

Supply chain planning 4.0

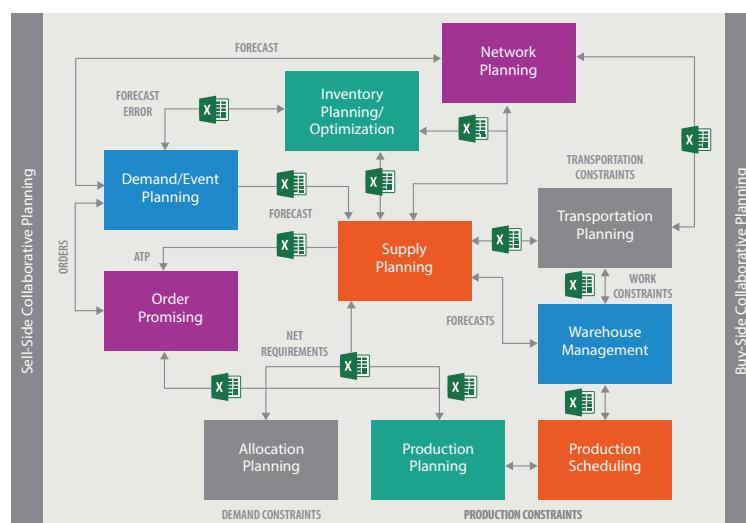
Planning revolutionized

It's not the 1960s anymore, yet the industry continues to use supply chain processes and capabilities described and developed more than 50 years ago. As a result, business benefits received from supply chain planning have plateaued. This is why it's time for a supply chain planning revolution.

The business benefits from supply chain planning have plateaued. We are still using processes and capabilities described and developed in the 1960s, which saw a radical improvement on previous approaches with the advent of Materials Requirements Planning (MRP). What we have done since then is develop approaches and solutions that have taken a wider set of constraints into consideration (MRP II). But the processes themselves have not changed. In the 1990s we added optimization capabilities in order to scale the processes (Advanced Planning Systems or [APS]) as technology advances enabled ever-more complex models. But again, the processes themselves still have not changed. It is time for the next revolution in supply chain planning, the fourth generation, Supply Chain Planning 4.0. The business need is there; the advanced technologies are available; and the latest generation of supply chain professionals have the necessary talents and approach to make this next revolution in supply chain planning a reality.

Times haven't changed

The functions outlined in the typical APICS or SCOR model have been with us for a long time. They may have developed in sophistication and complexity as the technologies matured, but their overall functionality remains the same. Even though the functional capabilities increased, most users turned to Excel spreadsheets in an attempt to bridge the gaps in module-based ERP and APS systems. Arrows in the model below represent those gaps. Generally, Excel was more user-friendly and it was one of the few alternatives to connecting data. However, the same problems remained. Analytics were separated by functional silos, and it was difficult to collaborate with anyone outside of the silo.



Each stage of development in terms of technology has led to increased capability and productivity. But, as Lora Cecere of Supply Chain Insights points out, financial indicators show that gains from supply chain planning have slowed.¹ She notes that since 2006, industries like retail, chemical, and consumer packaged goods have all seen declines in year-over-year revenue growth, return on invested capital, and operating margin.

¹Cecere, L., *Measuring Up?*, March 29, 2016

Since the 2000s, there has been widespread globalization leading to extensive supply chains and an explosion in product portfolios. This could not have been possible without the early generations of solutions such as MRP I, MRP II, and APS. But the value these solutions provide has plateaued. It is time for the next generation of capabilities.

Hau Lee of Stanford University describes the adoption of technology as occurring in three phases:²

- ▶ **Substitution:** Focusing solely on the cost to operate. In other words, there are little to no changes in the manner in which the organization functions
- ▶ **Scale:** The adoption of technology to do more of the same. Again, there are no changes to how we are currently operating
- ▶ **Structure:** A change in business model, as well as organizational structure and processes, to maximize the advantages of the technology

We need a structural change in how supply chain planning is performed.

