

# White Paper: Adding Intelligence to the Supply Chain

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## Intro

Supply chain management has changed dramatically in the past 15 years or so, as ERP and SCM applications have led to automation and streamlining of processes throughout the supply chain. As a result, companies have seen significant improvements in planning, scheduling and execution, leading to lowered operating costs.

However, these transactional systems have not provided the ability to adequately analyze the operational effectiveness across the supply chain. The next step is to apply analysis – to examine and measure the transactional improvements derived from ERP and SCM systems.

*"Organizations need the ability to `see' inside and measure the effectiveness of their supply chain processes in order to make better business decisions regarding all facets of their supply chain operations. Supply Chain Intelligence offers the mechanism that can facilitate this view."*

Curt Hall in "Supply Chain Intelligence: Technology, Applications, and Products"

## Supply Chain Intelligence

Supply Chain Intelligence (SCI) is the fusion of Supply Chain Management (SCM) and Business Intelligence. Applying BI to SCM functions on a strategic enterprise scale enables the integration of various operating systems, multiple data sources, tailored analytics, KPI's, industry best practices, and business processes. This gives the capability to access, analyze, and share information across the supply chain network. The most important concept here is that of the analytic application – software designed specifically around supply chain processes such as procurement, manufacturing, and distribution. Through the application of analytics and standardized metrics, companies can gain critical insight into the entirety of their supply chains, reducing costs, driving revenue growth, and establishing credibility with customers and partners.

## SCM vs. SCI

SCM and SCI are fundamentally different in nature. While SCM is focused primarily at the transactional level, SCI is analytic in nature. As such, SCM confines itself mostly to assisting in tactical decision-making, SCI enhances strategic decision-making and forecasting based on historical data.

## SCM vs. SCI

SCM	SCI
Largely about managing the procurement and production links of the supply chain life cycle	Provides a broad view of an entire supply chain to reveal full product and component
Transactional	Analytic
Tactical decision making	Strategic decision making
Helps reduce costs through improved operational efficiency	Reveals opportunities for cost reduction, but also stimulates revenue growth
Records one state of data representing 'now'	Maintains historic data
Assists in material and production planning	What-if forecasting based in historic data
Quantifies cost of some materials	Enables an understanding of total cost
Can show today's yield but cannot explain influences on it	Can drill into yield figures to reveal what caused the performance level

As the above chart shows, SCI complements SCM in nearly every differentiating factor. Essentially, this is because SCI is focused on the “why”, as opposed to SCM’s “what” and “how”. For instance, while SCM can show today’s yields, it cannot explain influences on them. SCI enables drilldowns into yield figures, so that one can discover what caused any performance fluctuations. SCI, using analytics and historical data, is able to offer insight into the supply chain that SCM is simply unable to.

### **Complexities in SCI Implementation and Development**

Today’s supply chain is anything but simple. It is, in literal terms, not a “chain” at all, but an incredibly complex, dynamic, data-driven network of inter-relationships among dozens, hundreds, or thousands of suppliers, customers, and partners. It spans a multitude of interdependent functions, and a myriad of metrics associated with each function.

The two most difficult issues in developing and implementing SCI applications are data integration and organizational issues.

#### *Data Integration*

Data integration is the single largest problem facing SCI development and implementation. Compared with company-wide scaled data integration efforts, collecting and integrating supply chain data is a nightmare. BI requires about seven data sources, as opposed to SCI’s 15 data sources. The common data sources that both SCI and BI require integration with, such as ERP, CRM, and Legacy systems are now well integrated with both SCI and BI technology. However, certain uncommon data sources make data integration especially difficult for the supply chain. For instance, shop floor manufacturing data can be especially difficult to collect because many of these systems use unusual data formats, as opposed to the common data sources.

### *Organizational Issues*

The main organizational issue facing SCI adoption is the cultural upheaval that can come as a result of collaboration of supply chain partners.

A major factor driving collaboration between supply chain partners is the advent of web-integrated applications. Through the internet, suppliers and their partners can stay connected in real time, leading to greater communication and control over supply chain decisions. The ability to access real time data over an intranet is quickly becoming standard for collaborative supply chain management.

