ARC Advisory Group Kinaxis, a Leading Supply Chain Planning Supplier

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Supply Chain Planning Market Definition

ARC Advisory Group has been covering the Supply Chain Planning (SCP) market for 17 years. The market has been growing at double-digit rates for several years, even during the pandemic. The pandemic brought home the need for companies to run agile and resilient supply chains. SCP is a critical application to help companies achieve better agility.

Supply chain agility reflects a company's ability to respond quickly to surges or plummeting demand. Agility can also reflect a company's ability to effectively deal with unexpected constraints caused by strikes, earthquakes, political strife, and a variety of other events. Supply chain resilience refers to planning for things that could go wrong and then creating inventory buffers or contingency plans.

ARC defines supply chain planning (SCP) products as including supply planning, demand planning/inventory optimization, and network planning. Network planning solutions include supply chain design, integrated business planning, and end-to-end supply chain analytics.

SCP solutions provide a solid ROI based on hitting targeted service levels with less raw material, work-in-process, or finished goods inventory. Attaining high service levels can be strategic because this drives higher sales.

SCP solutions are often used in an integrated business planning (IBP) process. A robust IBP process allows companies to set better financial targets and achieve those targets with a higher level of certainty. For companies with any complexity surrounding products, channels, or customers, no IBP process can be considered robust without employing SCP tools.

Demand Planning and Inventory Optimization

Demand planning is the process of forecasting the demand for a product or service so it can be produced and delivered more efficiently while meeting customer service level expectations. Demand planning is an essential step in supply chain planning.

These forecasts occur in three different time horizons:

- **Long-term planning**. Often called strategic planning, this is a forecast spanning 1 – 5 years. In long-term planning, a company forecasts the volume and types of products it will produce over the next several years and then examines whether it has the necessary capacity and infrastructure to meet that demand.

- **Medium-term planning**. Also known as tactical planning, these are monthly plans created for the next 12 to 24 months. The near-term plans are firmer and more nailed down than plans three months or longer out in the future.

- **Short-term planning**. Also known as operational planning, this takes place weekly, daily, or sometimes multiple times per day.

These forecasts also occur at different levels of granularity. A company might produce a forecast that shows how many units in a product family will need to be made across all factories in the coming month. Or, the forecast might be much more detailed. How much of a given stock keeping unit will need to be shipped to each of our retail customer's distribution centers in the coming week?

