



# **Orchestrating the chain**

Smarter supply chain performance  
management for life sciences companies

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## Abstract

The business value of supply chain visibility for life sciences organizations is simple: it helps you understand your company's performance. It leads you to take action on recent information, and creates a common context for decision-making across every department and at every level. For life sciences companies, the value of supply chain visibility goes beyond better insights into financial performance; it allows organizations to gain clearer insights into product safety and regulatory compliance issues.

Planning and business intelligence (BI) are an integral part of performance and regulatory compliance strategy management. These capabilities help you see what is going on in terms of operations and supplier processes. Your company gains the capability, visibility and intelligence to build an efficient and customer-focused supply chain that lowers costs and mitigates risks. Planning and BI provides the insight your organization needs to optimize the global supply chain – so you can anticipate problems before they happen, understand the reasons behind results and improve performance.

## Overview

In a fast-paced, highly competitive and increasingly regulated global economy, life sciences organizations cannot afford lackluster performance or besmirched reputations. They have to get the job done faster – under increasing regulatory scrutiny – and still maintain the highest levels of quality. Performance is especially critical now. When the economy is in a downturn, cost control, efficiency and agility are paramount.

The supply chain for life sciences companies carries an inordinate amount of business risk – and a commensurate level of regulatory oversight. Safety recalls are devastating for any industry. But in life sciences, insufficient capacity, out-of-stocks or even late delivery can have dire consequences. Increasingly complex supply

chains add to the challenge. A supply chain may have hundreds or thousands of interconnected contributors and processes (such as purchasing, transportation, inventory, production and customer delivery processes). And this network can increasingly reach around the world.

Orchestrating the chain requires more than just mastering logistics. The development and distribution of drugs is becoming just one part of a much larger and more elaborate supply chain. Life sciences companies have invested millions in ERP systems and supporting software applications to help them improve the performance of their supply chains. This approach has improved transaction efficiencies, and streamlined individual aspects of the network.

Yet for the volumes of data they generate, these systems have not delivered what supply chain managers for life sciences companies truly need – complete visibility across every aspect of their supply chain. A recent study by the IBM Institute for Business Value points to a new and critical imperative: supply chain intelligence.

*“As they reevaluate current supply chain strategies and initiatives, executives should ask: Which investments are simply making processes faster or more efficient? And which go a step further – making the supply chain decidedly more intelligent and resilient in times of unprecedented instability and risk?”<sup>1</sup>*

To keep all the elements in the chain running smoothly, life sciences companies have to see what is going on, what is most critical, what decisions they need to make and the impact these decisions will have up and down the extended supply chain.

## New intelligence for a smarter supply chain

The world we live in today is increasingly instrumented, interconnected and intelligent. We are experiencing a revolution, and information is at the heart of it. Life sciences companies that are taking advantage of this new wealth of information are able to make more intelligent decisions and are rising to the top. They're managing large volumes of information in real-time, incorporating analytics and predictive modeling, pervasively collecting and sharing information across the entire value chain and speeding time to value by delivering trusted, accurate and timely information to the right decision makers. IBM® Cognos® software is a prime example of how life sciences organizations can leverage this new intelligence to create sustainable competitive advantage through a smarter supply chain.

Life sciences companies are increasingly migrating away from the business model of relying on a blockbuster drug to selling therapeutic offerings that target smaller patient segments – and comprise more than just drugs. These solutions include diagnostic tests, monitoring mechanisms, sophisticated delivery devices and a wide range of support services – all potentially supplied by different partners. The implications for the supply chain are dramatic. To address this massive industry shift, life sciences companies will need a different kind of supply chain – one that is much smarter and far more:

**Instrumented**– Using sensors and “smart” devices allows life sciences companies to gain greater visibility across the supply chain, mitigate risk, reduce cost and manage rising complexity.

**Interconnected**– Life sciences companies can integrate the entire supply chain to share information, make decisions collaboratively and manage in real-time – and connect with suppliers and customers.

**Intelligent**– Relying more on advanced analytics, simulation and modeling tools allows life sciences companies to evaluate increasingly complex and dynamic risks and constraints and manage the supply chain more methodically, with visibility into real-time supply chain status.

