TOP 4
CAPACITY PLANNING OBSTACLES

AND HOW TO REMOVE THEM

KINAXIS®

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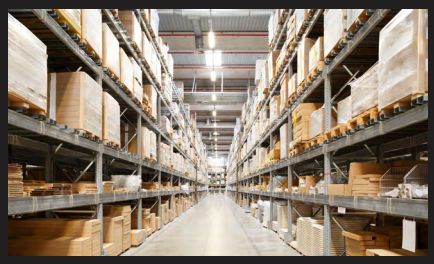


Missing customer commitments or having expensive equipment sitting idle are scenarios every planner wants to avoid.

THE CAPACITY PLANNING LANDSCAPE

The landscape of capacity planning is as diverse as the world we live in. Some work centers have load profiles as flat as the prairies. Others have capacity spikes that look more like mountain ranges. Capacity planning spans capital investment budgeting to ensure you're fully utilizing every individual machine. It's interwoven with multiple other functional planning processes, such as strategic planning, sales and operations planning (S&OP), master scheduling and material requirements planning. It's part of the conversation at every level of planning.

Depending on the level of capacity planning, whether it's resource requirements planning (RRP), rough cut capacity planning (RCCP) or capacity requirements planning (CRP), you may need a view of products and resources at either an aggregate or detailed level. Capacity plans look at every level of granularity including days, weeks, months and years. And in today's global supply chains it's typical for capacity planning to span across multiple countries and continents.

All this is on a good day. Over the last decade, the capacity planning landscape has evolved. Most industries experienced unprecedented changes fueling a need to transform capacity management from a regional to global view. For example, in the automotive sector, the 2008 economic downturn hit suppliers extremely hard, putting some out of business. In 2010, an upturn in demand in emerging regions such as Brazil, India and China, meant capacity began varying significantly by region. Unfortunately, that emerging demand didn't match companies' current supply in those areas. Thus, a global view of capacity management emerged to combat these new supply chain constraints.

As a result, there's now a constant need for cross-regional collaboration during the S&OP cycle and on longer-range capacity planning conversations for advancements and products like battery technologies and autonomous vehicles. The supply chain is more interdependent than ever before. Components sourced in one region are consumed by demands in other regions. Regional issues cause global problems. Global solutions have regional implications.

If there is misalignment with global and regional capacity systems, it can be costly. If you build products customers don't want, you have money tied up in inventory and marketing has to work harder to move supply. David Thomas, Director of Global Capacity Planning for Ford Motor Company, describes inventory as "dead money. It's not making money, it's costing money."[1] Supply constraints mean your customers aren't getting the product they want, when they want it. Minimizing inventory and holding costs and maximizing revenue is a critical competitive differentiator. What's needed is the most efficient supply chain with the lowest inventory possible so you can move the most product possible.

Whether you're analyzing risks associated with your next sales and operations plan or managing the daily utilization of a work center, it's a must to be able to effectively and efficiently align capacity with supply and demand. Because missing customer commitments or having expensive equipment sitting idle are scenarios every planner wants to avoid.