The example Lee uses to illustrate the three stages is the automotive industry. Early vehicles were merely horse carriages with motors attached. While there was some level of increased range and reliability, the primary focus was on cost.

As the design of vehicles changed, especially with the advent of the Ford Model T, we saw more and more people being able to afford a vehicle, so the industry began to scale. But the structural change only came later when people realized increased mobility allowed cities to be structured differently with suburbs, shopping malls, gas stations, motels, and drive-through restaurants. And, of course, the interstates made a radical difference to commerce. The increase in distances over which supplies and products could be moved in a timely manner led to massive consolidation and scaling of manufacturing organizations.

It is clear the full financial and economic potential of new technology is not achievable without a radical change in operating model. The old adage of “People, Process, Technology”, while always relevant, has its limitations. The greatest value is only achieved when technology is allowed to change the manner in which we run our processes and train our people on those processes.

In supply chain planning we have reached the critical tipping point where we must address the structural changes, or find ourselves in an infinite stagnant loop. As mentioned in the opening statement, the benefits of current supply chain planning systems have plateaued. It's more than just realizing increased benefits of planning. Current planning systems are not architected to deliver the speed and agility to respond to the complexity and risks associated with today and tomorrow's supply chain. If nothing changed and it was just business as usual, companies could still survive. However, a new planning paradigm is required to navigate through the unprecedented volatility supply chains are facing just to survive, let alone compete and profit.

We have to revolutionize planning

The clues to the structural changes required date from the 1960s when Jay Forrester first described the bullwhip effect in his book *Industrial Dynamics*. Despite very clear evidence of the advantages that visibility, transparency, and concurrent planning provided by the bullwhip effect, standard practice in supply chain planning focuses exclusively on functional excellence, just as it has for the past 60 years. Evidence for this can be found in most supply chain management training and certification programs.³

The proof Forrester provided is very clear. Companies that flatten the information flow in order to provide visibility, transparency, and concurrent planning know sooner when risks or opportunities present themselves. They act faster to mitigate those risks or maximize the opportunity. In many cases we adopt these approaches only in times of crisis by forming SWAT teams. We then dissolve those teams when the crisis is over, despite clear evidence of the value of immediate information exchange and collaboration.

The adoption of LEAN in the 1990s most certainly made great improvements to material flows through factories and supply chains, greatly reducing product lead times and invested capital in capacity and inventory. Completely new factory designs emerged to take maximum advantage of LEAN, and in some cases KANBAN reduced the need for planning at the site level. However, LEAN has very little impact on supply chain planning processes, and therefore also on the time it takes to plan, and the quality of the plans generated.

²Lee, H., *Don't Tweak Your Supply Chain – Rethink It End to End*, October 2010

³Industrial dynamics, Waltham, MA: Pegasus Communications, 1961

Undoubtedly, technology has had an impact on the time it takes to generate a plan, especially since the advent of APS solutions in the 1990s. In truth, the adoption of APS solutions was all about scale, to use Lee's term. It was about doing more of the same. The processes themselves did not change, and the APS modules only emphasized and exaggerated the functional focus by requiring deeper and deeper functional skills to make maximum use of the APS modules. Even with the increased functionality and a stable set of modules, Excel remained the go-to for supply chain analysis and decision support.

The bullwhip effect has provided key evidence of the advantages of visibility, transparency, and concurrent planning. Visibility is a lower level capability that focuses on having access to data beyond one's immediate function. Transparency is providing qualitative and quantitative information about how and why a decision was made. Transparency hints at collaboration.

Concurrent planning is collaboration in practice. It is the simultaneous evaluation of trade-offs between competing metrics across functional boundaries. No one can dispute the value of visibility and transparency. But collaboration, as exemplified by concurrent planning, is of much greater value. And yet our processes have not changed in favor of collaboration in the 50 years since Forrester described the bullwhip effect, despite clear operational and financial advantages.