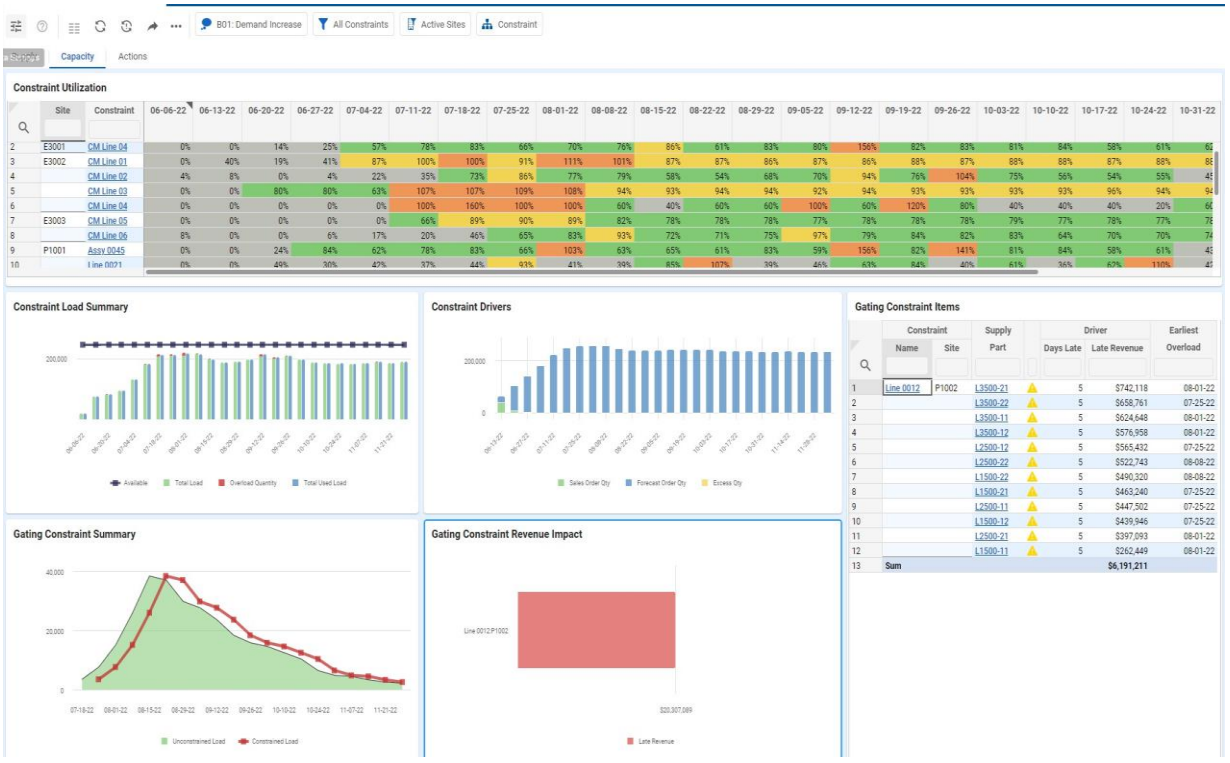
Forecasting has historically involved examining sales and order history and applying statistical techniques to that data. However, machine learning is increasingly being used, particularly for short-term forecasts.

Machine learning is particularly effective when it also uses external downstream data. So, for example, a manufacturer knows what it has sold to a retailer. However, suppose the retailer allows the manufacturer to access data on how much of their product is sold at each of their customers stores. In that case, the short-term forecasts can be improved. This downstream data allows for better demand sensing. Demand sensing forecasts can adjust to the swings in demand much more quickly than statistical forecasts.

Inventory optimization solutions take a demand plan and determine how much inventory needs to be produced and where and how much must be held across a network of factories, warehouses, and stores to hit defined service levels.

Supply Planning

Supply planning systems create models that allow a company to understand capacity and other constraints it has in producing goods or fulfilling orders. The factory models can include how long it takes to set up a machine, how many units per hour can be made by the machine, how long routine maintenance takes, how many workers are needed, and the hours the plant works, among others. Fulfillment constraints can include how long it will take to deliver goods to a destination, warehouse capacity, and warehouse labor requirements. The system then uses advanced algorithms to calculate the optimal way goods can be produced and fulfilled.



Kinaxis Rapid Response Application Displays Constraint Metrics

Supply planning engines "optimize" the schedule. An optimal plan is not a perfect plan. Optimization is needed when there are so many ways an end-to-end schedule could be developed that even if the planning engine ran a million years ago, it would still not have considered all the options. "Optimization" uses clever math to come up with a very good solution in a short planning run.

Supply chain planning solutions are tradeoff machines. A planner can see how much extra it would cost to take service levels from 95% for all customers to 99%. However, not just service levels and costs can be traded off. A planner could ask the SCP engine to achieve 95% service, with CO2 emissions under a million metric tons at a given factory in the coming month. This would be a three-way tradeoff. Other tradeoffs, such as maximizing cash on hand or allocating products in short supply to preferred customers, are also possible.

No plan is perfect. Demand will be higher or lower than expected. The ability to meet that demand can be less than expected. Concurrent planning links execution – the things a company needs to do in the next few days or weeks - to the longer-term financial plans. As new short-term schedules are created, the linkage to revenue and profitability goals in the IBP plan becomes instantly visible. This allows planners to run scenarios and pick a new strategy that helps to ensure that financial and strategic objectives will be met.

