Hype Cycle for Supply Chain Management, 2003

Not all supply chain management products are as mature as vendors and the press would like you to believe.

Management Summary

When supply chain management (SCM) started as a practice in 1990, vendors began to leverage technologies such as in-memory modeling and advanced optimization algorithms to provide customers with tools that went beyond transaction support and suboptimal planning solutions. These solutions largely fell into two areas: supply chain planning and supply chain execution (and included warehouse management systems, transportation management systems and order management systems). Although many of these initial solutions have matured to the point of commoditization, new applications and enhancements to current solutions are maturing to provide more cost savings — and to enable more-agile supply chain structures. Many of these solutions are just beginning to climb the Hype Cycle, and they should be treated as immature. Nevertheless, in the right hands, they can enable an enterprise to be more-agile and more-flexible.
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Figure 1. Hype Cycle for Supply Chain Management, 2003

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1.0 The Hype Cycle

Visibility

Technology
Trigger
Peak of Inflated
Expectations
Trough of
Disillusionment
Slope of
Enlightenment
Plateau of
Productivity

Maturity

Key: Time to Plateau

- Less than two years
- Two to five years
- Five to 10 years
- More than 10 years
- Obsolete before Plateau

Acronym Key

EDI electronic data interchange
RFID radio frequency identification
SCM supply chain management
SCP supply chain planning
SRM supplier relationship management

Source: Gartner Research (June 2003)

Figure 1. Hype Cycle for Supply Chain Management, 2003

2.0 On the Rise

2.1 Trading Grid

Definition: A single overlay of interconnected extranets and e-marketplaces that allows partners to digitally transact business and collaborate. Business process automation across the trading grid will occur rapidly as interoperable activities connect.

Time to Plateau/Adoption Speed: More than 10 years.

Justification for Hype Cycle Position/Adoption Speed: Enterprises will relegate non-value-added but necessary business processes and services to public forums. Strategic, private and differentiated business processes will also leverage the same trading grid to eliminate the high cost of proprietary technology platforms. This is the essence of the "always on" trading grid. However, trust, scalability and standards-adoptions issues will mean slow adoption.
**Business Impact Areas:** Will enable more rapid value-chain integration, driving new multienterprise business processes.

*Analysis by Andrew White*

### 2.2 Radio Frequency Identification Warehouse Management Systems

*Definition:* A software application that uses a combination of bar codes and radio frequency identification (RFID) to manage the operations of a warehouse or distribution center. Functionality includes receiving, "putaway," inventory management, cycle counting, task interleaving, wave planning, order allocation, order picking, replenishment, packing, shipping, labor management and automated material-handling equipment interfaces.

*Time to Plateau/Adoption Speed:* Five to 10 years.

*Justification for Hype Cycle Position/Adoption Speed:* RFID must first become cost-effective. Systems and standards must evolve to enable lower-cost deployments and overcome technical issues. Enterprises must develop best practices for business process redesign around RFID.

*Business Impact Areas:* High-volume distribution centers will benefit the most.

*Selected Vendors:* Manhattan Associates, RedPrairie and Yantra.

*Analysis by Jeff Woods*

### 2.3 Dynamic Logistics Network Configuration

*Definition:* A system or group of systems that enable enterprises to evaluate specific customer orders, and coordinate the configuration of assets and business processes that are on demand within the enterprise and the extended supply chain, to deliver a specific bundle of products and services.

*Time to Plateau/Adoption Speed:* Five to 10 years.

*Justification for Hype Cycle Position/Adoption Speed:* The underlying systems are beginning to evolve and provide alerting and response.

*Business Impact Areas:* This will make the enterprise more-responsive to customer demands, and more-efficient at responding to increasing variability in the supply chain.

*Selected Vendors:* Viewlocity and Yantra.

*Analysis by Jeff Woods*

### 2.4 Real-Time Planning

*Definition:* Applications that balance the supply and demand of goods and services as events occur. These solutions employ repair algorithms, simulations and real-time integration architectures to solve problems as soon as they recognize that something has changed.

*Time to Plateau/Adoption Speed:* Five to 10 years.

