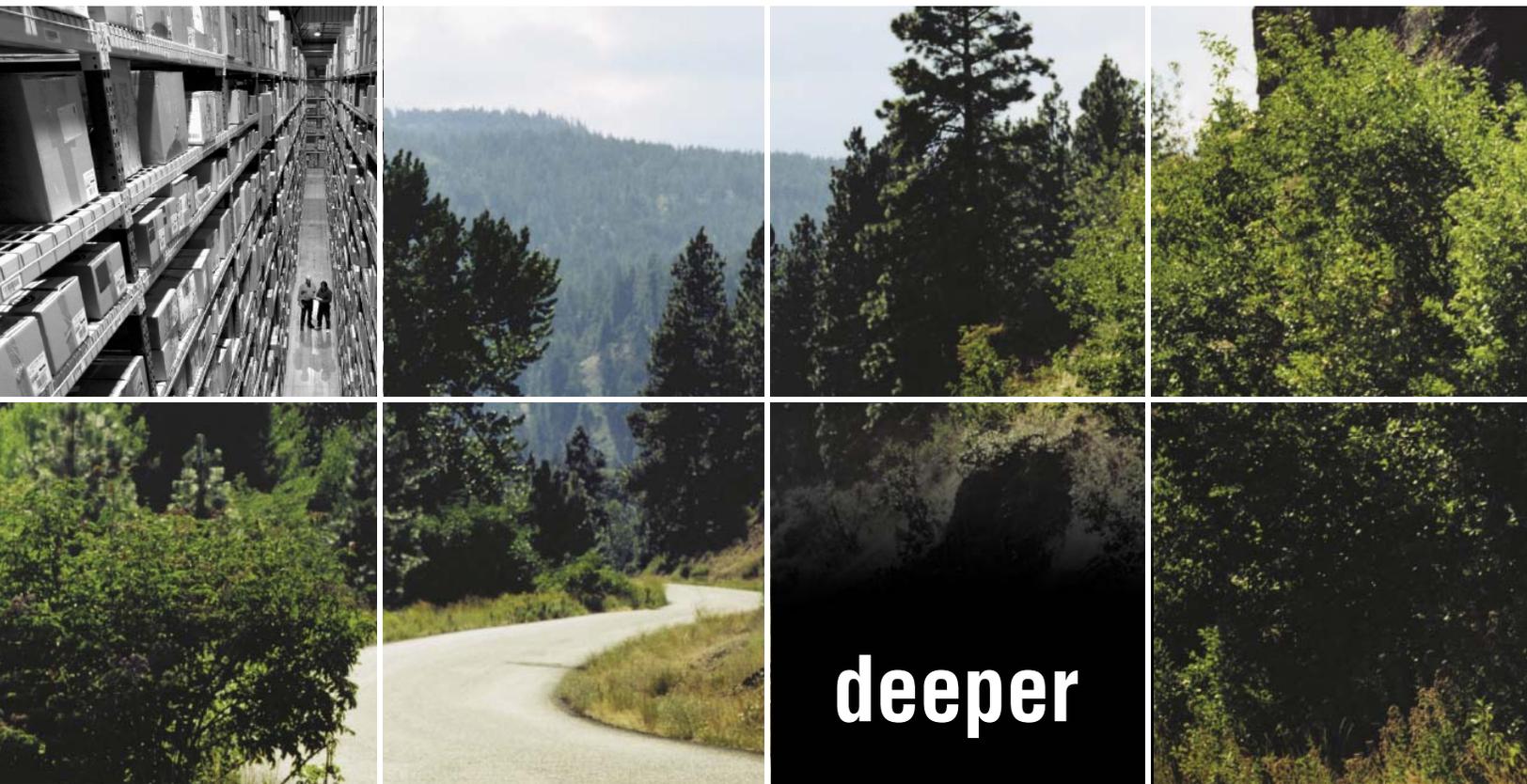


## Transforming your supply chain to on demand

*Competitive advantage or competitive necessity?*



*An IBM Institute for Business Value executive brief*

The IBM Institute for Business Value develops fact-based strategic insights for senior business executives around critical industry-specific and cross-industry issues. Clients in the Institute's member forums benefit from access to in-depth consulting studies, interaction among a community of peers and dialogue with IBM business consultants. This executive brief is based on an in-depth study created by the IBM Institute for Business Value. This research is a part of an ongoing commitment by IBM Business Consulting Services to provide analysis and viewpoints that help companies realize business value. You may contact the authors or send an e-mail to [iibv@us.ibm.com](mailto:iibv@us.ibm.com) for more information.

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## Transforming your supply chain to on demand: Competitive advantage or competitive necessity?

