Key Issues

1. How will SCM initiatives impact corporate performance?
2. How will IT be used to break down the barriers to supply chain performance?
3. How will the market for SCM tools and technologies evolve?
4. How can users best implement initiatives to improve supply chain performance?

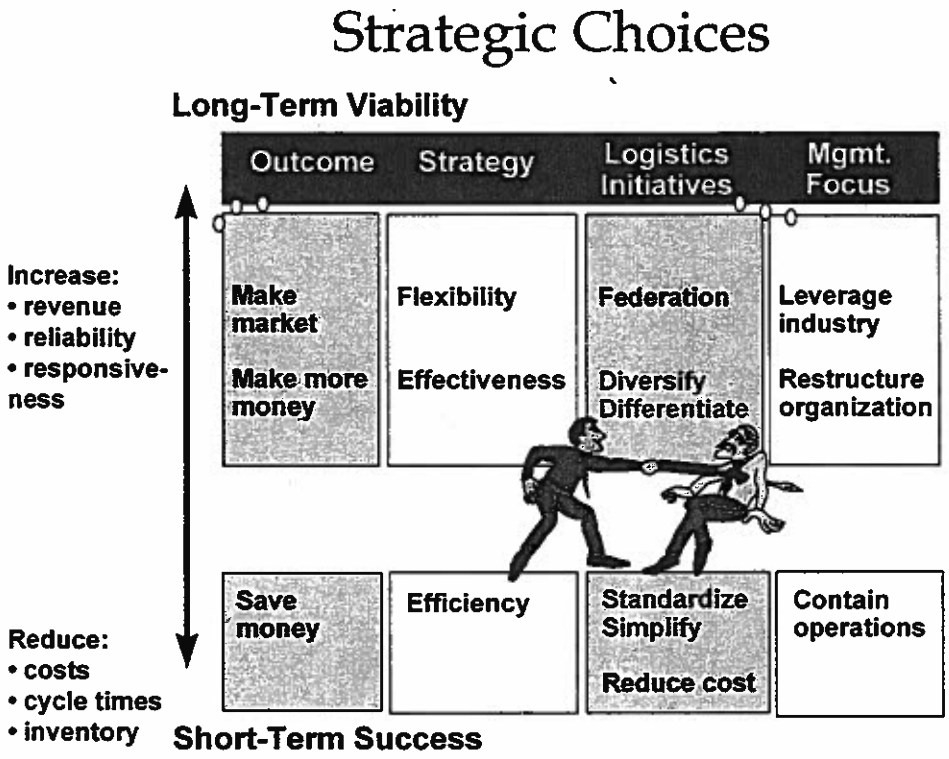
Source: GartnerGroup

Visibility: The ability to see process events and data throughout the trading partner community; to know what is happening.

Variability: The ability to manage the unique combinations of supply chain management (SCM) processes, and to control the infinite permutations of events and processes as they occur throughout the supply chain.

Velocity: The speed at which products process and data moves throughout the supply chain.

How will SCM initiatives impact corporate performance?

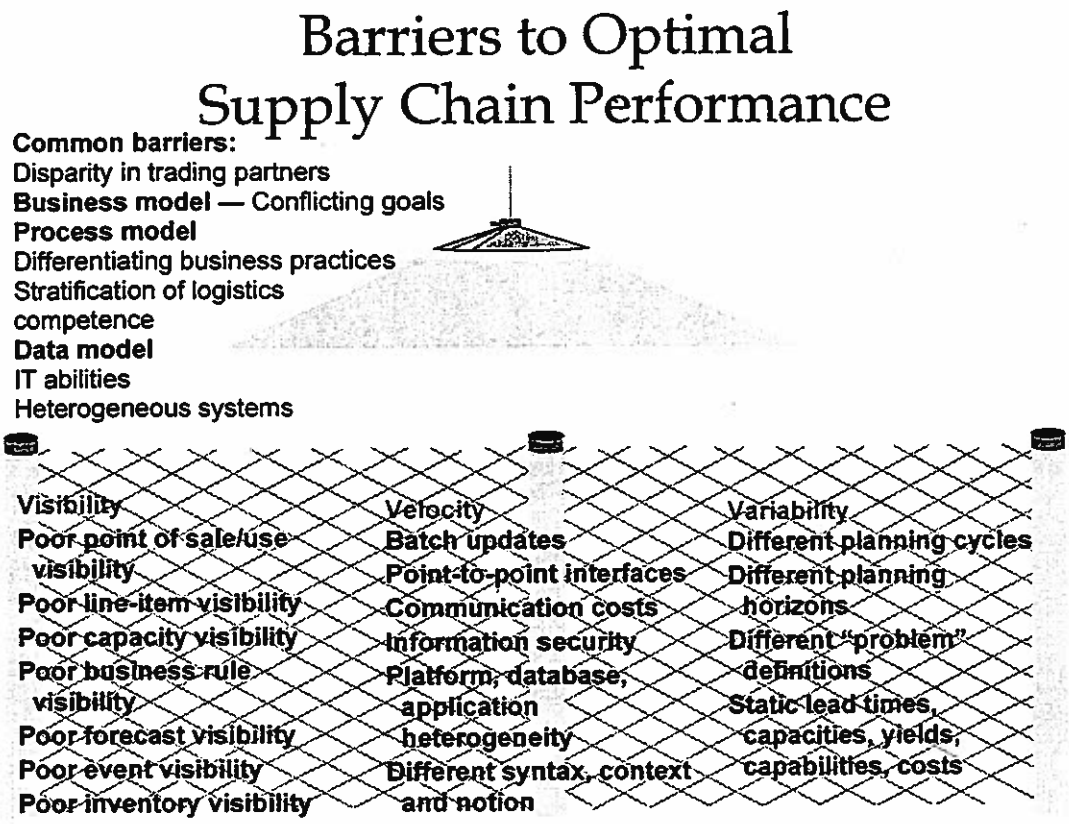


Source: GartnerGroup

Key Issue: How will SCM initiatives impact corporate performance?

Over the past 10 years, logistics strategies have moved from the basement of the corporation to the boardroom. The benefits to industry leaders have been proven as companies like American Airlines, Supervalu and Wal-Mart have used logistics as a competitive means to dominate not only their markets, but also the entire channel itself. Over the next five years, logistics and IS managers will find it easy to focus on process efficiencies, since they will clearly save money. However, these efforts are only fundamental steps and must be completed rapidly. World-class SCM companies like VF Corp. and Herman Miller SQA are breaking away from the competition by raising the bar on how they view SCM activities and focusing on how they can drive revenue with SCM activities. A few companies like Monorail are taking SCM strategies a step further; they are focusing their core competitive strategies on how they can restructure the market by creating a federation of suppliers who share the common goal of satisfying mutual customers.