Buyer Strategies

This section provides strategies to help a company select a supply chain planning solution.

Ask Suppliers for Proof Points

Many customers have selected an SCP solution based on Gartner's Magic Quadrant. This, however, is a one-size-fits-all analysis. Vendors in the top right-hand corner are good, while others are to be ignored. It is worth looking at the Magic Quadrant, but it should be just one proof point among many. Suppliers in the magic quadrant are not the best fit for all companies.

Suppliers make many claims when they are trying to win a deal. References can help a prospective customer verify those claims. Attending a supplier's user conference before purchasing the software is also an excellent way to gauge how engaged and happy the supplier's customers are. It would be a bad sign if only a few users gave presentations at the conference.

Pay Attention to the Platform Architecture

Public cloud solutions offer faster implementations, easier upgrades, and the ability to use network data for benchmarking. Because painful upgrades are unnecessary, public cloud solutions allow customers to stay current with the latest features and functions.

Some customers will want to use proprietary optimization and AI algorithms. To support this, a platform must store this proprietary math in a platform library, apply the math at the right point in a workflow, and fully support upgrade paths.

A robust platform also has the tools to keep the master data and critical parameters current. A platform with capabilities to ingest IoT, demand sensing, real-time risks, and industry and government data, and use that information to improve planning is also cutting-edge.

The platform should support concurrent planning. This capability is more a feature of the platform than the application.

Suppliers providing multi-enterprise supply chain network (MSCN) solutions on the same platform as SCP may have a strategic advantage. Similarly, a platform built using microservices that includes supply chain planning and execution solutions improves agility.

"Platform" is a term that can be misused. Integrating different applications from the same vendor does not make for a platform. A true platform has applications that are based on the same master data and run on the same database. Modern platforms are based on a microservices architecture.

Look at the Company's Implementation Partners

While an SCP supplier may be willing to, or even want to implement their solutions, companies often find working with system integration partners beneficial. SCP suppliers' integration services are more expensive. Suppliers may also be backlogged or lack enough consultants to start an implementation as quickly as their customer wants.

The largest consulting firms in the world are not the best system integrators (SIs). When ARC interviewed SCP customers, it was found that customers who had used smaller, specialist "boutique" consultants had better luck. Boutiques specializing in just one supplier's solutions are preferred over SIs implementing several different vendor solutions.

However, global SIs do have a role to play. They can be helpful in tying an SCP implementation to strategic goals. Once a solution has been implemented in one location, the global SIs can use the template created to scale the implementation quickly.

A few consulting firms specialize in supporting companies that want a robust IBP process. IBP is one reason many companies implement SCP.

Partners need to be certified so that customers have confidence that an SI fully understands the solution and how best to implement it. SCP suppliers need to keep track of which consultant projects are successful and which are not and have a strategy for directing more business to the right consultants. Awarding "platinum" partnerships based on a system integrator's willingness to engage in co-marketing with a vendor can lead customers to work with the wrong consultants.

The boutique SCP system integrator market is impoverished compared to other enterprise application marketplaces. Further, almost no SIs implement production scheduling.

Kinaxis Supplier Profile

The following profile is based on ARC's last supply chain planning study.

Kinaxis is a public company headquartered in Ottawa, Canada. It was founded in 1984 and employs over 1,700 people, almost all of whom work on the SCP product line. Kinaxis is one of the four largest suppliers of SCP solutions.

In January 2022, the company acquired Toronto-based operations research specialist Visual8. Visual8 brought a blend of operations research capability and product development experience in production planning and scheduling. In August 2022, Kinaxis acquired MPO for approximately $45 million. MPO provides a multi-enterprise supply chain network solution. The combination of MPO and the concurrent planning capabilities of the SCP will support more agile responses to supply chain disruptions. 2022 also saw a partnership with Google Cloud that will allow Google to host their solution on its platform.