It is time to adopt new operating models that flatten data access so it is visible across functional and organizational boundaries. That data can then be threaded together from all of the new sources such as the Internet of Things (IoT) and social media. This would allow new insights to be formed and acted upon, and puts the decision-making power in the hands of the organization's front line. We need systems that can make sense of these data streams and data lakes. We need people who are happiest and work most effectively in collaborative environments. We need a Sensing + Intelligent + Social Supply Chain.

Sensing + intelligent + social supply chain

The greatest change will be the manner in which work is performed, specifically supply chain planning. While there will still be the need for functional expertise, it will be more in the form of issues that cannot be resolved in an automated manner, when trade-offs need to be made across competing metrics, when an obvious solution is not available. While machine learning and cognitive reasoning will play a big part in supply chain planning at some stage in the future, the need to support human beings in their decision making is still of paramount importance.

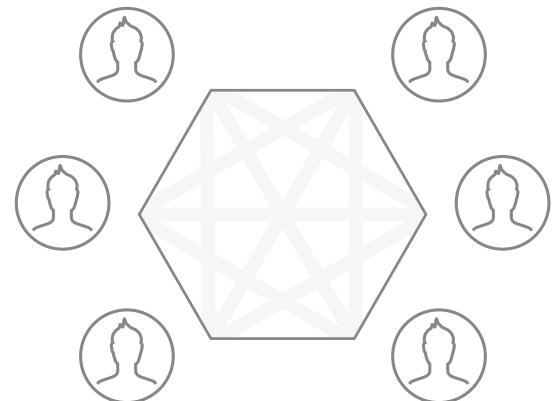
As systems have access to more and more information and are able to perform complex analytics at greater speed, the bottleneck in the decision-making process becomes the speed at which human beings can:

- ▶ Be made aware an important issue requires their attention
- ▶ Perform analysis to test alternatives
- ▶ Collaborate as a team to reach consensus

The Boston Consulting Group (BCG), Yves Morieux in particular, has been writing for some time about the need for what he calls an integrator.⁴ Others have referred to this person as an orchestrator. Of equal importance is the manner in which Morieux describes the drawbacks of our current operating models, which are based on functional expertise with little interface between roles. Morieux states:

"The real battle is not competitors. This is rubbish, very abstract. When do we meet competitors to fight them? The real battle is against ourselves, against our bureaucracy, our complicatedness—only you can fight it."

Many organizations respond to increasing complexity by creating more overlays, procedures, structures, and scorecards. But these outdated methods lead businesses to spend more time managing work and less time focusing on the important activities that actually add value."⁵



⁴Yves Morieux, The Boston Consulting Group, 2015

⁵Freeland, G., *Smart Simplicity: The Simple Defense Against Increasing Complexity*, 2016

BCG has been promoting the idea of Smart Simplicity for some time.⁶ It is best described by six key characteristics:

1. Understand what your people do so that managers understand the context.
2. Reinforce integrators. Take away rules and procedures, and add resources, so both managers and employees can promote cooperation.
3. Increase the total quantity of power so that your people are able to engage and cooperate, instead of staying in safe isolation.
4. Increase reciprocity. Kill monopolies, remove resources, and create new networks for interaction.
5. Extend the shadow of the future. Take consequences from “down the line” and put them into people’s everyday lives so that cooperation happens.
6. Reward those who cooperate. Make it useful to cooperate and dangerous to avoid cooperation.

The key point Morieux is making is that we need cooperation across the supply chain network. While this is not always possible across organizational boundaries because of legal reasons, we need to make a start internally. Cooperation is compromise. It is trade-off across competing objectives. It is the willingness to understand that our actions have consequences on the rest of the organization. The next revolution in supply chain performance can only be achieved by realizing that the speed of decision making is just as important as the mathematics we have focused on for the past 50 years.

Leading the change

At Kinaxis we have been working toward this goal for some time, having long promoted the concepts of concurrent planning and continuous sales and operations planning.