Today's industry leaders have to be able to see past curves in the road to successfully maneuver around what lies ahead. That's why many are moving away from a static supply chain and making the journey to a dynamic and responsive on demand supply chain. An on demand supply chain moves beyond a company's four walls to the extended enterprise – integrating all parts of the company with itself as well as with partners, suppliers and customers. Sense-and-respond capability enables companies to respond with agility and speed to virtually any customer demand, market opportunity or threat.

On demand. It's the road to the future, and the future is now.

### *The evolution of supply chains*

Over the last two decades, major changes in supply chain management have been driven by some common trends:

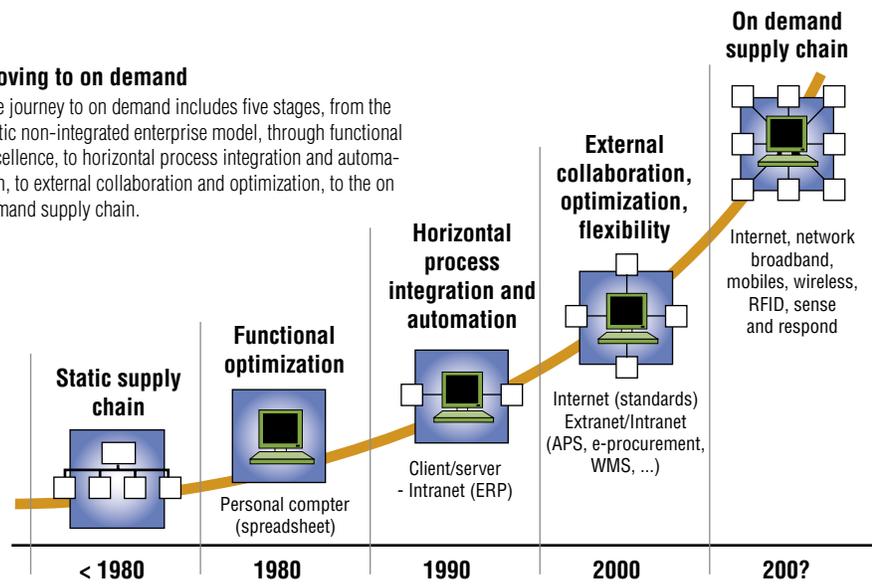
- Customers have become ever more demanding
- Product lifecycles have shrunk dramatically, and, as a result, speed-to-market and successful product innovation have become critical to corporate success
- Supply chains have become increasingly more global and complex, presenting greater challenges in managing supply and demand
- Companies have dramatically increased their use of global sourcing partners for cost and capability reasons, extending the number of players involved in delivering value to a customer
- Starting in the late 1990s, companies increased their use of e-business
- Cost reduction has been on the top of most manager's minds.



**Figure 1. The on demand maturity model.**

**Moving to on demand**

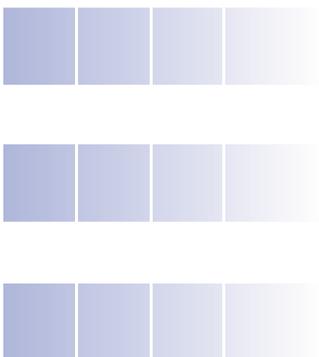
The journey to on demand includes five stages, from the static non-integrated enterprise model, through functional excellence, to horizontal process integration and automation, to external collaboration and optimization, to the on demand supply chain.



Source: IBM Institute for Business Value, 2003.

The e-business wave that started in the late 1990s saw the rapid growth of collaborative initiatives outside a company’s four walls in areas such as customer self-service, e-procurement systems, advanced planning hubs and collaborative logistics. This trend is set to continue as companies seek to get closer to their customers’ actual demands while reducing inventory levels, operating costs and order-to-delivery cycle times in today’s tough market conditions.<sup>1</sup>

The turbulent market conditions and competitive environment of the early twenty-first century have raised the stakes for supply chain further, and supply chain is set once again to become a key competitive battleground. New customer and distribution channels are being created, enhanced by new technological innovations and geographical expansion. Existing channels are under pressure and require constant change to retain market position. Customers are becoming more demanding, and their expectations are evolving toward greater levels of service and response with higher degrees of product and service customization. Empowered customers expect on-time delivery, self-service with realtime order configuration and status information, and optimally priced product/service bundles.



Current margin pressures are severe, and supply chain performance is focused increasingly on the overall business impact and shareholder value. This change is creating an urgent need for companies to reduce the fixed costs and capital requirements of their supply chain operations. They can do this by moving to a more “variable” cost structure tied directly to customer demand.