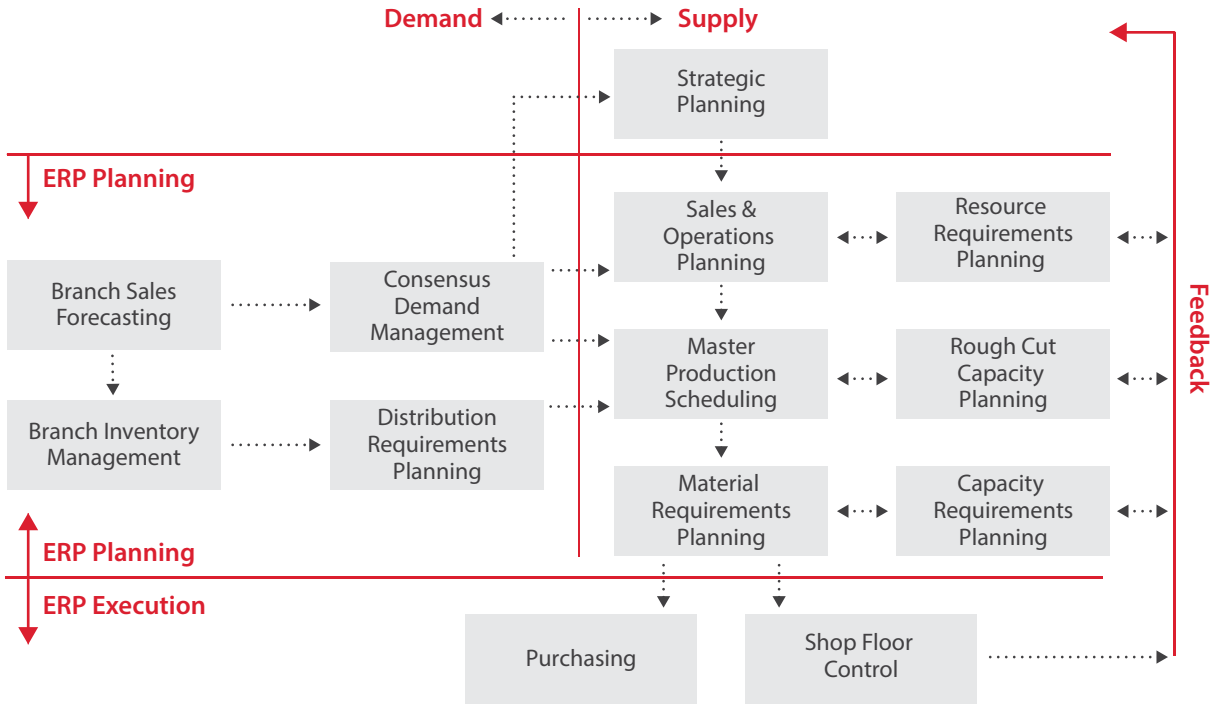


Figure 1 Planning hierarchy

[1] Creating global data standards, SupplyChainBrain, February 2017.

TOP FOUR CAPACITY PLANNING OBSTACLES

The capacity planning landscape can be difficult to navigate. Identifying and eliminating the four key obstacles standing in your way will help you see the complete global capacity picture and set you on the path to success.

OBSTACLE 1

COLLECTING DATA

Achieving an end-to-end view of your supply chain, including capacity, involves pulling data from locations all over the world. Regional data silos make it extremely difficult to get a single global perspective of capacity. Each region, plant, supplier or distribution center represents another system or spreadsheet you need to pull data from to manage capacity. Figure 2 provides some examples of where your capacity resources may be located.

Even in those fortunate cases with only one global instance of an enterprise resource planning (ERP) system, most regions are turning to Excel spreadsheets because the ERP systems can't handle the requirements for dynamic capacity management. With acquisitions, new sources, product introductions and the Internet of Things (IoT), the data collection obstacle is only going to grow. The bottom line: You spend more time collecting data and building Excel reports than analyzing data and making supply chain decisions.