However, this new collaborative approach does not come without potential pitfalls and concerns. Companies have expressed apprehension over the transparency the web-based collaborative model requires, and cultural issues have the potential to be even more problematic than those between divisions of a single company do. For supply chain partners to achieve collaboration among functional units, they must battle against ingrained practices, long-standing hierarchies, and territorial disputes, as well as many managers' tendencies towards division-specific performance at the expense of enterprise performance.

### **SCI Benefits**

In order to overcome the inherent reluctance certain supply chain participants feel towards a transparent supply chain intelligence solution, it is necessary for SCI improvements to have consistent and unwavering backing at the executive level. The benefits SCI can bring to supply chain efficiency must be highlighted, so that employees at all levels can see that any temporary inconvenience or adjustment is more than made up for by the long term improvements that SCI can facilitate.

- Improved forecasting abilities
- Reduction in excess inventory across the supply chain
- More efficient handling and management of raw materials, inventory, production planning, and finished goods
- Identification of top performing suppliers
- Accurate measurement of supplier performance over time

In short, SCI can provide the framework for a new, more collaborative, and more efficient supply chain network.

### **Industry**

The challenges of SCI adoption are shaping the supply chain industry. Companies realize that SCI is the key to achieving the vision of an extended supply chain – a near real-time, e-business network that transcends a company's boundaries to achieve precise synchronicity and profitable collaboration among thousands of moving parts and partners.

Despite apprehensions over transparency, the new web-based collaborative model is being embraced by a large portion of companies involved with a supply chain. In a survey conducted by Forrester Research, as of 2001, 57 percent of 40 supply chain executives at \$1 billion-plus companies either had not begun or were just getting started with web-based collaborative supply chains. By 2003, Forrester found that 80 percent expected to have these efforts nearly or fully complete.

Furthermore, advances in data integration technology are allowing consolidation of multiple data sources, which facilitate SCI requirements.

*“Companies are spending less on functionally targeted supply chain management applications in favor of supply chain network solutions that allow monitoring, managing and optimizing the entire supply chain network. Forrester expects firms to stop investing in narrowly focused functional SCM applications. Instead, they will hone their ability to monitor, manage and optimize their supply network processes. Forrester projects that the total spending on supply network process improvement initiatives in the US will rise from \$2.4 billion in 2003 to \$9.1 billion in 2008.”*

*Forrester Research*

### **Vendors Offering SCI**

The vendors of SCI tools and solutions may be divided into 3 groups.

The first group is composed of pure-play SCM or SCI vendors, companies that have a focus on Supply Chain Management applications and solutions. Examples of this category would be Manugistics, SeeCommerce, and i2 Technologies.

The second group is composed of business intelligence vendors entering the SCI market to supplement their enterprise-wide BI platforms. Examples of this category would be SAS Institute, Business Objects, and Cognos.

The third group is composed of ERP or data storage companies who are branching out into the SCI market in order to supplement their product lines. Examples of this category would be Oracle, SAP, and Teradata.

In recent years, these second and third groups have made continued inroads toward developing their SCI applications and solutions, as well as acquiring companies to strengthen their SCI presence. For instance, Oracle’s acquisition of PeopleSoft gave them a credible SCM platform with analytic capabilities.

During the last year especially, significant acquisitions of prominent supply chain analytic vendors have taken place. Manugistics was acquired by JDA software. In addition, SeeCommerce’s main SCI/supply chain analytics application SeeChain was purchased by Teradata, a company with an already considerable SCM presence.

## **Summary**

Supply Chain Intelligence is the convergence of Supply Chain Management and Business Intelligence technologies – the integration of transactional systems and analytic applications specifically tailored around supply chain processes such as procurement, manufacturing, and distribution. The result of this is the capabilities to access, integrate, analyze, and share information across the supply chain network. Through the application of analytics and standardized metrics, companies can gain critical insight into the entirety of their supply chains, reducing costs, driving revenue growth, and establishing credibility with customers and partners.

The two major challenges in implementation and development of SCI are data integration and organizational issues generated by collaboration between supply chain partners. These challenges are shaping the supply chain industry. Companies have come to understand that SCI is crucial to achieving an improved supply chain – one with a web-based, virtually real-time network extending beyond a company’s boundaries toward the goal of collaboration and transparency among the multitude of supply chain partners and processes.

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