While some company leaders struggle with the changes discussed, a few visionaries have stretched the boundaries to implement innovative game-changing new standards of service for their customers. They are accomplishing this by transforming their supply chains to on demand.

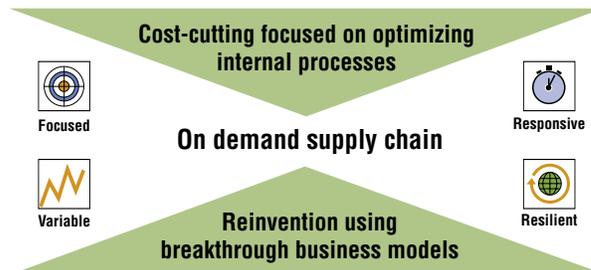
***Creating competitive advantage through on demand supply chains: Today’s reality and vision of the future***

**Managing supply chains on demand**

Companies today are placing more emphasis on the supply chain to transform their business model. They are radically changing the way that the organization senses, thinks, interprets and reacts.

More and more, successful companies are organizing their supply chains horizontally (as opposed to the traditional vertical functional silos) and orchestrating end-to-end extended supply chains, or value chain networks, integrating inside and outside of the four walls with the extended enterprise.

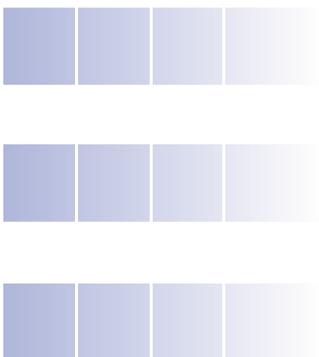
**Figure 2. Features of on demand supply chain management.**



Source: IBM Business Consulting Services analysis, 2003.

An on demand supply chain:

- Has the ability to dynamically respond to changes and conditions faster than traditional supply chains to truly achieve competitive marketplace positioning
- Is supported by applications and an open architecture that can enable instant or realtime, accurate information visibility inside the company, as well as outside its four walls
- Uses realtime information to sense shifts in the marketplace and dynamically redirects resources to address these shifts



“Companies that have been hugely successful...are great not because they were focused on cost or flexibility or speed, but because they have the ability to manage transitions, changing market conditions, evolving technology, and different requirements as a product moves through its life cycle. The companies that can adapt are the ones that will be here for the long term.”<sup>2</sup>

*Supply Chain Challenges:  
Building Relationships,  
Harvard Business Review*

- Is adaptable and can seize market opportunities based on real demand and market conditions, not just perceived demand
- Has the ability to help ensure that costs are variable and can move up or down, based on revenues.

During revenue growth times, the costs will go up. But if revenue declines, then the costs should go down accordingly. Finally, an on demand supply chain shares risk with suppliers, partner and others rather than leaving the enterprise to absorb shifts in supply and demand directly.

### Developing the competitive advantage

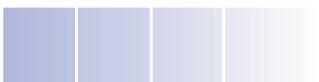
Companies need to envision the future and prepare accordingly. To thrive in an increasingly turbulent market environment, companies need to transform themselves into even more responsive organizations. They need to connect their supply chains end-to-end with suppliers, contract manufacturers, trading partners and customers – creating an on demand supply chain.

Organizations now have to be fully equipped to meet the challenges for today's supply chains. This means both mastering the traditional building blocks of supply chains and developing advanced supply chain capabilities.

Many companies have embarked on this journey, some through point initiatives and some as part of a grander vision. Based on IBM knowledge and the knowledge of what supply chain leaders in various industries are planning and doing, we have identified the strategies that successfully competitive supply chains are using:

- Innovative supply chain vision
- Focus on differentiating competencies
- Dynamic global sourcing and demand synchronization
- Radical new service chain models
- Use of e-business on demand technologies.

*Innovative supply chain vision* – The winners in today's competitive landscape will deploy smart supply chain models that deliver game-changing standards of service at competitive cost. They will connect the end-to-end value chain and differentiate supply chain approaches based on product/customer segments (e.g., postponement strategies, merge in transit, configure to order). Successful innovation is the key driver for revenue growth, competitive margins and, in some cases, even

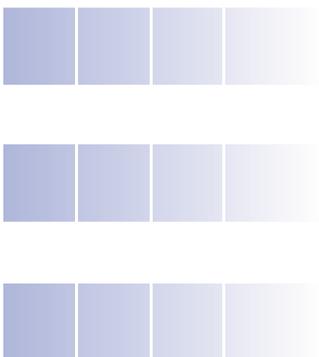


survival. Increasingly, this innovation has to be delivered through a virtual network of partners working together in a collaborative environment to bring product and services to market faster, smarter and cheaper.