*Justification for Hype Cycle Position/Adoption Speed:* Although the allure of real-time planning is high, its adoption will take many years due to change management and data availability issues.

*Business Impact Areas:* This will enable enterprises to respond to demand volatility in near real time.
Selected Vendors: Avere, Timogen Systems and Valdero.

Analysis by Karen Peterson

2.5 Adaptive Supply Chain Execution

Definition: Sophisticated supply chain execution tools that incorporate real-time decision support into supply chain execution processes, enabling re-optimization of the supply chain in near real time, and enabling enterprises to respond to demand volatility without increasing inventory.

Time to Plateau/Adoption Speed: Five to 10 years.

Justification for Hype Cycle Position/Adoption Speed: Solutions are unavailable today, but vendors are moving in this direction. When solutions finally do become available, enterprises’ ability to deploy them will be affected by data availability and purity, as well as change management issues.

Business Impact Areas: This will enable enterprises to intelligently react to supply chain disruptions during the fulfillment process.

Selected Vendors: i2 Technologies, Manhattan Associates and RedPrairie.

Analysis by Jeff Woods

2.6 Contract Life Cycle Management

Definition: Software used to coordinate the creation, storage, retrieval and enforcement of commercial agreements with customers, suppliers and regulatory bodies.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Served less by knowledge than need, some vendors are beginning to talk about this market. These vendors come from sell-side contract management, online negotiation, procurement, enterprise resource planning, supply chain planning (SCP) and small startups. Early adopters should investigate these solutions with a clear understanding of enterprise requirements, since they vary considerably.

Business Impact Areas: This enables enterprises to comply with government regulations, understand commitments and risks, and enforce commercially beneficial aspects of external relationships.

Selected Vendors: diCarta and I-many.

2.7 Multiechelon Inventory Optimization

Definition: The ability to plan inventory levels across the entire supply chain. Many of these systems also include stochastic algorithms that enable enterprises to represent uncertainty factors.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Although new vendors are appearing and offering unique solutions, most supply chain modeling capabilities are provided by traditional SCP tools. These capabilities will ultimately be incorporated into SCP suites.

Business Impact Areas: Enterprises can better determine where inventory should be held, as well as how much should be held.

Selected Vendors: Optiant, Oracle and SmartOps.
**Analysis by Karen Peterson**

### 2.8 Supply Chain Execution Suites

*Definition:* The consolidation of supply chain execution components — such as warehouse management systems (WMSs), transportation management systems (TMSs) and order management systems — to provide a single solution to manage the outbound logistics process.

*Time to Plateau/Adoption Speed:* Two to five years.

*Justification for Hype Cycle Position/Adoption Speed:* Vendors are beginning to provide some consolidated functionality. TMS vendors are beginning to market TMS suites and partner with WMS vendors. Order management continues to be a stand-alone solution.

*Business Impact Areas:* Lower total cost of ownership and faster deployment times. Ultimately, these will underpin dynamic logistics network configuration processes.

*Selected Vendors:* i2 Technologies, Manhattan Associates, RedPrairie and Yantra.

**Analysis by Jeff Woods**

### 2.9 Item-Level RFID

*Definition:* The tagging of individual items, usually at the time of production, with industry-standard radio frequency identification (RFID) tags that enable the object to be tracked throughout the supply chain.

*Time to Plateau/Adoption Speed:* Five to 10 years.

*Justification for Hype Cycle Position/Adoption Speed:* Item-level RFID is being used in limited field trials, and users are reporting difficulties in a number of areas — including technical feasibility, standards immaturity and cost.

*Business Impact Areas:* Business processes will be radically redesigned around autonomic sensing across the supply chain and data synchronization.

*Selected Vendors:* Alien Technologies, OatSystems, Philips Semiconductors, ThingMagic and Texas Instruments.

**Analysis by Jeff Woods**

### 2.10 Supply Chain Performance Management

*Definition:* The methodologies, metrics, processes and systems used to monitor and manage supply chain performance.

*Time to Plateau/Adoption Speed:* Two to five years.