How will IT be used to break down the barriers to supply chain performance?



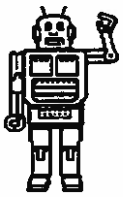
Source: GartnerGroup

Key Issue: How will IT be used to break down the barriers to supply chain performance?

Regardless of whether the goal was simply to save money, make more money or restructure the market, enterprises seeking to improve their supply chain performance have been greatly constrained by the fundamental barriers that exist in the supply chain, e.g., an overwhelming disparity in trading partner capabilities and IT sophistication, widespread misalignment of business processes and a throng of disparate enterprise systems. Traditional efforts to standardize the enterprise IT environment have failed to break down these barriers. The result has been a crippling lack of information visibility across the community of enterprises engaged in the common goal of customer satisfaction.

For an enterprise to achieve optimal supply-chain performance, it must specifically implement programs that will harness the unique diversity inherent in the trading partner community. In the past, a powerful channel master would dictate terms to its trading partners and force standardization (under the cloak of the SCM buzzword "collaboration"). While this works for captive trading partners, most trading partners have been forced to accept unique process and business models from multiple channel masters. Thus, instead of standardizing on a specific trading partner's business process and data model, enterprises will need to reconcile process and semantic differences.

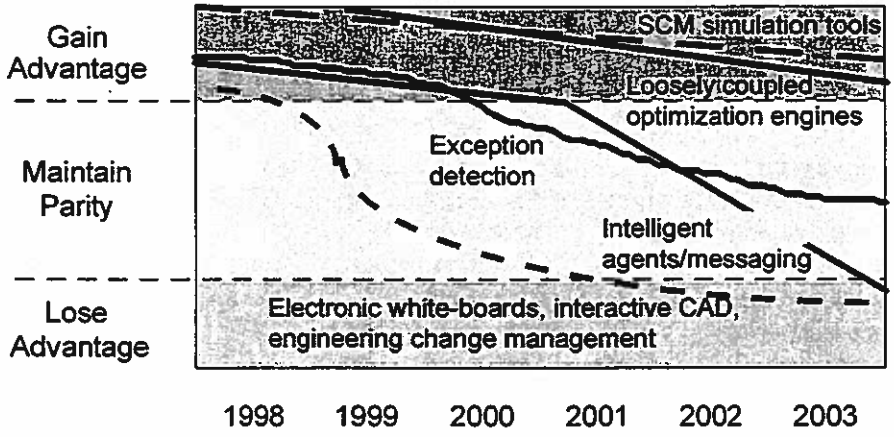
By 2003, enterprises lacking the capability to custom design unique customer/channel/product SCM strategies will be classified as unresponsive partners and start being excluded from business opportunities (0.7 probability).



Variability-Managing Technologies

Short-term advantage until 2000
Planning vs. actual exception detection

Long-term advantage through 2003
SCM process simulators



Source: GartnerGroup

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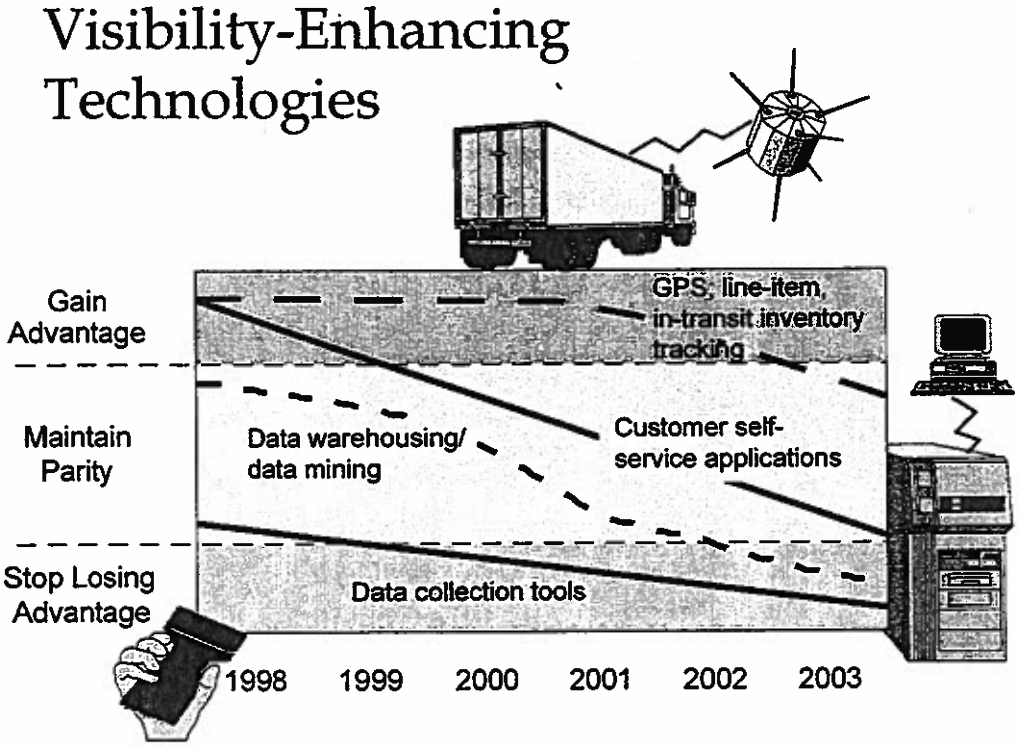
Variability is a natural element for the manufacturer, its customers and its suppliers. Managing variability requires increasing the **velocity** of communication cycles, since under a waterfall communication process such variability is not communicated to the other supply chain constituents until well after it has occurred, and too late for trading partners to make the most effective cost- or service-based adjustments. Establishing better relationships means providing the **visibility** of actual operational conditions to trading partners, so they can help improve customer service, drive down supply-chain-wide costs and, most important, create unique product offerings that are tailored to individual customers and channels. Long-term competitiveness will not be based on an end result, such as cycle time or lowest cost, which can be duplicated in time and should be viewed only as the ticket to entry. Long-term differentiation will be based on the ability to craft unique relationships with customers by agilely configuring tailored products and services in response to customers' continually changing demands.

By 2001, enterprises that fail to externalize internal data on supply chain capabilities and order status will be unable to maintain or gain "preferred partner" status (0.7 probability).