Although the decline of the blockbuster model involves a difficult transition for the entire industry, the smarter supply chain presents life sciences executives with a tremendous opportunity: a way to tailor their operations to meet the needs of different markets, customer segments and regulatory demands.

IBM Cognos supply chain performance management solutions provide the complete range of BI and planning capabilities needed to build and manage an efficient, intelligent and customer-focused supply chain.

## Business problems

### Barriers to the high-performance, intelligent supply chain

There are many barriers to building a high-performance supply chain. Some of the most common: lack of visibility, regulatory requirements, unpredictability, incomplete information and local optimization.

**Lack of visibility.** Even the simplest supply chain generates a tremendous amount of data from its shop floor, manufacturing, quality management and ERP systems and supporting applications. This data lets managers perform deep dives into some aspects of their operations, and most ERP systems do provide basic reporting capabilities.

However, these reports are rarely flexible enough to address specific questions or immediate needs. Nor do they encompass the entire supply chain. The result is many siloes of information that do not enable clear insights into the supply chain. The ability to follow a process from raw materials to finished product to customer delivery is critical. Yet the sheer volume of data makes this difficult to achieve. There is also data from customers and suppliers and all of these data sources have their respective applications and data silos.

With this mass of data, it's difficult to focus on exceptions, problem areas and opportunities for improvement or competitive advantage. Managers also know they need better visibility into their customer needs. Most companies rank customer service as one of their highest priorities. Yet few actually collaborate with customers across key areas, from strategic planning and forecasting to inventory management and cost reduction. The result? A disconnect between the supply and the demand sides of the business.

**Regulatory requirements.** Today's pharmaceutical products increasingly relying on globalization and outsourcing, and increasingly depend on ingredients and material from across the world. Life sciences companies need the safest and most efficient supply chain possible to produce the highest quality drugs. Life sciences companies are under ever-increasing scrutiny to ensure compliance with regulatory requirements that can vary from country to country – and even vary by state, region or province within a given country. Understanding and being able to report on the complex supply chain is essential for the production process, but pharmaceutical companies are also now under increased pressure to manage the supply chain from the point of production through product delivery to healthcare providers.

National and local e-pedigree requirements increasingly require an auditable electronic record of every step taken by a retail package of prescription drugs as it moves from the factory to the final point of sale. This chain-of-custody record will increasingly be used to assure the integrity and safety of the drug supply, and life sciences companies must ensure ongoing compliance with evolving regulatory requirements for tracking and tracing pharmaceuticals throughout the distribution chain.

For example, in the United States some states – including California – have already enacted e-pedigree legislation, while others are considering new legislation. Life science companies serving markets that have already or plan to enact e-pedigree legislation must be able to implement processes and systems that will enable granular compliance with local traceability requirements worldwide, which are evolving rapidly.

According to Daniel R. Matlis, President of life science analyst and strategic advisory firm Axendia, “The globalization of manufacturing and supply of medical products have created unique and demanding challenges for industry and regulators alike. In recent years, issues such as Heparin, melamine and ethylene glycol contamination has brought the need for supply chain visibility and control to the forefront. In light of these events, life sciences companies and regulatory authorities are preparing to take significant steps to secure the global supply chain. For example, the United States Food and Drug Administration (FDA) plans to increase its oversight over the global supply chain to ensure safety and security. This will prevent potential harm to the public by detecting and correcting safety issues before products reach the patient.”

According to Matlis, the FDA plans to “Implement new approaches and conduct new activities to effectively regulate the global supply chain. The priorities proposed in this initiative will assure the safety and security of foreign and domestic sources of ingredients, components and finished products at all points in the supply chain, including their eventual use by American consumers.” Axendia also conducted recent interviews with executives in leading pharmaceutical and medical device companies who described the need for strong supply chain security strategies and how this benefits both patients and industry by:

- Preventing adulteration
- Preventing and detecting counterfeits
- Preventing product diversion

“Supply chain security is the responsibility of all parties involved in procurement/sourcing, manufacturing, packaging and distribution of raw materials, intermediates and final product,” explained Matlis. “However from a regulatory perspective,

the company who's name is on the product – the authorized license holder – is responsible for assuring that links within the global supply chain fulfill their responsibilities for delivering safe and effective medical products. [For more information, read this [article](#) by Axendia.]