- A global consumer packaged goods company was seeking a solution to more effectively deal with its many trading partners. For companies like this one that grow through acquisitions and inherit a tangle of disparate systems and processes, the way to move forward is through an integration hub. The hub offers an infrastructure that integrates inherited and legacy systems and allows a “plug in” of new applications in the future. It also provides a single gateway to manage information flow between a company and its partners. It’s a classic “think big, start small, scale fast” initiative.
- An aerospace company is using design collaboration to produce its new jet at half the cost. Designers from key partners will utilize a common hardware/software platform to collaborate on design issues. The platform will be deployed on an as-needed basis.

*Focus on differentiating competencies* – The trend toward global sourcing and increasing use of partners for supply chain activity is set to continue, fueling the growth of networked value chains. Driving this trend is the imperative not only to seek unit cost advantage and secure best market capabilities, but also to share risks with partners and create a “pay-as-you-use” variable supply chain model. Collaboration with trading partners is becoming a new core competency. This trend creates new commercial gain-sharing models and changes supplier relationships as well as operational processes. Operations excellence in managing all supply chain functions remains a foundation for any world-class supply chain. However, a new perspective on operations excellence is required, not only in what a company does but also in what a company’s supply chain partners do and how a business orchestrates them.

- A high technology manufacturer of components has developed a globally sourced or contract manufacturing environment including sourcing and distribution in Europe, Asia and the United States without developing additional capacity in sales or product development. This action has increased asset utilization while lowering the costs of production up to 15 percent.
- A leading telecommunications provider is reconfiguring and scaling its supply chain network to on demand. A manufacturing network extranet is used to connect the company to its contract manufacturers, suppliers, distributors and logistics partners to create a virtual and collaborative supply chain while allowing management to focus on market and customer conditions (e.g., R&D, sales and marketing). Almost 70 percent of the products ship without the company’s physical involvement due to virtual coordination and management of the supply chain network.



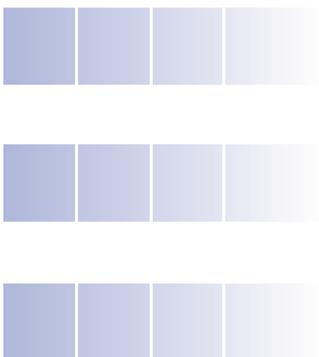
*Dynamic global sourcing and demand synchronization* – Global sourcing patterns will continue to shift dynamically in search of lower cost sources. In addition, companies will continue to rationalize and harmonize their own global value chain resources in search of more efficient and effective means of satisfying global customer demands. Fast, flexible, efficient and transparent response to changing end customer demands and supply shocks remains the goal for supply chain management and will be essential to compete in this new world. Shifting to customer-driven supply networks can accomplish this goal, with demand and supply management driven in realtime by critical demand and with supply events supported by customer self-service capabilities and end-to-end supply chain visibility and decision-making.

- IBM Corporation is implementing a sense-and-respond and supply chain event management prototype at its MicroElectronics Division. Sense-and-respond monitors deviations from forecast, inventory and supply to optimize forecasts and build plans and assess risks to cost of goods sold, inventory days of supply and customer on-time delivery performance targets.

*Radical new service chain models* – Radical new service chain models for after sales service and spare parts are emerging (e.g., fly-by-the-hour in the aerospace industry, managed networks in telecommunications, spare parts global sourcing), driven by customer demands and profit imperatives. These are blurring the boundaries between manufacturer and customer and increasing the need for connectivity across the whole value chain.

- An automotive company is developing a new variable business model through reorganizing and global sourcing of its spare parts supply chain to a global partner, formulating an engineering group to provide engineering services to the international automotive industry and using global sourcing for manufacturing of its most volatile product line.

*Use of e-business on demand technologies* – Innovative new technologies, such as Radio Frequency Identification (RFID), continue to emerge that enhance and transform supply chain capabilities and afford new ways to deliver and finance technology infrastructure on a “pay-as-you-use” basis. e-business on demand™ will be a critical enabler that delivers new capabilities, enhances returns on investment and supports fast, modular implementation of supply chain concepts across multiple value chain partners.