Source: GartnerGroup

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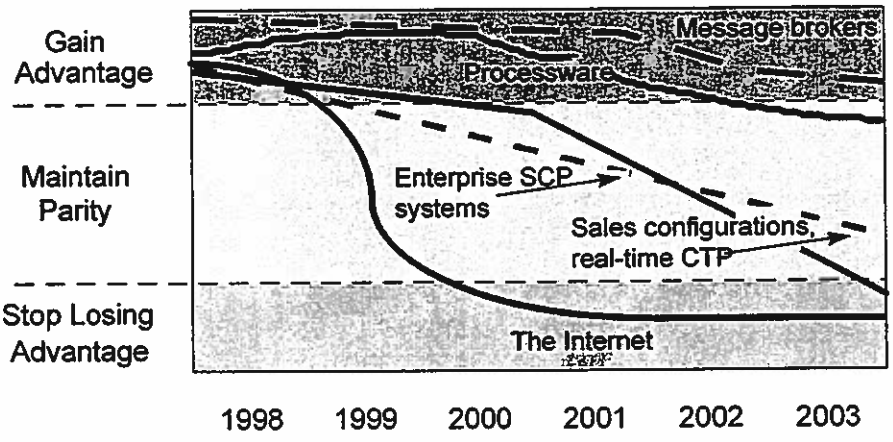
Many technologies are used in the context of supply chain integration, but two types are critical for success — communications and integration. The type of communications used for Internet and intranet access among business entities is the elemental conduit that will tie enterprises together and accelerate the creation of a virtual supply chain. However, this creation will only occur when applications and processes are integrated across the business spectrum. While "the Net" standardizes communications and networks across multiple communities of common interest, it does little to standardize the processes of doing business among community members. Integration of applications and data still requires a common notion of data context and syntax. The short-term benefit of using Internet technologies is the ability to provide a low-cost universal client to suppliers and customers through Web sites that contain purchasing information, order and inventory status, and promotional calendars. During the next five years, the Internet will be just one of many methods deployed to integrate information and business processes across the constituency of trading partners. EDI, shared databases such as Lotus Notes and Microsoft Exchange, E-forms, fax and E-mail transported across private and public WANs will be just as important as downloads of information from Internet access points.

Through 2003, enterprises that develop core competencies in integration tools and methods will achieve lower cycle times and better market responsiveness than those enterprises that strive to minimize integration (0.9 probability).

Velocity-Enhancing Technologies

Planning Velocity
- Advanced planning and scheduling
- Configurators
- Cape II/PDM

Data Velocity
- Message brokers
- Processware
- Internet



Source: GartnerGroup

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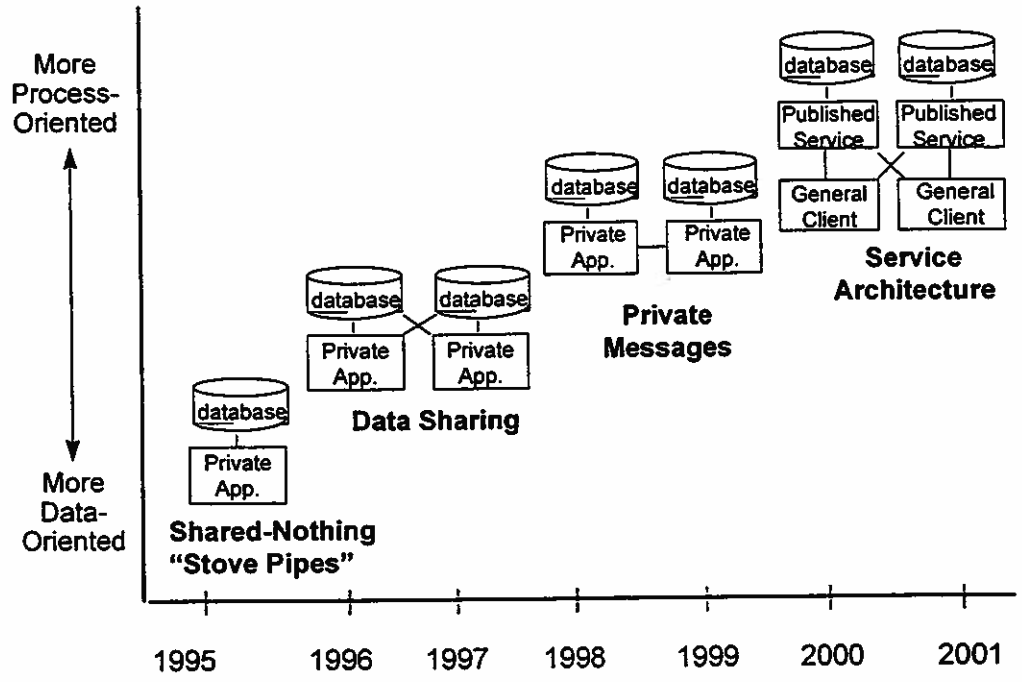
Key Velocity Technologies: While planning and scheduling tools allow for a faster planning cycle within the enterprise, we caution clients that the enterprise's ability to perform is greatly constrained by sets of activities that take place outside the enterprise, e.g., supplier capabilities and customers constantly changing requirements. As the flow of information becomes more complex with the critical need for sharing, communicating and integrating different data repositories, enterprises much ensure that the velocity of data is increased to correspond with the increased velocity of the planning cycle. The integration of a supply chain process with systems needs to incorporate assessments of channelwide impacts of actions, not the traditional point-to-point, enterprise-centric decision making process that is in place today.

In the case of Herman Miller SQA, coupling the configuration process with manufacturing planning and scheduling enabled the business to reduce its time from customer order from 24 days to seven days. However, to reduce cycle times to less than three days, the business needed clear visibility into its suppliers' capabilities on a near-real-time basis. To improve the velocity further, Herman Miller SQA will develop a message-oriented extranet called "supply net."

By 2001, enterprises that lack a service-oriented architecture will be excluded from SCM initiatives, due to the inability to manage the integration of disparate systems effectively across trading partners (0.7 probability).