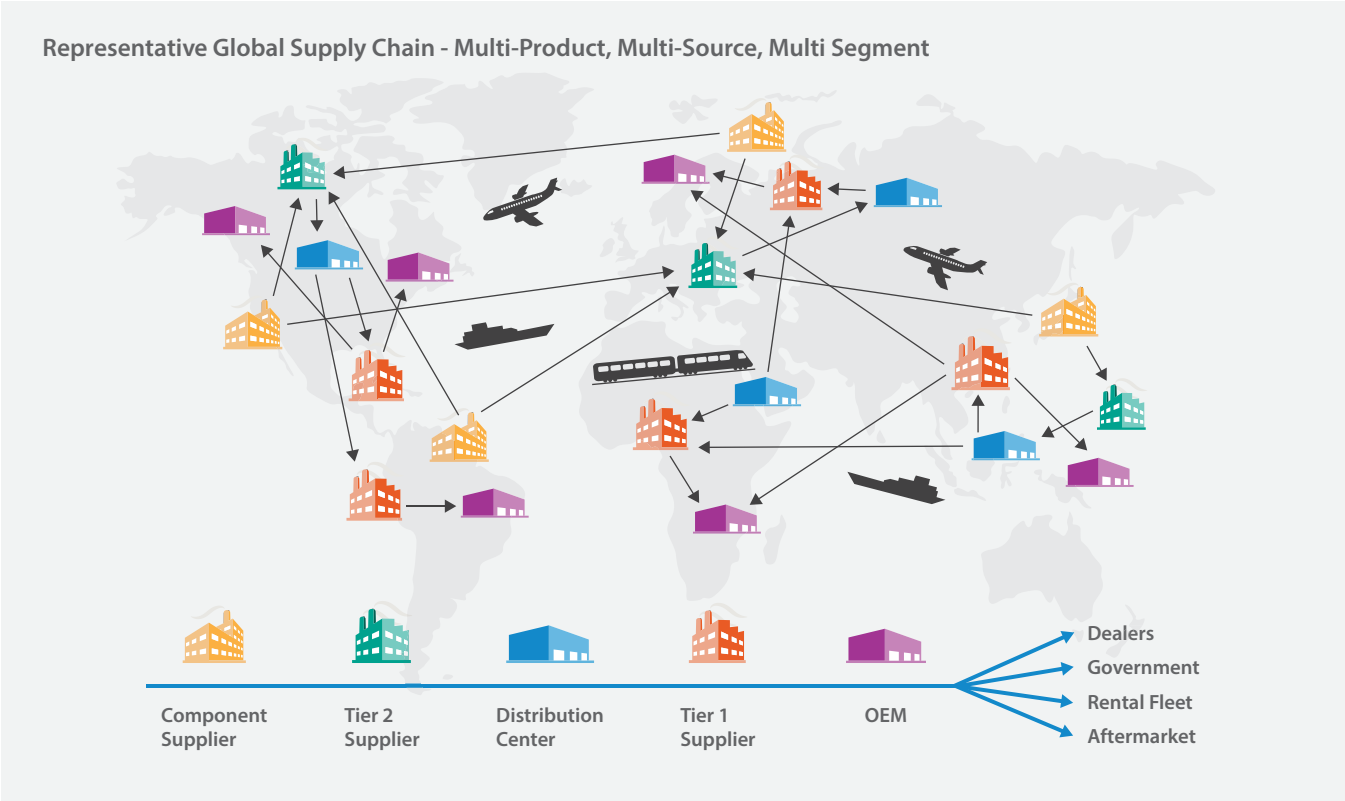


Figure 2 Global network of supply chain nodes[2]

HOW CAN YOU REMOVE THIS OBSTACLE?

System integration. Since data typically resides in multiple ERP systems, various point solutions and Excel, you have to seamlessly incorporate all this information and close the loop back to the execution systems based on decisions made during planning cycles. Automated tasks, such as the export of data from multiple sources, can collect and consolidate data into a single system of record so more value-added time can be spent managing capacity plans.

[2] An Integrated Approach to Global Capacity Management, Kinaxis, March 2014.

OBSTACLE 2

MAINTAINING DATA QUALITY

Along with numerous data sources, you're likely also dealing with a large number of capacity data elements on top of all your demand and supply records, making data quality difficult to maintain. With multiple tools and no direct link to formal systems of record, the validity of your capacity data becomes questionable at best. When using multiple data sources, which sometimes even have conflicting numbers, you're likely to get questions about which source is correct. That's especially true when data changes, which, let's face it, happens often.

Anytime you make improvements or changes to processes or add new sources, capacity data elements change and can alter things such as setup or run times. Capacity planners must keep a close eye on data, ensuring it's always current and that they've updated all data records simultaneously.

Each planning level has different data requirements to support various capacity planning objectives. When planning capacity at the aggregate level, you manage monthly rates by plant. It isn't critical you get detailed data such as an order moving from one work center to the next. In high-volume, low-mix environments managing key constraints may be enough. You simply need to understand constraint availability and the amount of constraint consumed by product. However, as you plan capacity to support material requirements planning (MRP), you'll need detailed work center information (e.g. number of shifts, hours per day, utilization and efficient rates) and load information, including setup and run times, routings, and move and queue times. This type of data often lives outside your system of record and changes often, making maintaining quality data even more difficult.

HOW CAN YOU REMOVE THIS OBSTACLE?

Data integrity. By integrating all data onto one platform, people gain confidence in the capacity management system as a whole and that the data they're using is up-to-date. Changes to data elements then become simple to manage because you're only updating the data in one location. There's a single version of the data, translating into a single source of truth that anyone involved can see. They'll see data updates as they happen; making it easier to aggregate or disaggregate data at the level of detail they need, effectively shortening planning cycles and response times to capacity disruptions.

OBSTACLE 3

GETTING THE CALCULATIONS RIGHT

Much like the problem of data living in multiple sources, many of the supporting capacity analytics exist in isolation as well. Capacity planners turn to Excel as a way to consolidate the data, but also to support the analytics required to do their jobs.