**Unpredictability.** The more confidently a manager can predict demand, quantity, costs and targets, the better they can secure suppliers and build processes. Life sciences companies need the ability to react based on increased demand levels for a given country so they can proactively identify and manage the risks of product diversion and the prevention of the availability of gray market drugs and the re-importation of exported drugs. [For more information, read this article by [Axendia](#).]

Unpredictability causes variation between expected and actual results. Left uncorrected, the problem is likely to reoccur with continued detrimental impact on the supply chain. Usually, this is because the root cause of the variation can't be found and the process isn't fixed. When this happens, managers fall into a constant game of catch-up – moving resources and materials around at the last minute, rather than proactively driving performance.

**Incomplete information.** Lacking the time to fully analyze and understand a problem, managers have no choice but to make hasty decisions based on pre-configured ERP reports that provide a historical or partial view of the issue. These reports help managers solve their immediate problems, but prevent them from making improvements that can lower costs or improve efficiency on a larger scale.



**Local optimization.** Organizations are spreading supply chain operations across the globe. Yet much optimization is still done at a local level to ensure compliance with national regulatory standards. Few life sciences companies make global optimization a top priority or allocate human resources to achieving it. This localized approach to optimization is to be expected, given that most managers see silos of information rather than a complete, integrated view. Also, without a clear link to strategy, managers can't see or predict the impact their actions will have further down the line. Their actions can bring about delays, cost increases or shortfalls that ultimately impact customer satisfaction.

## Business drivers

### Overcoming barriers with supply chain performance management

IBM Cognos supply chain performance management solutions encompass the complete range of BI and planning software, including scorecards, dashboards and event management.

#### *Visibility*

IBM Cognos performance management software provides organizations with complete visibility into and across their supply chain. It can bring together data residing in different systems and at multiple levels of granularity. Managers can monitor performance at the global level, analyze results across processes, products or suppliers, and drill down to transaction-level detail. They can identify key metrics, measure performance and receive alerts when performance is off-track and make immediate corrections.

#### *Predictability*

With supply chain performance management, future results become more predictable. Through regular reporting and analysis, managers can identify events, trends or other conditions that lead to problems. This helps them become proactive and eliminate problems before they occur. Managers can analyze trends in operations, and build financial models and sales forecasts that help them make better decisions about resources and suppliers as well as new products. They can

*“Ordinary companies apply cost reduction techniques within individual functions (such as transportation or manufacturing), but top ones apply lean-management tools throughout the supply chain.”*

*McKinsey<sup>2</sup>*

drive effective sales and operations planning (S&OP) to integrate demand with supply and financial plans. Companies can also take pre-emptive action to prevent inventory shortfalls, delays and other events that hurt performance.

#### *Complete information*

IBM Cognos software provides managers, partners, suppliers and customers with the complete and consistent information they need to produce meaningful and actionable analysis. Reports, analysis and other information can be distributed through a centralized portal or extranet. Effects of decisions can be evaluated so managers can make better decisions. Complete information enables better collaboration. If a flaw or delay is identified, managers, suppliers, partners and customers can be alerted and work out a collaborative solution.

#### *Global optimization*

IBM Cognos performance management solutions provide the cross-functional visibility into supply chain performance that helps managers in life sciences companies see beyond individual data silos. Cause-and-effect relationships and clear links to strategy are made visible, so managers can see and understand the impact of their decisions up and down the line. In addition, data integration, multilingual, multi-currency capabilities and proven scalability enable deployments that span products, countries, languages and currencies.

## The solution

### How it works

IBM Cognos software helps life sciences organizations answer the fundamental questions in supply chain performance management: *How are we doing? Why? What should we be doing?* Managers need to answer all three questions to manage performance effectively. Without knowing how they're doing, they can't be proactive; they must constantly react. Without knowing why, managers can't identify problems or make improvements. Without knowing what they should be doing, managers are forced to act in a vacuum; they can't understand the impact of their decisions or see opportunities for change.