Evolution of the Service-Oriented Architecture



Source: GartnerGroup

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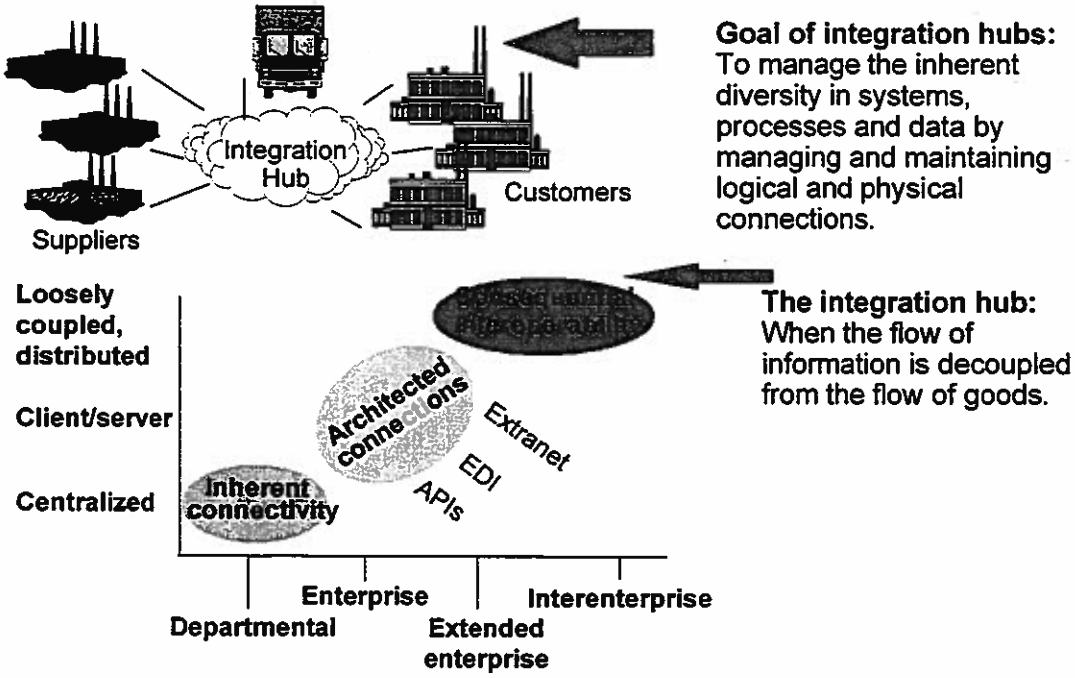
If network computing is the vision from the outside in, what do process and data owners see from the inside out? The extended enterprise will support multiple service contracts with many peers. Whereas a data-driven enterprise would be torn between the coordination cost of maintaining multiple, physical databases, and the complexity and poor performance of a single, physical database, a service-oriented IT strategy provides the flexibility to change internal implementations to support new requirements (e.g., network computing transaction requests) while preserving existing contracts.

Increasingly, these service contracts will move private, application-specific messages to published services, which can be subscribed to across business boundaries and vendor religions. SAP's componentry focuses on: 1) decoupling internal development dependencies, and 2) enriching BAPIs and promoting cross-vendor plug-and-play. PeopleSoft's Tuxedo transaction will evolve from internal, runtime messages into a set of published services to be used as integration points.

By 2002, more than 50 percent of all enterprises will use or be forced to use some form of integration hub to manage data integration between their trading partners.

Outsourcing Service Architecture: The Integration Hub



Source: GartnerGroup

Key Issue: How will IT be used to break down the barriers to supply chain performance?

In other mature industries, information has been decoupled from the flow of goods by the introduction of an intermediate IT node. Examples of this include the Sabre reservation system, the SITA network and the ACH systems for managing monetary transactions. While passengers travel through a hub-and-spoke system, the data regarding transactions is following a totally different path. While money flows in a highly distributed fashion, the flow of information from ACH systems and the reserve banks is completely removed from real exchange of money. These systems use an intermediary, whose sole purpose is to manage members' needs and integrate business process and data. The common thread is that these are mature industries that have undergone radical consolidation, limiting the number of logical connections (companies).

Why does data go in and out of every ERP system as the goods and services flow throughout the supply chain? Distributors will have an opportunity to create an integration hub linking small and medium manufacturers to large customers, whose process and systems requirements stretch the abilities of smaller vendors.

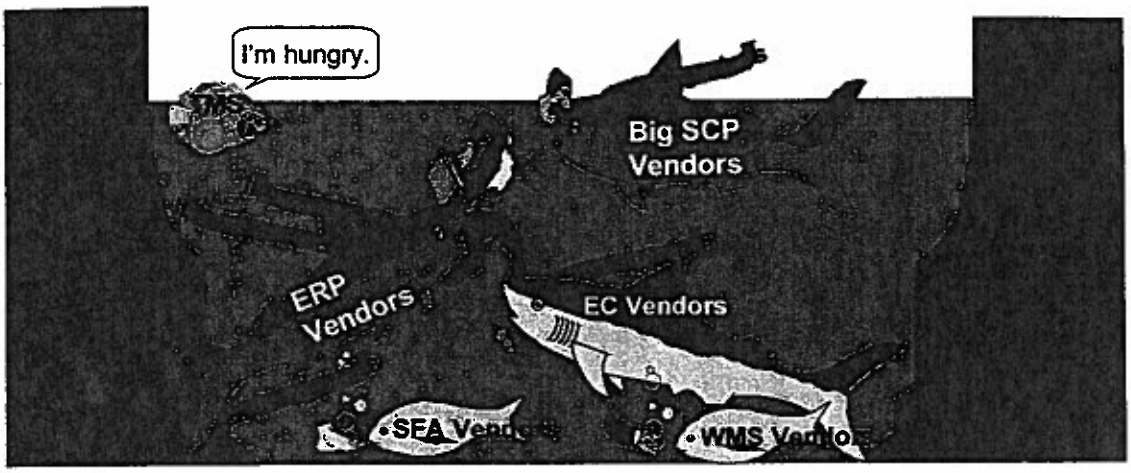
How will the market for SCM tools and technologies evolve?

The SCM Market: A Feeding Frenzy

Architecture Sharks

Function Fish

Process Lamprey



Source: GartnerGroup

Key Issue: How will the market for SCM tools and technologies evolve?

In the past, the supply chain market was comprised of niche vendors that specialized in domain-specific areas of functionality or process improvement. These companies survived because they provided a set of specific functions that could not be found elsewhere. Now that SCM has become the "fad du jour," market leaderships have assumed a new context. Enterprises no longer prefer to buy compartmentalized products from a slew of vendors; they prefer to buy a suite of functions from a limited number of vendors. This desire to minimize integration liability across supply chain applications has led the leading vendors to switch from selling application functionality to selling an architecture that would enable the integration of SCM component applications. The rapid growth of the packaged applications market has, in turn, changed the focus of those consultancies that are concentrated on process improvement. In the past, these firms would serve as neutral evaluators of the process and functionality of the vendor community. Today, however, such neutrality is extremely questionable, since the focus of these firms has shifted to that of systems integration, with change management activities focused on getting systems up and running. Instead of selecting the best solution for customers based on functions, integrators tend to implement products based on prior agreements with vendors.