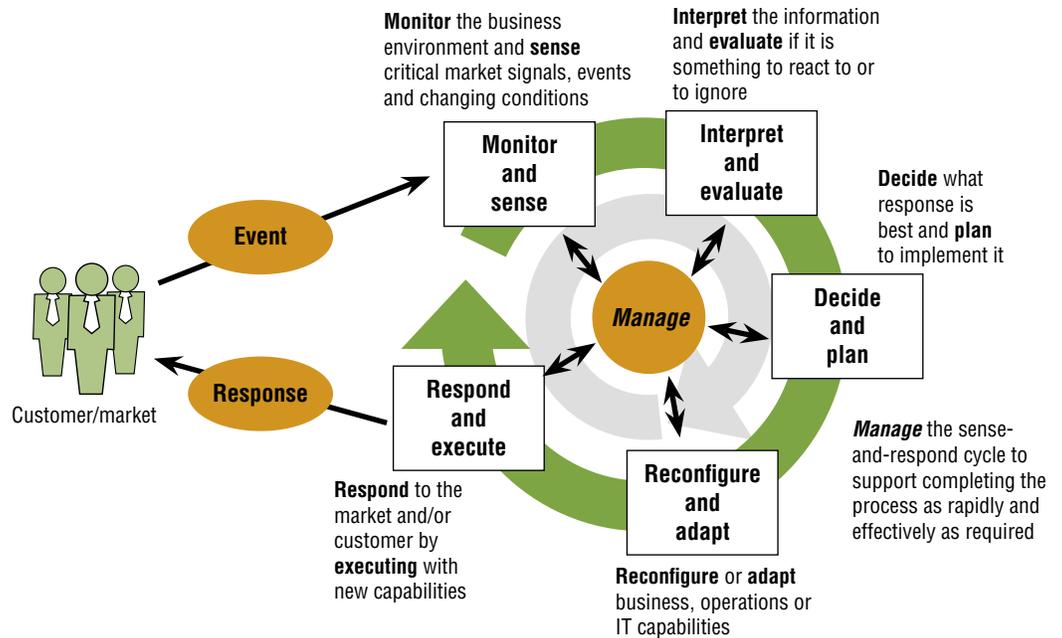


- A major retailer created a supply chain that is driven by customer demand and supply chain events. First to implement supplier electronic collaboration, which was extended to Vendor Managed Inventory (VMI), this company is now using RFID tags and scanners for inventory management, auto-replenishment and loss prevention.

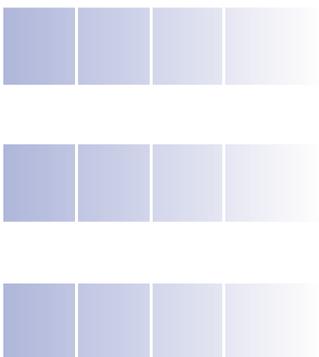
***Sense-and-respond – an approach to creating a responsive supply chain***

The new agenda calls for companies to leverage the supply chain as a competitive weapon to gain business advantage. Accomplishing this requires companies to transform or reinvent their supply chain activities using breakthrough business models and new operating constructs. Doing so enables companies to adapt rapidly to unpredictable supply chain events and events requiring exception management or a rapid decision. Responsiveness refers not only to the ability to sense and respond to wide fluctuations in demand, but also to the ability to meet shorter lead times, produce a wide variety of products, innovate faster and meet a very high service level.

**Figure 3. The sense-and-respond organization.**



Source: IBM Business Consulting Services analysis, 2003.



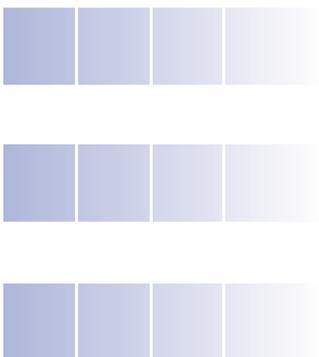
A sense-and-respond company should consider the following breakthrough business models:

*Supply chain visibility* allows end-to-end visibility of all supply chain transactional event and performance information. Executive and operational dashboards are developed to aggregate and synchronize information and support collaboration. Workflows are integrated into the information flow to model where critical decision points reside in the supply chain processes and to determine targets and thresholds for event notifications. End-to-end visibility of supply chain activities and information supports exception management and adaptive planning and execution.

*Aligned measurements* are consistently and continuously measured throughout the end-to-end supply chain. These measurements are used to determine how well the supply chain is performing through key performance indicators (KPIs) with targeted results. The measurements are used to gauge supply chain performance regarding all constituents on a regular basis (e.g., daily) and to monitor key events or groups of events affecting targeted expectations. An example of this would be on-time customer delivery performance. Performance management tends to view the KPIs and look at trends in supply chain performance across multiple functions. Sense-and-respond capabilities add the ability to monitor discrete events, make decisions based on business rules and even recommend responses, some of which may be transactional changes (e.g., reorder quantities).