### How are we doing?

To assess how they're doing, managers can use scorecards and dashboards separately or together, depending on their specific business goals. However they are used, both capabilities help them look across their data silos to assess performance across departments inside and outside the company, and across regions and products. Scorecards and dashboards are also interactive. When results or events exceed a threshold, managers can seamlessly drill-through to supporting reports and analysis to find out why.

#### *Dashboards*

Dashboards are real-time, visual snapshots of the supply chain. They provide a high-level overview of performance across any number of key areas – including supply chain cycle time, shipment performance, quality and supplier response. Managers can use dashboards to monitor supplier performance by a specific metric, such as rates of on-time delivery. They can use them to map and monitor a process from start to finish. Dashboards also provide immediate, exception-based information on critical metrics that require attention. Results are presented using gauges, maps or other intuitive displays.

#### *Scorecards*

Scorecards also let managers throughout life sciences companies monitor performance across key performance indicators (KPI), but they provide an extra level of detail by displaying results against pre-established targets and by plotting changes in performance as neutral or as part of a trend.

Managers are easily directed to the indicators that need immediate attention or are getting worse, so they can set up initiatives and projects to correct or improve performance. In addition, scorecards help managers understand how their supply chain supports strategic goals. This knowledge helps them set up and monitor the appropriate KPIs and ensure that end-to-end activities support these goals. Scorecards also support the Supply-Chain Operations Reference-model (SCOR) developed by the Supply Chain Council. The SCOR model provides a framework that links processes, metrics, best practices and technology to improve supply chain management.

A scorecard can integrate SCOR elements, allowing managers to monitor processes and measure supplier performance based on industry standards. The IBM Cognos SCOR Blueprint is a scorecarding application that includes more than 400 predefined metrics and linkages to the SCOR Performance Attributes. The IBM Cognos SCOR Blueprint provides:

- A comprehensive metrics approach that includes a predefined metrics database and impact diagrams.
- Standard performance reports and analytics, as well as alerts.
- Insight into underperforming metrics.
- Defined metrics ownership and responsibility.

### **Benchmarks and your supply chain**

Benchmarking allows you to compare the metrics of a process or method against an industry standard (such as the SCOR model) or another company best practice. The challenge is knowing how to define and use benchmarking data most effectively to improve supply chain performance. AMR Research offers seven success factors:

- **Keep your eye on the end-to-end goal.** Focus on the entire supply chain rather than a particular aspect.
- **Select the right metrics.** Clarify the purpose of the benchmark to help you focus on the best metrics.
- **Define a feasible scope.** Find a level of granularity that is manageable and meaningful.
- **Compare based on supply chain characteristics, not products.**
- **Get the process right.** Use the right resources and be realistic about time-frames.
- **Turn the data into action.** Use interdependencies between metrics to determine the most appropriate improvement projects.
- **Make it sticky.** Ensure benchmarking measures are usable and sustainable over time.

*“Measuring performance and periodically benchmarking it are critical components to the ability to excel over time. The best companies do this right. However, while doing all of this is important, good processes and governance will only get you halfway there. Most important in this effort is the clarity that you are benchmarking to improve end-to-end supply chain performance in the context of company goals and making it an ongoing process to drive continuous improvement.”<sup>3</sup> Read the full AMR Research report: [Benchmark Your Supply Chain: Seven Factors for Success](#).*

### *Event management*

Event management provides proactive alerts to supply chain managers when either a predetermined business situation or an unusual event occurs—such as a material part shortage, quantities rejected or customer shipments at risk. Life sciences companies need the ability to proactively identify quality issues and perform root cause analysis for Corrective and Preventative Analysis (CAPA) investigations. Alerts are also delivered through email, mobile devices, dashboards and portals to provide further information that managers can use to correct the situation. This provides them with the complete information they need to take action and resolve issues at the earliest possible instance. Event management can also track the progress of measures implemented to correct a problem.