Through 2000, 90 percent of enhancement funding and 75 percent of ERP vendor acquisitions will be outside of the SCP functional area (0.7 probability).

ERP the Market vs. ERP the Vision

ERP Definition vs. ERP Vendor Reality

GartnerGroup Defines ERP in 1990: "The integration of manufacturing, financial and distribution functionality to dynamically balance and optimize the enterprise's resources."

ERP Vendor Responses:
- Focus on filling in manufacturing, financial and distribution transaction-based functionality.
- Institutionalize costing and unconstrained MRP and DRP for planning.
- Assumed monolithic functionality equates to integrated supply chain processes.
- Begrudgingly create APIs or integrate SCP vendors at client's insistence
- Declare themselves "SCM vendors."

GartnerGroup Defines EERP in 1998: "The integration of manufacturing, financial and distribution functionality to dynamically balance and optimize the **extended** enterprise's resources."

ERP Vendor Responses:
- Slap a Web browser on an application with intraenterprise business processes and data models.
- Create a handful of "self-serving" applets.
- Declare their applications interenterprise-ready.

Source: GartnerGroup

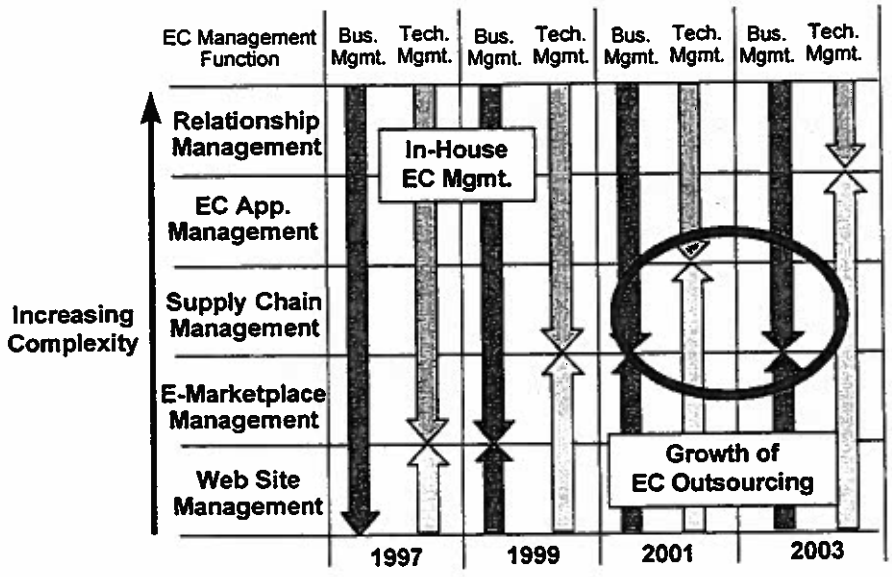
Key Issue: How will the market for SCM tools and technologies evolve?

In one respect, ERP vendors have always been involved in supply chain planning (SCP) by offering traditional MRP/DRP functionality. However, since the late 1980s when most of today's ERP applications were conceived, ERP vendors —besides adding more "bells and whistles" — have not sought to redefine their planning paradigms … until recently. In the meantime, more advanced users began to understand that the planning capabilities of ERP applications would not run businesses as optimally as users hoped. Hence, a new class of applications and vendors arose to fill the widening void left in planning by ERP vendors. SCP's importance has recently moved to the top of the ERP vendor's priority list; however, it is crowded with many other initiatives, such as customer service, industry-specific functionality and new markets that will constrain the investments in improving SCP functionality. Consequently, ERP vendors will focus their limited SCP investments on the most generic, functional SCP "sweet spot" of their installed bases and targeted markets. The anticipated SCP improvements by ERP vendors vs. traditional MRP/DRP is good news for users, but users should not anticipate broad, industry-leading functionality over the next five years.

EC outsourcing will progress from Web site management and content hosting through marketplace and SCM over the next three years (0.7 probability).

Neither the technical nor the business components of relationship management will be outsourced by 2003 (0.7 probability).

More EC Outsourcing Opportunities



Source: GartnerGroup

Key Issue: How will the market for SCM tools and technologies evolve?

EC management varies substantially from one situation, industry and enterprise to another. In some cases, EC management may refer to managing EDI technical development; in others, it may refer to managing content in a Web-based E-catalog. This is because there are so many EC applications or ways that one enterprise can "do business" with another. So how can all of these different applications or "relationships" with trading partners be managed, and how will EC management vary over time? In general, the answers are that: 1) The more technical systems or applications are linked directly to other companies; and 2) the more that business processes and strategies are directly dependent on electronic links to trading partners, the more complex EC management becomes. As this happens, we believe that the increasing complexity will drive more enterprises to outsource EC management to third-party specialists.

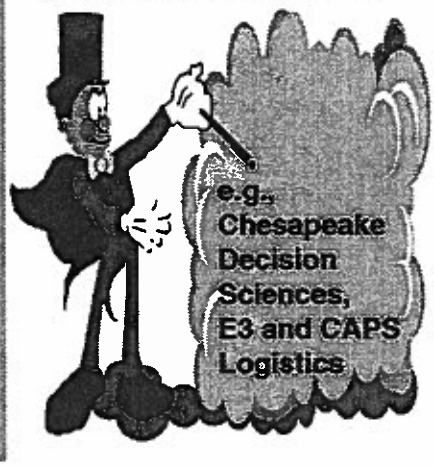
Through 2002, users with complex SCP problems who are seeking differentiation through SCP technology will need to work with domain expert niche SCP vendors (0.6 probability).

SCM Market Survivors: Domain Expert Niche SCM Vendors

Characteristics:
Focus on and solve tough problems
Deep and regarded industry knowledge
Limited number of market served or problems solved
High services-to-product mix
Good partnering ability

Market Challenges:
Selling complex products and implementation
High maintenance costs
Limited growth opportunity
Maintain growth to support high R&D investment
Hold on and cultivate domain experts
Stay focused