The cloud-based RapidResponse solution is a hosted single-tenant product based on a single data model and single platform. Their applications include demand planning, supply planning, S&OP, and MSCN. The solution is underpinned by the Kinaxis' concurrent planning technology.

Concurrent planning is based on the platform's ability to continuously synchronize the end-to-end supply chain without data duplication or waiting for batch runs. Concurrency extends across strategic, tactical, and operational timeframes. Multiple planners can create on-the-fly what-if scenarios simultaneously, make various changes, and then instantly understand the scenario's impact across all areas of the supply chain and against cross-functional metrics, without the planning getting out of sync. The platform is known as the Cognitive Network Graph. This patented in-memory hybrid columnar and graph database is only available to Kinaxis customers.

Planning is based on heuristics, optimization, and machine learning algorithms. Machine learning is also used for insight assistance and automatic resolution of mundane tasks. The platform allows partners or customers to extend the solution with low- and no-code options.

The model is being extended beyond traditional supply chain functions to include finance, sales, marketing, operations, logistics, and other related fields. Additional financial planning and sustainability parameters are being added.

Kinaxis has developed RapidStart methodology, which, when applied to the Kinaxis Planning One package, allows customers to go live in just 12 weeks. Their standard offering takes considerably longer.

Product development is focused on bringing together MPO and RapidResponse to create agile planning based on alerts from the extended supply chain. The company continues to invest in production scheduling; it will be releasing a new enterprise scheduling offering.

Sustainability will be supported with investments in forecasting product returns and identifying the best use of components from a returned assembly.

Kinaxis Customer Case Study

Cardinal Health's Perfect Implementation

Cardinal Health's senior vice president of global logistics said of their implementation of the Kinaxis' supply chain planning (SCP) solution, "I was scared. I put my name on the line." He added, "we needed results in the first year." Pete Bennett, and his co-presenter, Mary Byrne, the vice president of supply and demand planning, spoke during a presentation at Kinaxis' user conference Kinexions. They had every right to be worried. A previous supply planning implementation, of an SCP system from a different supplier, had not gone well.

When it comes to supply chain planning, the right technology solution can make a big impact on a business' agility and resilience. Cardinal Health, a global manufacturer and distributor of medical, surgical, and laboratory products, is focused on continuous improvement of service. Global logistics leaders wanted to improve service levels, lower costs, and fortify Cardinal Health's supply chain planning process. The company made a bold decision to implement the Kinaxis Rapid Response advanced supply chain planning (SCP) solution with its AI-based technology platform. While change is always risky, leaders were confident that this decision would propel the business forward.

The Cardinal Health Supply Chain

Cardinal Health's medical segment manufactures, sources, and distributes Cardinal Health branded medical, surgical, and laboratory products. This segment also distributes a broad range of non- Cardinal branded products and provides supply chain services to hospitals, clinics, and other healthcare providers in North America. The medical segment's supply chain consists of 61 North American distribution centers and 27 global manufacturing plants. Ninety-four percent (94%) of US and Canadian healthcare systems use Cardinal Health in one capacity or another.

Supply Planning Implementations are Just Harder

The previous SCP implementation had not gone well. It was an IT-led implementation where a planning model was developed, the solution implemented, and then planners – who had not been sufficiently prepared and trained – were expected to use a system significantly different from the legacy systems they were familiar with.

Implementing supply planning solutions is hard. As with any major technology change, it can be challenging to balance business requirements and IT schedules all while protecting the customer experience. Ideally, you wouldn't want your customer to even know that you implemented a system change. Indicators of success are critical.