### **Why?**

When they understand the why behind results, managers can identify problems or make improvements. Reporting and analysis lie at the heart of IBM Cognos supply chain solutions. Combined, these capabilities extend the visibility provided by scorecards and dashboards to let managers explore and analyze their supply chain performance at any level of detail, and combine it in ways that extend beyond the capabilities of most ERP systems. Both capabilities are interactive and can provide direct access to supporting detail, further analysis, scorecards or the transactional systems themselves.

### *Reporting*

Like dashboards, reporting provides up-to-the-minute views into key supply chain areas that can be shared across portals and extranets. However, reports also provide greater detail and context about suppliers, throughput, inventory and other areas, as well as the ability to perform ad hoc queries to find answers that aren't readily apparent.

Using sales pipeline reports, for example, managers can forecast the impact of changes and adjust production plans based on anticipated sales volumes. This will ensure they have the capacity to deal with demand, while at the same time ensuring the right inventory levels. With reporting, managers can:

- View exception reports to understand critical issues in the supply chain.
- Build ad hoc reports on any aspect of performance without the need for IT intervention.
- Identify the processes and operations that generate unfavorable variances.
- Reconcile inventory, production and demand information to meet customer demands.
- Report on performance by department, employee, process, customer, supplier and operation.

#### *Analysis*

Analysis lets managers explore and assess current issues, successes or problems in the supply chain to understand what led to the results. According to Axendia's Matlis, "This helps them better understand the factors that contribute to poor performance and take actions to resolve them. Managers can identify cost reduction areas, root causes and areas for performance and productivity improvement. Most CAPAs are attributed to changes in standard operating procedures or operator retraining, yet 93% of issues recur because companies are not discovering the true root causes of problems in the supply chain." [For additional information, see the Axendia research reports [Managing the Total Product Lifecycle](#) and [Quality Management System Trends in Life Sciences](#).]

Managers can also bring together performance data from every aspect of their supply chain and combine it in different ways to find the point where production, forecasts, supplier performance and other elements intersect to provide the greatest gains. With analysis, managers can:

- Redistribute inventory to respond to increased customer demand in a different region.
- Identify under-performing suppliers.
- Focus on logistics performance to improve delivery and reduce costs.
- Reassess and optimize the product mix for a specific region.

#### *Data integration*

Given the numerous applications that an organization implements to support its supply chain process, it is increasingly difficult to bring information together to gain a supply chain process view. Life sciences companies need to understand data throughout the supply chain so they can develop a single version of the truth to understand and manage the supply chain.

Supply chain performance management provides a common metadata model that applies consistent business rules, definitions and calculations to the data, regardless of its source or structure. Information can be collected from any of the multiple applications used throughout the business. This means managers can move confidently across data and applications to find answers without being limited by incompatible data formats or conflicting definitions. They gain a common performance management view across the entire supply chain, regardless of the transaction applications they use. Managers spend less time looking for the right information and spend more time making – and acting on – fact-based decisions.



**What should we be doing?**

Enterprise planning capabilities provide life sciences companies with the predictability they need into the high-performance supply chain. Planning offers an environment for managers, suppliers and partners to collaborate on forecasts and see the effects of different business scenarios – to model and determine the best fit between operational goals, financial targets and channel management.

Cross-functional teams can set plans, allocate resources and monitor usage, and they can validate supply chain practices and adapt as needed. Everyone works collaboratively to define goals, create forecasts and evaluate alternative scenarios to maximize operational effectiveness. Managers have better and more timely visibility into plans, plus the ability to compare them to actual results to see whether they are off-track so they can take the appropriate actions.

Plans can be evaluated and realigned – daily, if required – as business conditions change. This helps suppliers and partners readjust their own plans to avoid shortages or stoppages. Ultimately, this means better alignment of plans with current and forecasted market conditions, and more control over financial and operating performance. A recent study by McKinsey bears this out. Organizations with high-performing supply chains tend to use common management best practices; one of which is integrated planning.