Domain Expert Niche SCM Vendor: The SCM Magician



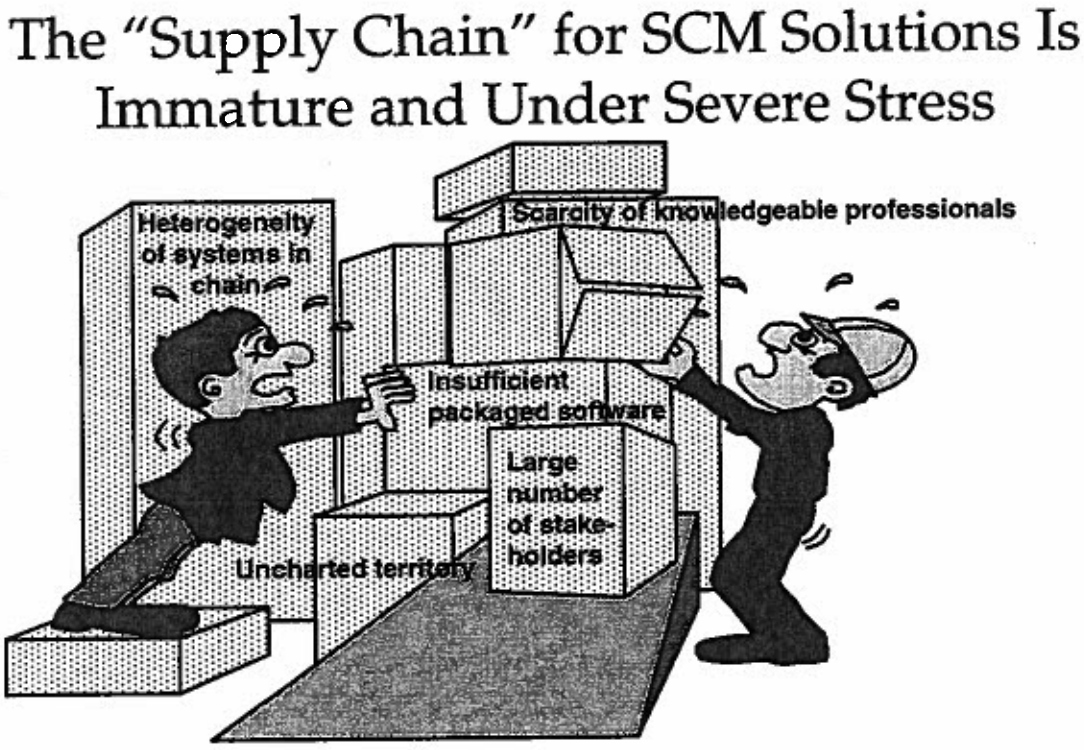
Conclusion: Only a handful of today's SCM vendors will survive as domain expert niche SCM vendors. Despite size, viability risks for the five-year planning horizon are low, if the vendor is growing 50 percent annually.

Source: GartnerGroup

Key Issue: How will the market for SCM tools and technologies evolve?

Because of a general SCP functional focus by ERP vendors, and the inability of the larger SCP vendors to meet the needs of all industries, a new SCP vendor class will emerge and be called "domain expert niche SCP vendors." What differentiates these vendors from general, stand-alone niche vendors is a focus on providing the majority of SCP functionality for a unique industry(s), having world-class SCP experts and an application that can uniquely model and solve complex supply-chain problems. In addition, these enterprises must be well-run businesses because they will need to grow aggressively to continue funding their industry-leading capabilities. While many of the smaller SCP vendors will lay claim to achieving domain expert niche SCP vendor status, few will actually ascend to this class. Paramount to success as a domain expert niche SCP vendor is industry-recognized intellectual capital. It must be differentiating from both a business and technological perspective. Development of industry-recognized intellectual capital takes years to develop and comes from a consulting, not product-oriented, culture. The two greatest challenges for domain expert niche SCP vendors, over time, are maintaining intellectual capital and culture, and having a narrow industry focus.

How can users best implement initiatives to improve supply chain performance?

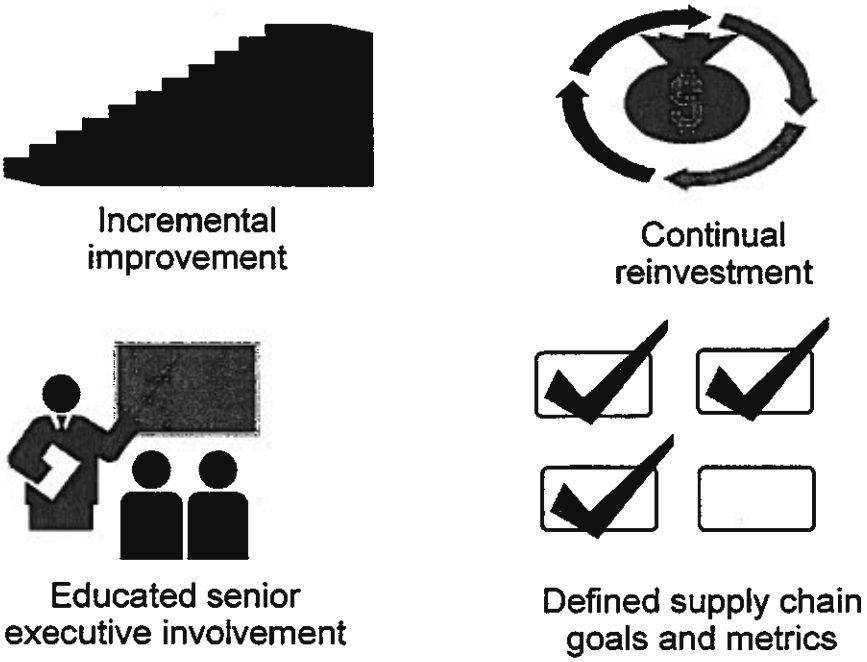


Source: GartnerGroup

Key Issue: How can users best implement initiatives to improve supply chain performance?

Implementing supply-chain-oriented systems initiatives has never been more popular or precarious, since the industry is oversold with vendor vision and the resources available to manage change and install systems. As the old saying goes, "Be careful what you wish for ... you may get it." In the past, SCM initiatives would take the back seat to financial- and marketing-oriented initiatives, causing SCM executives to grovel for the funds and executive commitment to invest in and deploy SCM-oriented strategies and systems. Now that SCM is one of the fastest growth areas of enterprise applications, a new set of challenges arises: setting and managing realistic expectations of what can really be done today, and determining the time frame it will take to receive tangible benefits.

The Discipline of Market Leaders



Source: GartnerGroup

Key Issue: How can users best implement initiatives to improve supply chain performance?