Adding capacity analytics to demand and supply balancing makes for a complicated collection of rules and logic. On top of the logic associated with setting demand, exploding a bill of material (BOM) to calculate component requirements, capacity planners need to align resulting supply plans to resource capabilities. Here are just a few of the many rules and analytics capacity planners typically require:

- Unconstrained and constrained views of load by work center
- For constrained views, realignment of supply orders based on constraint availability
- Material availability consideration when scheduling work orders
- Preplanning to avoid overloaded situations
- Insights into alternate sources when primary resources can't satisfy supply commitments
- Attribute-based planning rules defining what sources can satisfy demands for a specific customer or region

It's not often an ERP system can support this library of analytics. But adding all these analytics to Excel opens a large door for errors. Managing and maintaining the math can be a tedious exercise. One misplaced operator can throw plans into disarray. The other problem is the latency of calculations. Typically, you import the demand and supply balancing results into a capacity tool before any capacity planning actually takes place. If there is a demand or supply change, the lag time to start the cycle over and see the impact on capacity could be days.

HOW CAN YOU REMOVE THIS OBSTACLE?

Have all planning analytics in one place. Planners must configure the support required for regional and global processes. That means having all planning (demand, supply, inventory, capacity) analytics and rules, along with views and workflows, in one place. This configurability dramatically improves capacity planning accuracy, credibility and response cycle times, and lets processes evolve over time without customizations.

OBSTACLE 4

COLLABORATING WITH THE REST OF THE PLANNING COMMUNITY

Every single person in any organization has a stake or interest in capacity – from human resources, finance and sales, to demand, supply and operation planners. From the CEO to the production worker, capacity conversations happen at all levels across all organizations.

Figure 3 highlights the feedback loops between planning functions and the three main levels of capacity planning: requirements planning, rough-cut capacity planning and capacity requirements planning. Making things even more challenging is these planning functions span countries and languages. It equates to people across multiple levels of the organization, in multiple locations, speaking multiple languages and getting information from multiple systems.

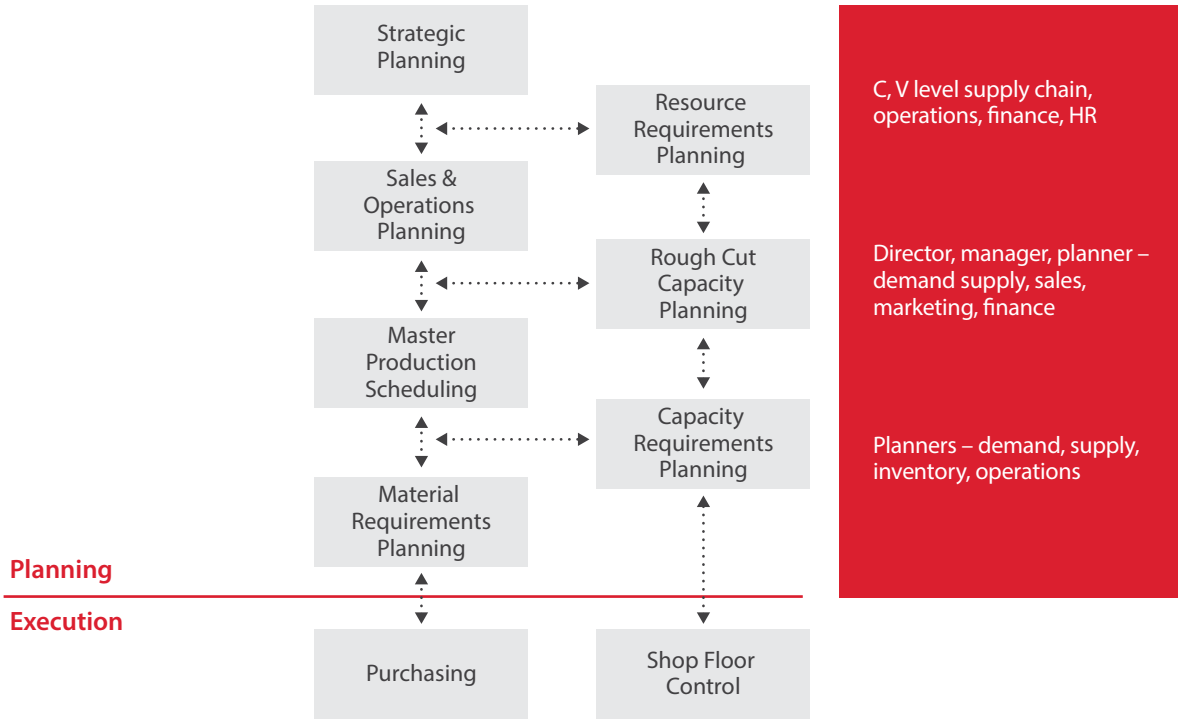


Figure 3 Planning hierarchy with roles and responsibilities

Capacity planners sit between demand (including product development), sales and marketing, and supply. The use of multiple systems separates capacity data and analytics, while regions and borders separate the people required for cross-functional conversations. Even if every planner was in the same room, questions around data integrity and calculated results would inhibit productive planning. Geographical separations only add to the complexity. All of these factors make it painful to communicate across functions and drive plans that support companywide goals and objectives.