*Justification for Hype Cycle Position/Adoption Speed:* Although supply chain performance management is key to measuring and modifying supply chain activities, it will take enterprises several years to build the processes and integrated systems necessary to proactively modify supply chain processes. Technology and applications will be available before enterprises can take advantage of them.

*Business Impact Areas:* Enables enterprises to use feedback to improve supply chain processes.

Analysis by Karen Peterson

2.11 Supplier Relationship Management Suites

Definition: Supplier relationship management (SRM) involves the business practices required to establish the rules needed for interacting with suppliers.

Time to Plateau/Adoption Speed: Five to 10 years.

Justification for Hype Cycle Position/Adoption Speed: SRM is the least-mature of all SCM suite application areas. All enterprises have to manage procurement processes, but these are usually performed at the tactical or transactional (rather than the strategic) level, or were augmented with consultantware. New applications are changing the situation by enabling enterprises to manage their suppliers more proactively. As a broad solution suite, SRM is still climbing the Hype Cycle. However, it will take time to reach the Plateau of Productivity because of the number of immature components in the suite.

Business Impact Areas: Gives enterprises the ability to produce better, less-expensive products and services more rapidly.

Selected Vendors: Ariba, i2 Technologies and PeopleSoft.

Analysis by David Hope-Ross

3.0 At the Peak

3.1 Distributed Order Fulfillment

Definition: Enables enterprises to evaluate specific customer orders, and to coordinate the configuration of assets and business processes on demand (within the enterprise and the extended supply chain), to deliver the requested products and services.

Time to Plateau/Adoption Speed: Obsolete before Plateau.

Justification for Hype Cycle Position/Adoption Speed: Solutions will become a part of dynamic logistics configuration offerings.

Business Impact Areas: This is a good way for enterprises to begin coordinating internal and external resources for customer fulfillment.

Selected Vendors: i2 Technologies, SAP and Yantra.

Analysis by Karen Peterson

3.2 Transportation Management Suites

Definition: System to manage freight activities across the enterprise from strategic planning and sourcing, through tactical planning, operational planning and execution, visibility, freight payment and audit.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Leading vendors are offering solution suites with varying levels of integration and capabilities. Customers will increasingly deploy them as vendors build credibility.

Business Impact Areas: Enables the management of all freight processes, reducing freight spending and increasing customer satisfaction.
Selected Vendors: Global Logistics Technologies (G-Log), i2 Technologies and Manugistics.

Analysis by Jeff Woods

### 3.3 Container-Level RFID

**Definition:** Tagging containers of items such as pallets, cases or ocean containers at a specific point in the supply chain for limited tracking purposes.

**Time to Plateau/Adoption Speed:** Two to five years.

**Justification for Hype Cycle Position/Adoption Speed:** Some enterprises are already using container-level radio frequency identification (RFID). Developments in international trade and customs regulations may drive further adoption. Requirements by large retailers such as Wal-Mart will drive many consumer packaged goods enterprises to adopt.

**Business Impact Areas:** Decreases labor costs involved in supply chain transition points, improves inventory accuracy and reduces the need for inventory safety stocks.

Selected Vendors: Savi Technology and WhereNet.

Analysis by Jeff Woods

### 3.4 Price Optimization

**Definition:** Software that helps enterprises to optimize revenue, product sales and gross margins by calculating price levels for individual products and entire categories.

**Time to Plateau/Adoption Speed:** Five to 10 years.

**Justification for Hype Cycle Position/Adoption Speed:** Although price optimization is maturing rapidly in the retail industry, other industries are still in the investigative stages. For them, the ability to optimize pricing based on competitor initiatives and economic factors may never mature.

**Business Impact Areas:** Greater profitability, possible competitive advantages and reduced risks.

Selected Vendors: i2 Technologies, Manugistics, ProfitLogic, Rapt Technologies and Spotlight Solutions.

Analysis by Andrew White

### 3.5 Strategic Sourcing Applications

**Definition:** Tools to create an optimal set of suppliers and establish the terms of trade that are required to balance cost, quality and risk. Strategic sourcing applications include requests for proposal/requests for quotation (RFPs/RFQs), bid management, and supplier analysis and optimization.