If you are implementing a warehouse management system, for example, you scan something, you put it away, you store items, you replenish, you build pallets. The system either works or it doesn't. A consultant knows immediately if things are not working, and the solution can be quickly fixed. However, when implementing an advanced supply planning solution, the signals are not always immediately clear. Many companies have negative impacts on customer service levels during the first five months of implementing an advanced supply planning solution, Mr. Bennett explained. The team at Cardinal Health was determined that this would not be the case for their customers. They had set a goal of zero disruptions to customers for the entire implementation. This was a bold and risky move.

With planning systems, there is a delay between cause and effect. Companies typically expect that inventory levels will drop, and service levels improve at the end of the first month. If they don't, there is deemed to be something wrong with the planning system. Company leadership, planners, and customers begin to doubt the system. Teams will then revert back to their former tools, often times using Excel.

Live and Learn

Based on hard won learnings, Mr. Bennett and Ms. Byrne put together an almost perfect implementation. This was accomplished despite a difficult IT environment – the company had 28 different systems that needed to be integrated into their planning system.

The key success factors were:

- **A Dedicated project Team for both IT and Business.** One of the most unique elements of the Cardinal Health team's approach was in setting up a dedicated implementation team with peer-to-peer matched roles from IT and from the business. This was one of the toughest decisions they made as a leadership team. As Mr. Bennett explained, "I literally pulled my top talent out of the day-to-day planning team and my IT business partner did the same. We knew we wouldn't be successful unless this was their only focus." This is the penultimate example of leadership commitment. It is incredibly rare, but Ms. Byrne and Mr. Bennett saw it as fundamental to the success of the project.

- **Count them! Two Centers of Excellence**. A center of excellence (CoE) is a team that provides leadership, best practices, research, support, and training in a focus area. Cardinal Health developed two COEs. They already had a Supply Planning COE. This is not uncommon among multinationals who have implemented SCP. This COE was tasked with improving sales & operations planning (S&OP) maturity and supporting other strategic business process initiatives and best practices.

  The leadership team added a second COE to lead the implementation, design, and deliver training, act as the "Genius Bar" for Kinaxis technology questions, and generate future strategy for technology success with the new platform. This was unique. Mr. Bennett and Ms. Byrne listed this as the second-most fundamental success factor.

- **Efficient Hypercare Transition**. Hypercare support did not occur all at once. Hypercare in most IT projects is the period of time immediately following a system Go Live where an elevated level of support is available. For a considerable period in what the Cardinal Health team called a "double launch", planners used both their legacy planning system and the new Rapid Response planning application. It was not until all planners were comfortable with the output from the system that planners exited the legacy systems (Cardinal Health had no less than five different systems across multiple teams and business) and switched solely to the Kinaxis RapidResponse application.

- **Planner Metrics**. Cardinal Health implemented adoption metrics on how often planners were using the planning application or if they were experiencing any pain points in the system. If a planner stopped using the application, or used it less, that was apparent to supply chain executives and could be addressed and solved.

- **Intensive Training**. Training started a full year before the go live. There was both in-person and on-line training, all complemented by continued virtual training sessions and frequent skills assessments. The company did not assume that just because planners had received training, they were comfortable with the system. Senior planners would identify planners that seemed to be struggling with the new system. If necessary, a trainer would fly to the site and provide one-on-one training.

  The implementation team also surveyed planners' level of confidence throughout the training. It was not until 96% of the planners said they were comfortable with the system that they went live.

The Results

It was important to have quick wins, and the company got them. Within two months of implementation, the service level had improved several percentage points, inventory decreased almost exactly as RapidResponse predicted it would, and the planning team was able to optimize inventory movement across the network.

The results differed by division. But, over time, service levels improved by up to 10% while inventory was reduced by over 20%. The backlog was reduced to less than 17% of revenues. And all of those occurred while the customer experience was protected during the transition.

Taking risks can result in success for both a company's operations and their customers. And certainly Mr. Bennett and Ms. Byrne took a risk when they admitted they had learned how to execute an almost perfect implementation based on hard-won experience. I applaud them for their honesty. People in the audience really sat up and listened to what they had to say.