HOW CAN YOU REMOVE THIS OBSTACLE?

Have one central place for collaborative planning. When all supporting data and analytics are in a single location, allowing for easy viewing and analysis by all planners, cross-functional conversations are easy, regardless of where everyone is located. Collaborative planning begins to feel more familiar, like Facebook, but with the power of supply chain planning rather than a bulky enterprise planning tool. As soon as any functional planner makes a change, others immediately see the impact and can collaboratively drive resolution through consensus and trade-offs. This ensures capacity planning processes support all objectives such as utilization targets as well as margin, delivery and revenue targets.

THE VALUE OF REMOVING THE OBSTACLES

By removing the capacity planning obstacles outlined above, and providing a single source for data, analytics and communication, you'll achieve key capabilities, including:

ON-DEMAND PLANNING

Explode through multiple tiers of the supply chain in minutes or even seconds, not hours and days

RAPID SIMULATIONS

Model plan alternatives and what-if analysis to understand the impact of proposed changes or unexpected events and capacity disruptions

SEAMLESS COLLABORATION

Allow all functions to work together and respond quickly during planning cycles and in course correct mode

END-TO-END SUPPLY CHAIN VISIBILITY

View current plans, performance to plans, and financial implications, and take timely action to course correct as required

AUTOMATED ALERTS

Receive prioritized notifications when plans aren't going as expected so you're aware something has changed and can immediately understand the impact

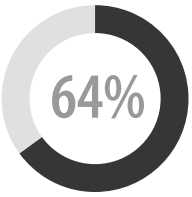
By removing the disconnect between capacity planning and the rest of the supply chain functions, you'll have the quick planning and response capabilities needed to address capacity challenges in time to avoid unfavorable conditions. A recent study by Appleseed Partners and Planview highlights the impact of not improving resource management and capacity planning. It shows poor capacity planning leads to failure to complete projects on time, increased project and production costs, and the inability for fast innovation.[3]

With so much disruption, it's easy to lose sight of capacity planning goals and jump into firefighting mode.

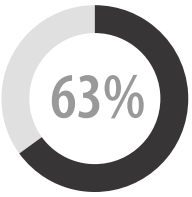
Organizations that excel at capacity planning:

80% act on new opportunities in hours instead of weeks

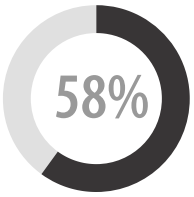
Organizations with poor capacity planning:



64% lack visibility into capacity



63% can't prioritize demand well



58% need better insight into demand

Volatility is present at all stages of the planning horizon. In some lean production or make-to-stock environments, you may enforce a frozen period, where there are no changes to the production schedule, to smooth production. However, in make-to-order environments, you're likely accepting customer changes well into execution. The same is true for industries such as aerospace, where the large number of engineering changes affects production schedules and capacity plans. With so much disruption, it's easy to lose sight of capacity planning goals and jump into firefighting mode. Solid capacity planning processes, free of obstacles, enable short planning cycles, quick decision support and positive business outcomes.

[3] Appleseed Partners and Planview, 2016.

MANAGING CAPACITY WITH RAPIDRESPONSE

Removing capacity planning obstacles doesn't have to be a challenge in itself. By implementing the best tool for the job, you'll be able to overcome any issues and speed your way to capacity planning success.

The ideal solution provides:

- Support for all levels of capacity management in a single environment
- Quick, effective planning cycles and the ability to manage planning activities across the entire horizon
- Assistance with data and capacity analytics on one platform
- Integration capabilities that pull data from multiple sources in near real-time
- Concurrent planning to seamlessly connect all functions, allowing for easy collaboration and scenario creation to quickly answer questions and respond to change

Kinaxis® RapidResponse® has all these abilities and more to support your capacity and constraint management journey. By connecting data, processes and people, you can identify and analyze constraint issues, whether it's in long- range planning, supporting the S&OP process or responding to unexpected changes at a daily level.