**Time to Plateau/Adoption Speed:** Two to five years.

**Justification for Hype Cycle Position/Adoption Speed:** Strategic sourcing is beginning to look like a market. Analytics and RFP/RFQ vendors, as well as those with broader but shallower solutions, offer products that usually serve only a limited number of commodity groups, or have limited functionality. Through 2004, consolidation will present the market with larger, less-integrated suites.

**Business Impact Areas:** Unit cost reduction of up to 30 percent, which can translate into positive earnings per share, improved supplier performance and a balance of cost, quality, risk and technical innovation.

Analysis by David Hope-Ross

3.6 Web Services

**Definition:** The Web services concept treats software as a set of services that are accessible over ubiquitous networks, using Web-based standards and protocols such as SOAP and Universal Description, Discovery and Integration.

**Time to Plateau/Adoption Speed:** Two to five years.

**Justification for Hype Cycle Position/Adoption Speed:** Web services, the newest of all connectivity technologies, is rapidly descending into the Trough of Disillusionment. Companies such as United Parcel Service (UPS) and Federal Express are frequently used as examples to illustrate the ease and value of integrating an internal process with that of a trading partner. Although Web services are valuable for their ability to rapidly link enterprises and applications, enterprises are realizing that a lot of complexity and expense is involved. Most enterprises don't have the infrastructure and technology in place to handle this.

**Business Impact Areas:** When they are mature, Web services will allow enterprises to easily link processes together, and will ultimately lead to new supply chain integration processes — thus reducing lead times and providing greater flexibility.

Analysis by Karen Peterson

4.0 Sliding Into the Trough

4.1 Capable-to-Promise

**Definition:** A system that allows an enterprise to commit orders against available or planned capacity, as well as inventory.

**Time to Plateau/Adoption Speed:** Two to five years.

**Justification for Hype Cycle Position/Adoption Speed:** Although solutions are available, enterprises are struggling with data availability, accuracy and information latency when deploying these systems. Most have resorted to less-sophisticated kinds of capable-to-promise (CTP) systems — that is, those that don't provide rescheduling or profitability calculations.

**Business Impact Areas:** Enterprises that can correctly provide CTP systems to customers will increase customer satisfaction and leverage assets better.

Selected Vendors: Adexa, i2 Technologies, J.D. Edwards, SAP and Webplan.

Analysis by Karen Peterson

4.2 Supply Chain Event Management

**Definition:** Applications that enable enterprises to monitor and manage events across the supply chain. Supply chain inventory visibility systems enable enterprises to track and trace inventory globally, on a line-item level, and also to submit plans and receive alerts when events deviate from expectations. This visibility into orders and shipments on a real-time basis gives enterprises reliable, advanced knowledge of when goods will arrive.

**Time to Plateau/Adoption Speed:** Obsolete before Plateau.
Justification for Hype Cycle Position/Adoption Speed: Supply chain event management (SCEM) applications reached the Peak of Inflated Expectations in 2002, but vendors are now failing while customers (many of which are non-revenue-generating) are abandoning implementations. Customers now realize that the early solutions were simplistic and required them to rebuild business process knowledge—that is, logic already residing in the applications that sit underneath the SCEM solution. SCEM will not be a stand-alone solution, but rather it will be incorporated into many different applications in the form of the SCM5 (see "SCM5 Will Drive the Next Wave of Supply Chain Advantage," SPA-17-4799).

Business Impact Areas: SCEM capabilities will have a huge impact on business; however, SCEM is not a stand-alone solution.

Selected Vendors: Viewlocity, Vigilance and Vizional Technologies.

Analysis by Karen Peterson

4.3 Collaborative Planning

Definition: Applications that enable the sharing of planned demand or supply data with trading partners.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Although many enterprises began collaborative planning initiatives a few years ago, many have stepped back to re-examine these initiatives. Many enterprises are re-implementing solutions that link back-office applications to collaborative initiatives, deploying collaborative processes with internal personnel (such as salespeople) and cleaning up data. Collaborative applications are evolving; most of the early tools merely provided Web-based front ends with little flexibility in process and data support.