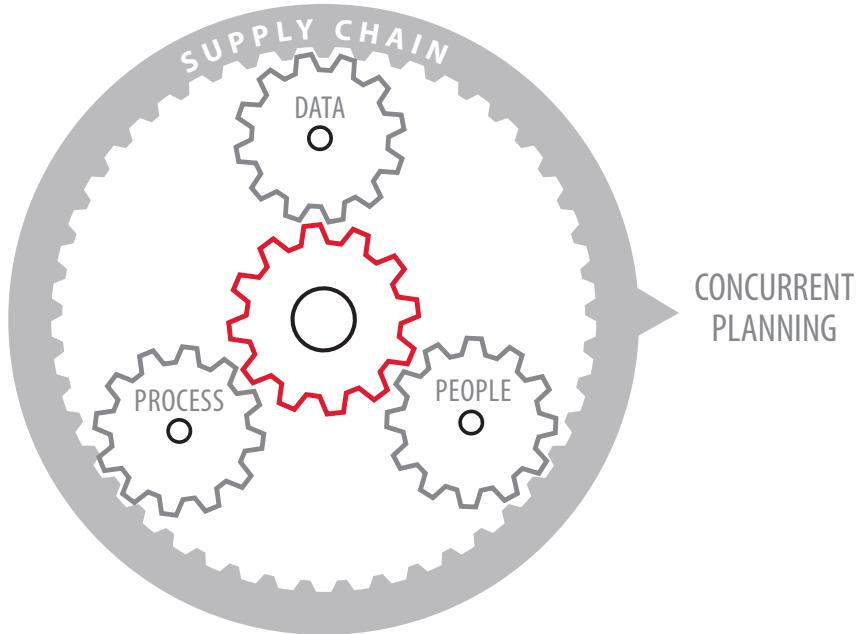
Our RapidResponse® solution provides the driving force that allows data, process, and people to simultaneously work together to power the entire supply network, truly creating a sensing, intelligent and social supply chain.

We have always supported concepts such as responsibilities, alerting, scenario planning, assumptions, and collaboration. In fact, Kinaxis has been recognized as a leader for the second consecutive year in Gartner’s Magic Quadrant for Supply Chain Planning (SCP) System of Record (SOR). Gartner describes a SCP SOR as follows:

“A SCP SOR is a platform that enables a company to create, visualize, manage, link, align, collaborate and share its planning data across a supply chain, from demand plan creation through to the supply-side response, and from detailed operational through tactical-level planning.”⁷

Clearly the seven verbs used by Gartner—create, visualize, manage, link, align, collaborate, and share—are very consistent with the six rules promoted by BCG, and are in fact the outcome of those rules in a supply chain planning context. Together, the seven verbs embody BCG’s term ‘cooperation’. However, BCG states the change in operating model a lot more explicitly than Gartner.

Changing an operation model is not a simple exercise, but clearly it is a necessary step required to revolutionize planning and bring supply chain planning into the future. Kinaxis has partnerships with Accenture and Deloitte, two of the leading supply chain planning management consulting firms, to help our customers define their adoption of new planning processes in terms of initial functional focus, change management, and speed of deployment.



⁶Morieux, Y. and Tollman, P., *Six Simple Rules: How to Manage Complexity Without Getting Complicated*, 2014

⁷Payne, T., *Magic Quadrant for Supply Chain Planning System of Record*, Gartner Inc., January 19, 2016



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About Kinaxis Inc.

Offering the industry's only concurrent planning solution, Kinaxis helps organizations around the world revolutionize their supply chain planning. Kinaxis RapidResponse, our cloud-based supply chain management software, connects your data, processes and people into a single harmonious environment. With a consolidated view of the entire supply chain, you can plan expected performance, monitor progress and respond to disconnects when reality hits. RapidResponse lets you know sooner and act faster, leading to reduced decision latency, and improved operational and financial performance. We can prove it. From implementation to expansion, we're here to help our customers with every step of their supply chain journey.

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