Figure 4 Dashboard with capacity metrics

RapidResponse lets you import capacity and load data to support planning for all work centers. In figure 5, you can see global resources in the hierarchy on the left, capacity / load profiles for any of those resources and who is responsible for managing the constraint, all in one place. Turning on constraints will provide immediate visibility to the impact on customer demands.

Figure 5 Constraint Manager

With all planning processes (demand, supply, inventory, capacity) managed in one solution, driving to a realistic capacity plan is no longer sequential. Pull one link in the supply chain and immediately understand the full impact on all other links. Drop in a new demand and instantaneously see the capacity implications. Simulate a machine breakdown and understand the impact on supply orders and customer commitments. Figure 6 highlights the impact of a demand increase on a key resource by conducting a what-if analysis and comparing the current state (annual plan) to a future state (increased demand). In seconds, you can see the impact on margin, delivery and utilization. This is concurrent planning with capacity planning added to the equation.

RapidResponse also lets you simulate responses. In figure 6, two resolution scenarios are being tested. The first uses an alternate source and and the second schedules work earlier than needed (preplanning). In each test case, delivery is improved but utilization and inventory turns take a hit. With this information you can quickly collaborate on a compromise and instantly share and score options with all involved.

This is concurrent planning with capacity planning added to the equation.

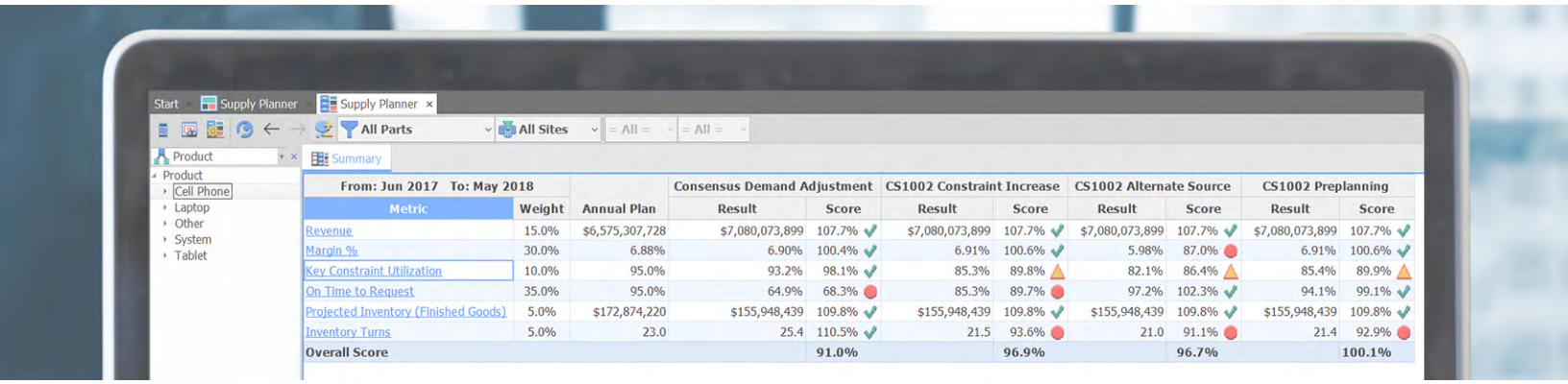


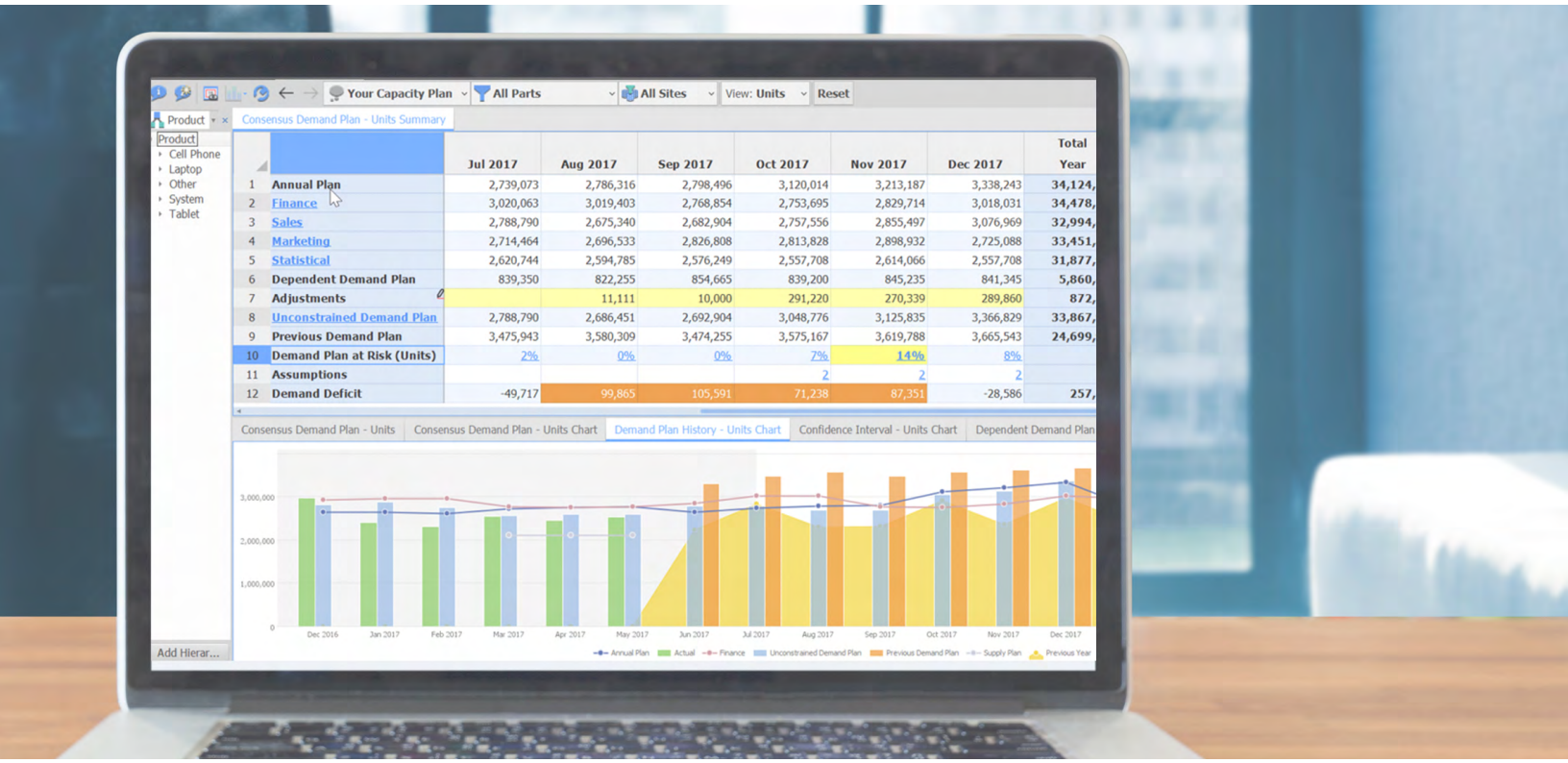
Figure 6 Scenario comparison in scorecard view