Business Impact Areas: Tools will enable enterprises to share demand and supply, as well as intellectual property, internally and externally.

Selected Vendors: Demantra, i2 Technologies, J.D. Edwards, Logility, Manugistics and Syncra Systems.

Analysis by Karen Peterson

5.0 Climbing the Slope

5.1 E-Marketplaces

Definition: An e-marketplace is an operation that aggregates buyers and sellers. E-marketplaces can enable transactions, collaboration and content. They offer market intelligence to buyers and sellers—buyers are in a better position to understand their buying behaviors and, thus, gain control over their e-procurement processes; suppliers are able to collaborate more effectively with other partners in the supply chain to reduce inventory, obtain greater visibility of supply chain constraints, and lower processing costs.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Heralded as the "next big thing" for optimal supply chain management in 1999, e-marketplaces suffered from immature functionality, misplaced participant priorities and an overall lack of adoption due to trust, control and change-management issues. The e-marketplaces that managed to stay in business are doing so by paring costs and focusing on more-tactical, high-value services. Consortia-based e-marketplaces such as Exostar, E2open and the WorldWide Retail Exchange (WWRE) have limited but dedicated adoption by consortium members. As
enterprises struggle with the cost and complexity of business-to-business enablement, e-marketplaces will be an attractive solution.

Business Impact Areas: They will provide low-cost solutions for trading partner integration. E-marketplaces will function in much the same way as utilities do, enabling participants to integrate once but also enjoy the benefits of multiple trading partners.

Selected Vendors: Covisint, E2open, Emptoris and WWRE.

Analysis by Karen Peterson

5.2 E-Procurement

Definition: Provides creation, escalation and routing of requisition approval and order processing for nonproduction goods and services.

Time to Plateau/Adoption Speed: Less than two years.

Justification for Hype Cycle Position/Adoption Speed: E-procurement has had time to mature and is now struggling to climb out of the Trough of Disillusionment to become an important (albeit commoditized) component that enables enterprise procurement efficiency.

Business Impact Areas: Largely automates the procurement process. Helps to requisition cycle time reduction and end-user self-service.

Selected Vendors: Ariba and PeopleSoft.

Analysis by David Hope-Ross

5.3 Supply Chain Planning

Definition: Applications that coordinate assets to optimize the delivery of goods and services, balancing supply and demand. A supply chain planning (SCP) suite sits atop a transactional system to provide planning, what-if scenario analysis and real-time demand commitments.

Time to Plateau/Adoption Speed: Less than two years.

Justification for Hype Cycle Position/Adoption Speed: SCP has had two years of depression as the large, best-of-breed vendors failed to live up to overoptimistic promises. Although the vendors haven’t recovered, the solutions are more-scalable and functionally deep, the promises are more-realistic and customers have realized that this type of implementation requires a significant amount of effort.

Business Impact Areas: Enterprises are able to use resources better by coordinating supply and demand.

Selected Vendors: i2 Technologies and Manugistics.

Analysis by Karen Peterson

6.0 Entering the Plateau

6.1 Bar Code Warehouse Management Systems

Definition: Applications that manage the operation of a warehouse or distribution center. Functionality includes receiving, putaway, inventory management, cycle counting, task interleaving, wave planning, order allocation, order picking, replenishment, packing, shipping, labor management and automated material-handling equipment interfaces. Using radio frequency (RF) technology in conjunction with bar
codes provides the foundation of a warehouse management system (WMS), delivering accurate information in real time.

*Time to Plateau/Adoption Speed:* Less than two years.

*Justification for Hype Cycle Position/Adoption Speed:* Most midsize and large distribution-intensive enterprises have adopted some RF-based WMS systems. However, at this point, many of these enterprises are evaluating upgrades and replacements.

*Business Impact Areas:* Reduction in labor, reduction in inventory, increase in customer service levels, improved ability to provide data for other supply chain processes.

*Selected Vendors:* HighJump Software, Manhattan Associates, Marc Global and Swisslog.