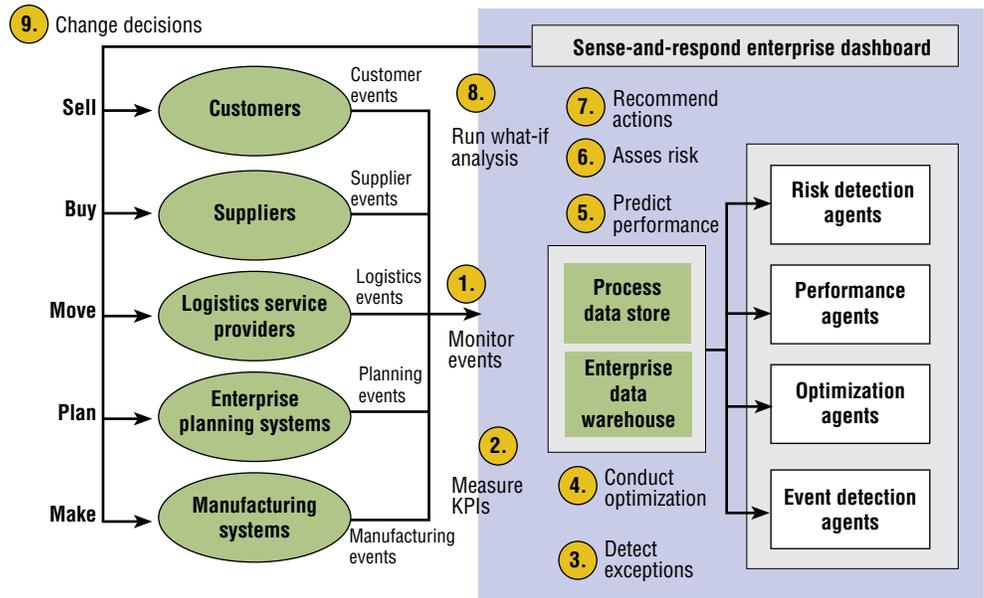
*Adaptive planning and execution* consists of proactively monitoring and observing ongoing supply chain information to identify potential “out of tolerance” situations as soon as they arise. This action provides the ability to monitor, manage and optimize business exceptions across the end-to-end supply chain with only limited need for human intervention. It is used to assess business trade-offs and optimize supply chain performance between planning and execution based on realtime information. The sensed event may become an exception based on standard rules and thresholds for performance. The organization is supported by an adaptive management governance focused on horizontal process synchronization and optimization. Governance is performed on the basis of context and coordination by people who are accountable for outcomes rather than by management command and control.<sup>3</sup>

*Event management* is the ability to detect exceptions in business processes and alert affected parties to drive resolution. Realtime exception management through alert messaging is proactively used to warn decision-makers if an action must be taken or if a trend is emerging. Once the exception is detected, the event is analyzed



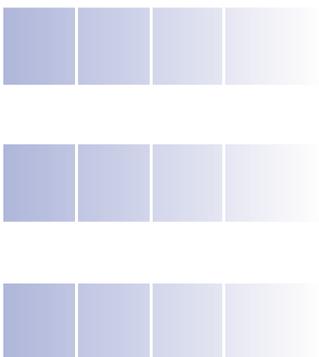
to determine the impact on other supply chain requirements and constraints (e.g., inventory, service levels). After assessing the implications, an action to remedy that exception is determined.<sup>4</sup> The business logic that generates alerts for timely decision support has to be well defined up front.

**Figure 4. The sense-and-respond infrastructure.**



Source: IBM Business Consulting Services analysis, 2003.

A new technology infrastructure is required to support the sense-and-respond business model. An open- and services-based technology architecture is needed that incorporates realtime information, business rules and analytics to optimize supply chain performance. Intelligent agents can be employed to detect signals and send responsive transactions, often without manual intervention. For example, given the right conditions and model, supply chain planning and execution systems can be dynamically reconfigured to adapt to volume and bandwidth processing constraint conditions. The intelligent agents assist in analyzing event exceptions and, through dashboards, allow employees to view exceptions. They support the ability to make either automated or more intelligent decisions based on red flags or exceptions identified in the supply chain. In addition, RFID, smart tags and wireless tools can be used to uniquely identify and track objects to improve inventory visibility, streamline processes and reduce costs throughout the value chain.



