a leading-edge advanced planning and scheduling software solution can help manufacturers keep the production line humming. To discover more about what a custom APS solution can do, contact the [Optessa team](#) today.



FOR MORE INFORMATION

Optessa provides world-class manufacturers from all over the world with the only planning, sequencing, and scheduling software that mathematically guarantees results. Thanks to its patented algorithms, Optessa's advanced planning and scheduling (APS) software adapts to all manufacturing and logistics challenges with no extra coding required. With a full range of configurations for its clients' unique needs, it's the go-to solution for four of the six largest auto OEMs in the world, as well as industry leaders in a broad range of manufacturing, shipping, and logistics verticals.



ADDITIONAL RESOURCES

1. <https://www.sdexec.com/warehousing/article/22197175/apqc-weighting-the-impact-of-supply-chain-disruptions>
2. <https://www.nytimes.com/2021/10/11/business/supply-chain-crisis-savannah-port.html>
3. <https://procurementandsupply.com/2020/07/how-to-respond-when-a-critical-supplier-goes-out-of-business/>
4. <https://www.bloomberg.com/news/articles/2022-07-13/us-inflation-accelerates-to-9-1-once-again-exceeding-forecasts>
5. <https://tradingeconomics.com/country-list/inflation-rate>
6. <https://www.dau.edu/tools/se-brainbook/Pages/Design%20Considerations/DMSMS.aspx>
7. <https://www.bloomberg.com/news/articles/2022-03-09/ukraine-war-impact-reverberates-through-world-s-factory-floor#xj4y7vzkg>
8. <https://www.iiot-world.com/predictive-analytics/predictive-maintenance/the-actual-cost-of-downtime-in-the-manufacturing-industry>
9. <https://www.atlassian.com/incident-management/kpis/cost-of-downtime>
10. <https://www.optessa.com/solutions/key-differentiators/>

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