*Analysis by Jeff Woods*

6.2 Transportation Routing and Scheduling

*Definition:* Specifies how to take a collection of pickup and drop-off activities and sequence them to meet all customer requirements and minimize the distance traveled.

*Time to Plateau/Adoption Speed:* Less than two years.

*Justification for Hype Cycle Position/Adoption Speed:* This continues to be deployed. Early solutions were mostly for fixed routes, but newer solutions enable dynamic route planning and the sophisticated use of assets outside of typical "delivery style" networks.

*Business Impact Areas:* Enables better use of transportation resources and improves customer service.

*Selected Vendors:* The Descartes Systems Group, GEOCOMtms, UPS Roadnet and Velant.

*Analysis by Jeff Woods*

6.3 Factory Scheduling

*Definition:* Generates plant-level execution schedules by product and resource (for example, line and machine), and resolves day-to-day capacity bottlenecks. Scheduling applications normally include a more-granular level of resource information, and will provide such functionality as sequence-dependent setup, tank scheduling and point-of-use material availability.

*Time to Plateau/Adoption Speed:* Less than two years.

*Justification for Hype Cycle Position/Adoption Speed:* Factory scheduling has been around for years. It was one of the early SCP applications.

*Business Impact Areas:* Enterprises with complex factories are continuing to invest in these applications. Many of these enterprises are replacing custom-developed solutions with packaged solutions.

*Selected Vendors:* Adexa, Greycon, i2 Technologies, Manugistics, Matrikon and Wam Systems.

*Analysis by Karen Peterson*
6.4 Electronic Data Interchange

*Definition:* The electronic exchange of trading documents (for example, invoices and orders) to facilitate e-commerce. Originally conducted only via value-added networks, electronic data interchange (EDI) is now moving to the Internet.

*Time to Plateau/Adoption Speed:* Less than two years.

*Justification for Hype Cycle Position/Adoption Speed:* As enterprises extend their number of trading partners, EDI continues to experience increasing use in the management of SCM processes. Many small and midsize businesses are employing Web-based EDI tools to reduce costs.

*Business Impact Areas:* Enables transactional integration, which reduces errors and increases the speed of information exchange.

*Analysis by Karen Peterson*

7.0 Conclusion

Although the more-traditional elements of supply chain management are mature, new technologies and applications will raise the bar for competitive advantage. Even conservative enterprises should investigate mature SCM solutions. Since the SCM technologies on this Hype Cycle will mature at different rates, enterprises should prioritize based on individual needs and industry requirements.
Appendix A: Hype Cycle Definitions

Technology Trigger: A breakthrough, public demonstration, product launch or other event generates significant press and industry interest.

Peak of Inflated Expectations: During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures, as the technology is pushed to its limits. The only enterprises making money are conference organizers and magazine publishers.

Trough of Disillusionment: Because the technology does not live up to its overinflated expectations, it rapidly becomes unfashionable. Media interest wanes, except for a few cautionary tales.

Slope of Enlightenment: Focused experimentation and solid hard work by an increasingly diverse range of organizations lead to a true understanding of the technology’s applicability, risks and benefits. Commercial, off-the-shelf methodologies and tools ease the development process.

Plateau of Productivity: The real-world benefits of the technology are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations. The final height of the plateau varies according to whether the technology is broadly applicable or benefits only a niche market. Approximately 30 percent of the technology’s target audience have or are adopting the technology as it enters the Plateau.

Time to Plateau/Adoption Speed: The time required for the technology to reach the Plateau of Productivity.
Appendix B: Acronym Key

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>CTP</td>
<td>capable-to-promise</td>
</tr>
<tr>
<td>EDI</td>
<td>electronic data interchange</td>
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<tr>
<td>RF</td>
<td>radio frequency</td>
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<tr>
<td>RFID</td>
<td>RF identification</td>
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<tr>
<td>RFP</td>
<td>request for proposal</td>
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<tr>
<td>RFQ</td>
<td>request for quotation</td>
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<tr>
<td>SCEM</td>
<td>supply chain event management</td>
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<td>SCM</td>
<td>supply chain management</td>
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