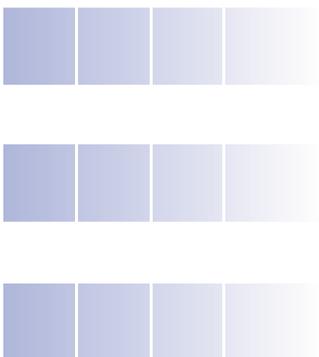
## *Transforming your supply chain model – the on demand journey*

### **Assess where you are now**

Transformation to an on demand supply chain is a journey and requires a roadmap, or structured approach, on how to get there. The journey should begin with a diagnostic assessment of your company's current supply chain performance, comparing it to a future on demand end state. The assessment should also analyze how your company is positioned relative to leading practices of other companies. As a company matures through the various stages of a static enterprise model – functional optimization, horizontal process integration, external collaboration, on demand supply chain– certain characteristics are evident. A diagnostic assessment will help you determine where you are on the on demand maturity model and help you prioritize initiatives that will have the greatest impact on shareholder value and return on investment.

Are you on demand? Can you answer these questions?

- Do you provide online and realtime customer order configuration, updates and status throughout the order fulfillment pipeline? Doing so will help improve customer service levels and reduce operating costs. For example, in order management processes, a company that is static probably will not have any formal standards of order management. Typically, there is a high degree of manual intervention with a great deal of exceptions as each order moves through the fulfillment process. At the other extreme of the spectrum, an on demand enterprise allows realtime order configuration.
- Can your supply chain respond dynamically and rapidly to changes in customer demand, supply fluctuations, and market and environmental conditions? This capability will enable your company to be responsive to true demand requirements and help enhance profitability. More mature supply, manufacturing and logistics processes will be customer pull-driven as opposed to push-driven.
- Are your supply chain costs variable and aligned with revenues? This feature will allow your company to better maintain the correct margin balance and shareholder value growth objectives.
- Are your supply chain infrastructure components (e.g., technology, process, organization, distribution network) scalable to be able to respond quickly to market changes? This capability will help reduce underutilized capital assets and process costs yet grow capacity as demand increases.
- Can you dynamically configure and deliver product/service bundles based on actual demand and market conditions? Doing so will help optimize profitability and remove obsolete inventory from the pipeline.



- How tightly integrated are you with your supply chain partners? Tighter integration will enable you to communicate quickly and respond to supply chain fluctuations while delivering superior customer service levels. In a more mature model, all supply chain constituents (including customers) can view the status of actual order demand and fulfillment throughout the supply chain pipeline.

Based on this assessment of your supply chain maturity in regard to processes, organizational aptitude and enabling technologies, you can begin to formulate a supply chain vision and strategy.

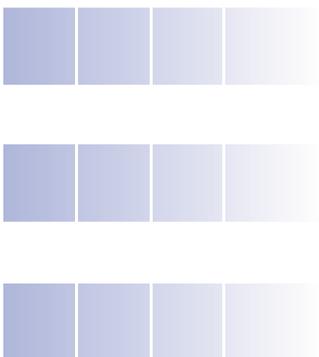
### **Develop your strategy**

This strategy should include the following key steps:

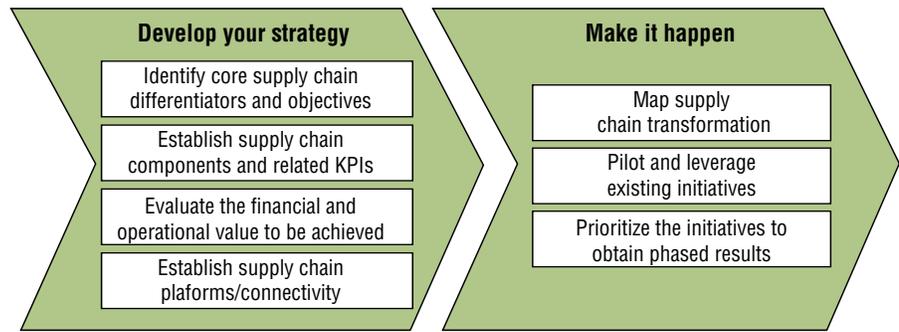
- Identify the company's core supply chain differentiators and capabilities, and assess current performance.
- Determine which functions could be better performed by a partner, and begin to identify these partners.
- Define the supply chain process components and the needs for organizational reconstruction.
- Define the measurement framework, which is aligned with business objectives and goals. Set targets and thresholds for the key supply chain performance indicators.
- Evaluate the financial and operational value to be achieved in terms of financial performance and operational performance characteristics such as cycle time, quality and service level attainment. Use modeling tools to simulate end-state financial statements and operational performance criteria.
- Define the realtime information and connectivity vision, including an open- and services-based technology architecture, required to support the vision.
- Prioritize which initiatives will have the greatest impact on growth, operational excellence, return on investment and shareholder value.

### **Make it happen**

Transformation requires a roadmap that establishes the steps required to achieve the vision. Each supply chain component has associated performance criteria – both financial (i.e., costs, revenue influence) and operational (i.e., cycle time, quality, service level attainment). The initiatives with the greatest business impact, both financially and operationally, can be prioritized and implemented with speed to bring value to the organization. A transformation portfolio should be created which focuses on the prioritized initiatives that will have the greatest business impact, and quickly.