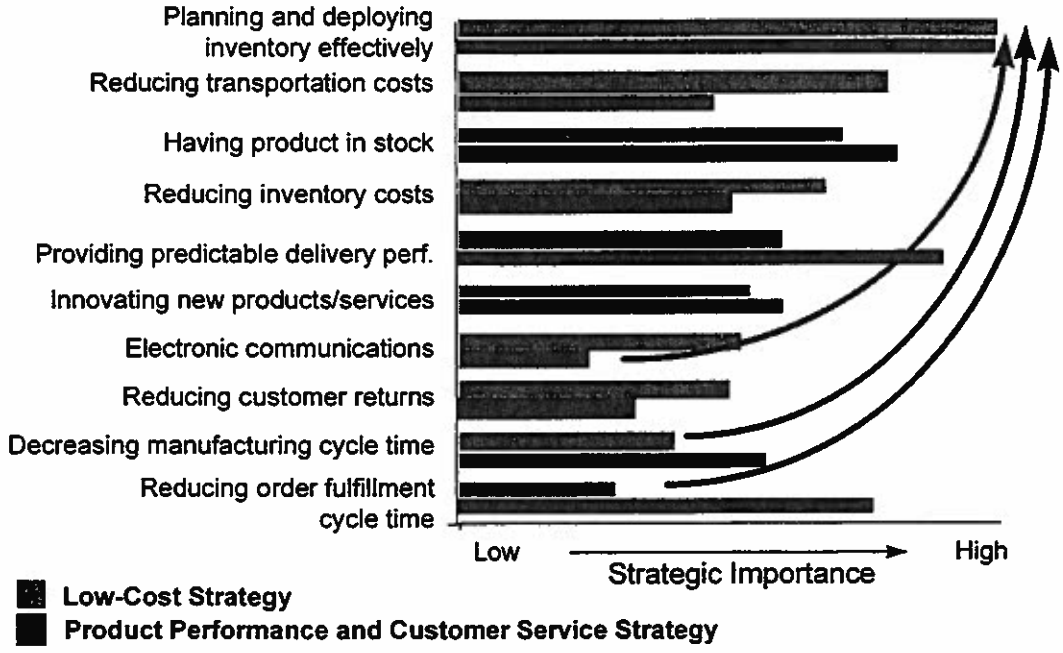
Enterprises with successful SCM initiatives clearly state that such improvements were based on incremental improvement and the need to invest in new technologies continually. The notion that projects could be managed in a "big bang" fashion was clearly dismissed; these clients cited the need to manage SCM improvements one small step at a time. Since the discipline is so embryonic, the need to reinvest every three-to-five years was paramount as new best practices continue to evolve and the vendors themselves play leapfrog.

While executive involvement is important, nothing is worse than an executive sponsor who is uneducated and, thus, sets the wrong priorities. Executive involvement is not enough; the executive must be educated in the cause-and-effect relationships within the supply chain. Clearly defined goals and metrics related to customer service levels, and inventory/assets that are focused on specific supply-chain improvements, are key to successful projects. Interviews with clients who failed in their SCM initiatives revealed a disturbing trend. In almost all cases, there was an absence of a supply chain strategy. Instead, the driver for systems deployment was an enterprisewide standardization or year 2000 replacement.

KPMG study analyzed by GartnerGroup: Misplaced priorities due to executives' lack of understanding of cause and effect.

KPMG Case Study: Good News, Bad News

Good News: **Executives recognize the changing priorities for SCM.**
Bad News: **They still do not understand cause and effect.**

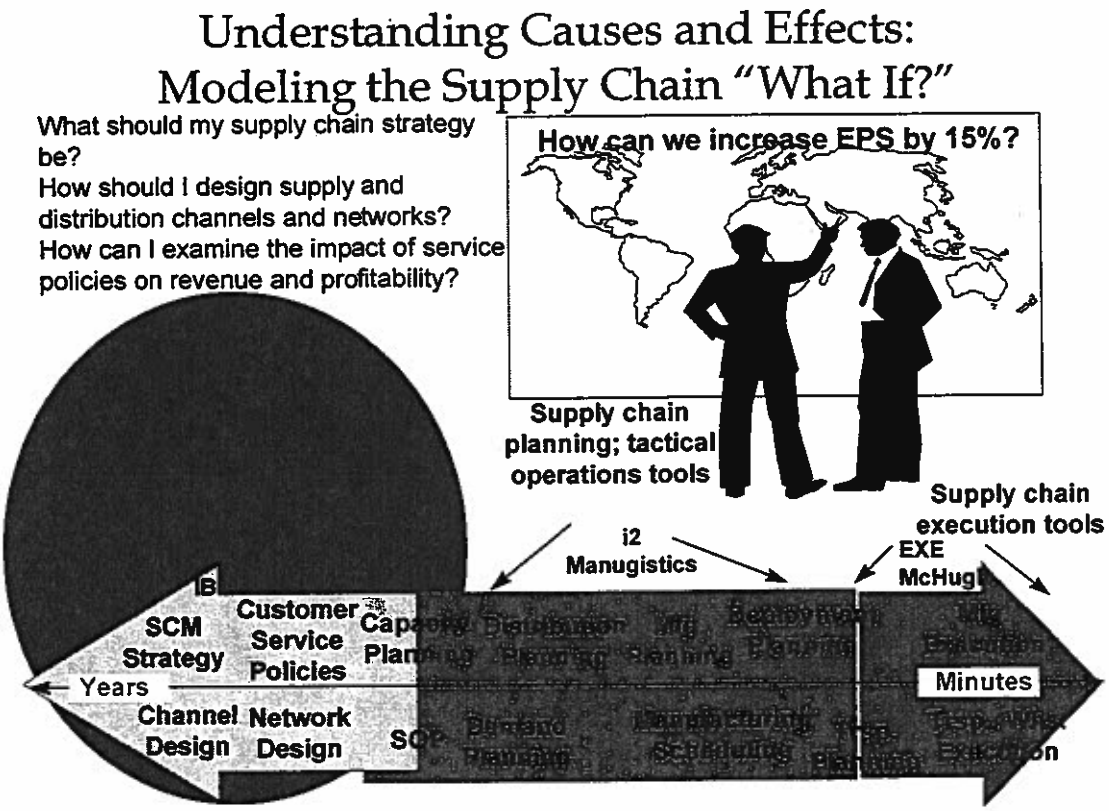


Source: GartnerGroup

Key Issue: How can users best implement initiatives to improve supply chain performance?

A recent survey by KPMG and Northwestern confirms that the priorities of strategic initiatives change when the focus shifts from low-cost strategies to those of enhancing revenue. For companies in which cost was the focus, reducing order cycles and manufacturing times was the lowest priority; whereas in revenue-focused companies, these priorities were deemed significantly more important. Perhaps most important, however, is that *this research further validates our claim that most clients still do not have their priorities straight.* For a company that wants to compete on product and service performance, it is outrageous for electronic communication with customers and suppliers to be last on the priority list. It is even more amazing to see that low-cost companies effectively appoint planning and deploying inventory as their number one goal, yet the three things they could do to manage inventory variability would be to increase their connect with customers and suppliers, reduce order cycle times and manufacturing cycle times – the lowest things on their list.