These companies “*tightly integrate forecasting, supply planning and production-scheduling processes. [...] They are twice as likely as ordinary companies to use planning and performance information to adjust inventory levels and storage locations dynamically.*”<sup>34</sup>



### **Sales and operations planning**

Organizations need enterprise forecasting and planning capability to effectively coordinate both market needs and the capabilities of the business.

The *IBM Cognos Sales and Operations Planning Performance Blueprint* integrates planning activities across finance, operations, production, purchasing, sales and marketing. It complements existing ERP and supply chain applications, and provides a multi-year view so companies can identify the best scenarios and use their transaction systems to execute them.

Using a common platform and workflow, departments coordinate their sales and production plans. For example, sales and marketing departments forecast product demand and revenue, and plan campaigns. At the same time, schedulers carry out capacity, cost and throughput modeling of products and plants to determine the right combinations.

Production can create a demand-driven supply plan and identify capacity, labor and materials requirements so they can meet demand. As well, the supply organization evaluates supplier capabilities in-line with materials and builds plans.

Once they're rolled up, management and finance teams review, analyze and align plans with corporate goals and objectives. Using this coordinated process, managers can reconcile sales and demand forecasts with supply plans and financial goals. They can build a multi-year financial and operational plan to simulate P&L, balance sheet and cash flow implications for demand and supply. There is also more time for analysis and rolling forecasts. Since the organization can quickly adjust plans and targets as needed, it stays on top of market changes or new opportunities and issues, such as supply chain disruptions.

## Conclusion

### Implement a smarter supply chain solution

The smarter life sciences supply chain keeps customers – wholesalers, governments, hospitals and pharmacies – stocked with the products they need to meet uncertain patient demand. It works to replace the inventory management guessing game with facts and real-time adjustments.

It does so by connecting with suppliers, manufacturing and distribution partners, and especially customers. With clear line of sight to the first paying customer, the smarter life sciences supply chain can better determine where to locate inventory and in what amount. Upstream visibility allows it to make real-time adjustments to production and distribution, optimizing inventory around the world and avoiding costly stockpiles in markets with little demand.

Interconnectivity also allows the smarter supply chain to synchronize production schedules across sites to minimize idle periods and shorten end-to-end cycle time. This is particularly important with increases in the number of complex treatment solutions that involve multistep, multisite, multipartner manufacturing and assembly processes.

Smarter supply chains help life sciences companies segment and serve a diverse customer base, proactively gathering and analyzing information to develop a deeper understanding of each segment's specific needs. Close collaboration with wholesalers, governments, hospitals and retail pharmacies is critical to serving those customers better, and it helps ensure regulatory compliance and deliver greater visibility into quality.

Perhaps more importantly, smarter supply chains help companies capitalize on the tremendous revenue opportunity found in emerging markets. Through greater supply chain visibility, companies can synchronize supply with varying levels of demand around the world. And more advanced customer insight allows firms to tailor their products and distribution channels to meet market-specific needs.

A life sciences company can no longer rely on siloed reporting, analytics or planning to manage their supplier networks. IBM Cognos supply chain solutions enable an integrated approach to supply chain management. Organizations can create a management plan that links top-level strategy with departmental plans. S&OP serves as the basis for aligning sales, marketing, supply chain and finance. Using metrics (often based on the SCOR Model), management can monitor end-to-end supply chain performance. And plans can be adjusted as needs change.

Finally, the reporting of actual results provides visibility into performance in relation to targets and external benchmarks, creating a closed-loop supply chain performance management system. With IBM, life sciences organizations have comprehensive insight across applications and data sources to help them manage today's increasingly complex supply chains.



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## About IBM Cognos BI and Performance Management

IBM Cognos business intelligence and performance management solutions deliver world-leading enterprise planning, consolidation and BI software, support and services to help companies plan, understand and manage financial and operational performance.

IBM Cognos solutions bring together technology, analytical applications, best practices, and a broad network of partners to give customers an open, adaptive and complete performance solution. Over 23,000 customers in more than 135 countries around the world choose IBM Cognos solutions.

For more information, visit [www.ibm.com/cognos/lifesciences](http://www.ibm.com/cognos/lifesciences).

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### Endnotes

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