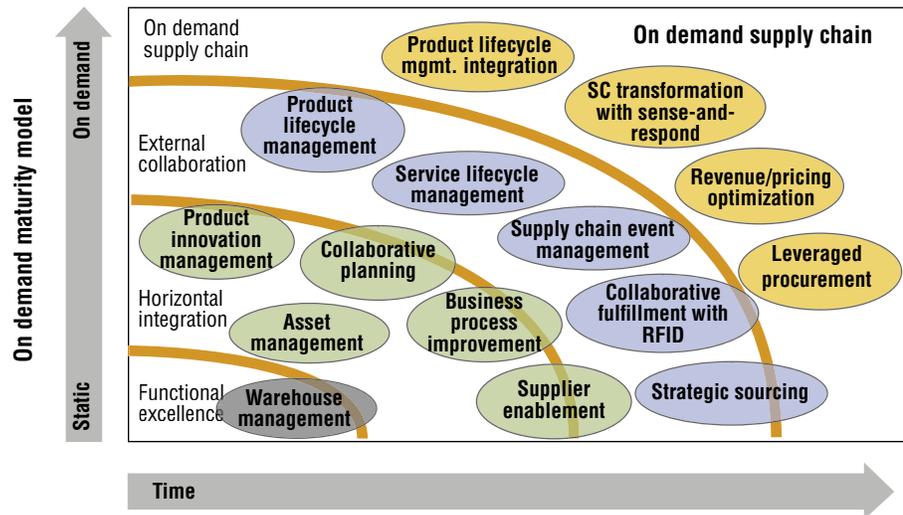
**Figure 5. Develop your strategy and make it happen.**



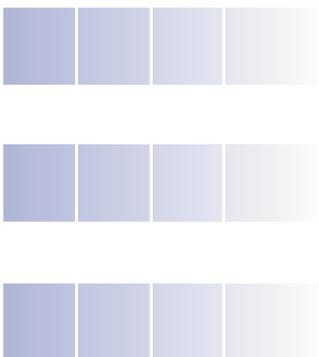
Source: IBM Institute for Business Value analysis, 2003.

In addition, a new mindset is required for implementing the strategy. The old model of fixed strategy and long implementation time scales is dead. In its place, companies are demanding either rapid return on investment (ROI) or ROI that is self-funding, with a modular approach to implementation, often involving pilots followed by scale up. More scrutiny is also being placed on benefits' delivery and tracking, helping to ensure that benefits flow through to the bottom line and that multiple supply chain initiatives do not double (or worse) account for benefits and overstate the business case, especially in inventory and process cost reductions. On demand implementation approaches (e.g., gain sharing, pay-as-you-use) can provide the impetus to kick-start major transformation programs and generate the change momentum required to build a longer-term vision.

**Figure 6. Supply chain transformation initiatives.**



Source: IBM Institute for Business Value analysis, 2003.

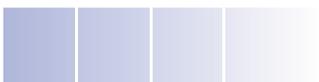


## *Conclusion*

Meeting the challenge of today's tough market conditions requires companies to treat their supply chains as a competitive weapon. In doing so, breakthrough business models must be designed and implemented. Supply chains must become connected and integrated end-to-end with suppliers, partners and customers – realtime in constant collaboration. The supply chain must be able to respond rapidly in a variable and resilient manner to virtually any opportunities or threats.

Such a supply chain cannot be built overnight, but can develop as the industry and technology evolve. The transformation has already begun in several distinct process areas (e.g., leveraged procurement, supply-demand synchronization) for many companies, and early adopters are already realizing the benefits.

To discuss how IBM supply chain consultants can help you plan and prepare for an on demand future, call **0870 010 2513**.



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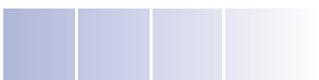
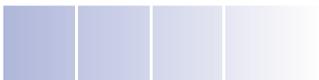
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## **References**

- <sup>1</sup> IBM Institute for Business Value analysis, 2003.
- <sup>2</sup> "Supply Chain Challenges: Building Relationships", Harvard Business Review, July 18, 2003.
- <sup>4</sup> Haeckel, S. and Slywotzky, A. "Adaptive Enterprise: Creating and Leading Sense-and-Respond Organizations", Harvard Business School Press, Cambridge, MA. 1999.
- <sup>3</sup> Strozniak, P. "Exception management: let SCEM turn invisible supply chain problems into profit opportunities and improved service", Frontline Solutions, 2002.





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