Any multisite manufacturing- or distribution-focused enterprise that has not remodeled its supply chain network in the past three years should do so before implementing any systems to improve tactical operations.



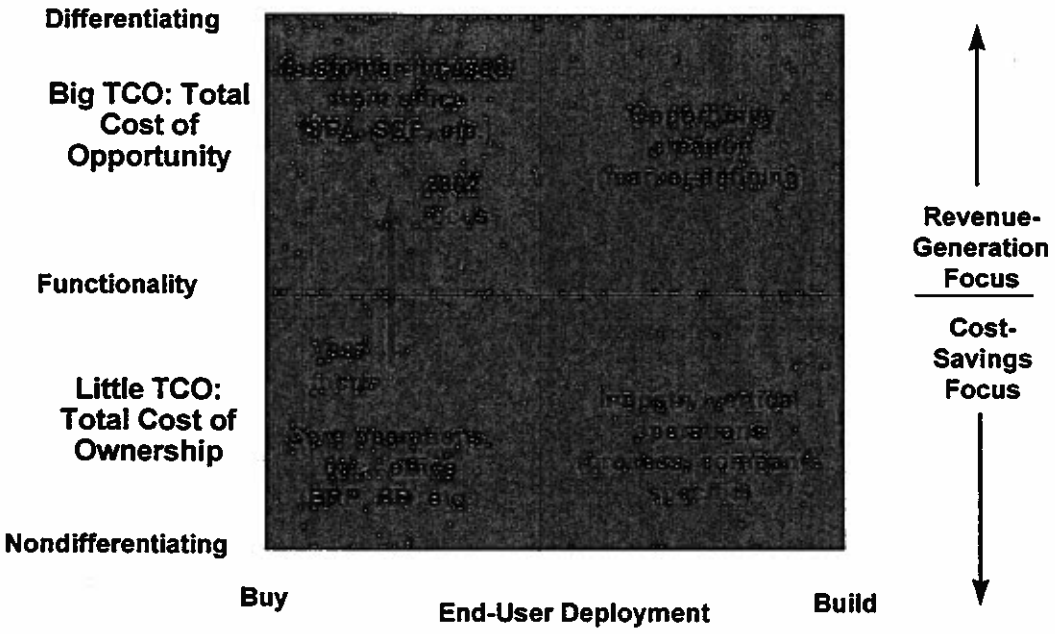
Source: GartnerGroup

Key Issue: How can users best implement initiatives to improve supply chain performance?

Global transportation networks and deregulation have radically changed the requirements for the construction of a logistics network, which would provide a specified level of service. Additionally, constantly changing tariff and trade rules impacts the design of logistics networks. As companies look at how they can improve tactical operations in manufacturing and distribution operations, they must first understand how these improvements will affect the physical network itself. Will the same facilities be needed today or tomorrow? What plants should we open or close, given the improved ability to operate? While SCP is the rage in the industry, too much focus has been placed on improving tactical operation without a clear understanding of how such programs will affect or drive strategy and the network design. Developing a clear SCM strategy requires a clear understanding of the trade-offs between inventory, warehousing and transportation, and the impact of each component on the cost of providing goods and services. This analysis is best performed using a special class of software tools, dubbed "network planning software." Since this analysis requires mediating conflicting agendas between manufacturing distribution sales and marketing, we highly recommend that an outside facilitator be used to manage such an analysis.

The shift from "save money" to "make more money" requires a new investment paradigm.

A New Investment Paradigm



Source: GartnerGroup

Key Issue: How can users best implement initiatives to improve supply chain performance?

As clients shift their strategies from saving money to making more money, they must shift the focus of their purchasing strategies from buying a specific product at the lowest cost of ownership to looking at buying capabilities that can be assembled to create new products and revenue streams, or "total cost of opportunity." This is especially true for those looking to source packaged software applications for SCM. We caution clients that a low total cost of ownership strategy will greatly constrain their ability to remain competitive over time. SCM is so embryonic that few solutions exist, and demand for them has currently outstripped the ability of vendors to provide resources. For clients who wish to excel beyond the raw basics of SCM, they will have to pay a premium to software vendors and consultants to increase the pace at which a solution will be delivered in the market. Additionally, while ERP vendors will claim to have functionality of supply chain vendors (i.e., SCP, configuration, warehousing), for many the real cost of these products is their lack of functionality as compared to their competitor. The real price is not in the cost of the software and training, but rather in the lost business opportunities due to process inefficiency or ineffectiveness.

SCM Case Studies: Tying "IT" All Together

Monorail — Restructuring Markets (speed and flexibility) Visibility - supplier's ability Variability - product, position partners, process Velocity - product commercialization	**VF — Managing the Customer** Visibility - customer's ability Variability - store space management Velocity - VMI
Herman Miller — Using Product Variability as a Weapon Visibility - capacity/user design Variability - build to order Velocity - >3 days cycle time	**Bridgestone — Managing Channel Diversity** Visibility - capacities Variability - channel diversity Velocity - planning cycles

Source: GartnerGroup

Key Issue: How can users best implement initiatives to improve supply chain performance?

Monorail is a virtual corporation by any definition of the term. By creating a business in which all activities from order-taking to delivery and collection are outsourced, it has been able to break the $1,000 PC price barrier and effectively compete against the "Dells," and is using SCM to attempt to restructure the PC marketplace.

VF Corp., considered the leading member of the quick response initiatives of the 80's VF, looks at cost efficiency as "been there, done that." Now it focuses on how to drive sales by managing a more effective selling process at each of its customer locations.

By improving its velocity from design-to-delivery, **Herman Miller SQA** has been able to clearly differentiate itself from its competitors by competing on speed. Now with cycle times at less than seven days, it begins a new quest to lower cycle time to three days or less.

Bridgestone, forced to manage a complex mix of unique products for unique channels, has recognized the need to augment its ERP system with SCP tools that will allow each supply chain to be modeled uniquely. Not willing to wait until its ERP system was operational, Bridgestone chose to implement SCP into its legacy environment and get value now.

SCM leaders will separate themselves from competitors by using SCM to drive revenue.

Standardization and simplification initiatives will be replaced by initiatives focused on diversification and differentiation.

The shift from "save money" to "make more money" with SCM initiatives will require a new systems investment model, based on total cost of opportunity vs. the total cost of ownership models that have driven the industry to date.

Mediating the fundamental conflicts in SCM strategy will require users to model their environments to clearly assess the impact of policies on performance.