In cases where data may not exist in the ERP system(s), RapidResponse serves as the system of record. This is typical for capacity data. It also hosts all planning analytics. If a demand planner generates a new forecast using a statistical forecast model, everyone can immediately see any overloaded resources. The second a demand planner makes changes, BOMs are exploded, all order policies and allocation rules are applied and RapidResponse calculates capacity usage, providing immediate feedback and resolution options – for all users across all sites. In figure 7, the demand planner's view into constraints is line 10 (demand plan at risk). This is only possible by simultaneously considering capacity constraints during the demand planning process.

With RapidResponse, you're using the same data for all levels of capacity planning. Its reporting capabilities easily allow you to aggregate and disaggregate data as required. Unlike traditional approaches where each level of capacity has its own source, RapidResponse provides a unified, end-to-end view across the planning horizon, eliminating data integrity questions.

Dramatically reduce planning cycle times. Collaborate and simulate long-range planning strategies like adding resources, and short-range capacity strategies like increasing overtime. In any of these situations, you can assemble a dedicated team to work collaboratively on a plan or response to an unexpected event directly within RapidResponse – no more playing phone tag or trying to follow along with confusing email trails. Teams can communicate, share simulations and compare solutions seamlessly. RapidResponse provides the scalability and analytic power for large user communities to simultaneously evaluate different capacity scenarios and compare results against key metrics.

RapidResponse provides a unified, end-to-end view across the planning horizon, eliminating data integrity questions.



		Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Total Year
1	Annual Plan	2,739,073	2,786,316	2,798,496	3,120,014	3,213,187	3,338,243	34,124,
2	Finance	3,020,063	3,019,403	2,768,854	2,753,695	2,829,714	3,018,031	34,478,
3	Sales	2,788,790	2,675,340	2,682,904	2,757,556	2,855,497	3,076,969	32,994,
4	Marketing	2,714,464	2,696,533	2,826,808	2,813,828	2,898,932	2,725,088	33,451,
5	Statistical	2,620,744	2,594,785	2,576,249	2,557,708	2,614,066	2,557,708	31,877,
6	Dependent Demand Plan	839,350	822,255	854,665	839,200	845,235	841,345	5,860,
7	Adjustments		11,111	10,000	291,220	270,339	289,860	872,
8	Unconstrained Demand Plan	2,788,790	2,686,451	2,692,904	3,048,776	3,125,835	3,366,829	33,867,
9	Previous Demand Plan	3,475,943	3,580,309	3,474,255	3,575,167	3,619,788	3,665,543	24,699,
10	Demand Plan at Risk (Units)	2%	0%	0%	7%	14%	8%	
11	Assumptions				2	2	2	
12	Demand Deficit	-49,717	99,865	105,591	71,238	87,351	-28,586	257,

Figure 7 Consensus demand plan with risk due to constraints

Figure 8 Adaptive collaboration view

Here are just a few benefits of including capacity management in your RapidResponse concurrent planning processes:

- Reduced planning cycle times of up to 43% for S&OP[4]
- Support for both cadence-based planning and event-based response management
- Elimination of ad hoc spreadsheets, which are typical for capacity management
- Cross-functional collaboration for quick, effective evaluations of constrained operations
- Utilize high capital resources as effectively as possible
- More profitable and responsive production operations

With existing capacity tools, data and analytics exist in silos across multiple locations, leaving you struggling to collect, maintain and configure the information needed to support your capacity planning processes. Without a single, end-to-end version of your supply chain, collaboration is difficult and time consuming. RapidResponse lets you manage and connect all levels of data including demand, supply, inventory and capacity, from your existing disparate systems. You'll be able to easily collaborate across planning functions to satisfy long-term capacity planning requirements and overcome short-term capacity challenges, all from one single source of data.

4 43% reduction in S&OP cycle times – TechValidate.

WANT TO LEARN MORE?

Visit our website or contact us today to learn more about how RapidResponse can revolutionize your planning.

LEARN MORE

Kinaxis
Know sooner. Act faster.

PRODUCT SOLUTION RESOURCES ABOUT

HOME / SOLUTION / SUPPLY CHAIN MANAGEMENT APPLICATIONS / CAPACITY PLANNING (CONSTRAINTS)

Capacity Planning (Constraints)

Manage constraints on a global level with capacity planning solutions

OVERVIEW DETAILS AND BENEFITS PROCESS COMPONENTS

Generate a realistic supply plan that considers various types of capacity limitations.

In today's global supply chain it's a challenge to consistently balance demand and supply to exceed customers' expectations. It becomes almost impossible if you can't efficiently and effectively align your capacity resources to your planning processes, including S&OP down to detailed scheduling. The Capacity Planning (Constraints) application allows you to identify and analyze any possible problems involving constraints whether you are supporting your S&OP process or responding to unexpected changes in the supply chain.

TAILORED FOR YOUR BUSINESS

RapidResponse applications are based on best-practices and standard process flows established by our years of successful deployments at a multitude of world-leading manufacturers. The out-of-the-box Capacity Planning (Constraints) application enables a quick implementation and acts as an advanced starting point for a tailored solution that meets your company's unique needs. You will be able to immediately take advantage of the available workbooks, dashboards and scorecards to model constrained material and capacity, simulate changes impacting resources, collaborate with others on constraint issues, and align the management of constraints with your other business goals.

THE ADDED VALUE OF INTEGRATED APPLICATIONS

Among the greatest advantages of any given RapidResponse application is the ability to leverage it in conjunction with other applications as part of a broader, integrated solution. Depending on the need, significant added benefits can be achieved by using the Capacity Planning (Constraints) application alongside one or more related applications to ensure synchronization across interrelated planning processes. Companies that use the Capacity Planning (Constraints) application can achieve advantages and broader value by using it with connected applications such as (but not limited to):

ABOUT KINAXIS

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.

Kinaxis