



**Executive
Guide to
Supply
Chain
Management
in South
Asia**

Research

Analysis

Communication

Action

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About This Executive Guide

This Executive Guide presents a summary of results found right from an analysis of current and emerging trends in executive thinking. It provides key pointers for decision makers and leaders.

- A summary of executive trends
- A summary of key executive trends
- A guide to some of the emerging information technology solutions

This is one of a series of INPUT guides involving the business IT and business sectors.

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- Electronic Marketing
- Electronic Government
- Enterprise Applications Software
- e-Business
- IT Communications & Support
- IT Governance

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- Create and maintain a strategic IT plan
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Since its founding in 1994, INPUT has been a leading IT consulting and research organization. It has been successful in helping companies to make key decisions about their IT strategy and to take advantage of the opportunities in the IT market.

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Executive Guide to Supply Chain Management in South Asia



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Introduction

Competition is growing while profits and margins are falling. These are the challenges facing most South Asian enterprises, particularly in the manufacturing and distribution sectors. As they strive to improve efficiencies, reduce costs and increase profits, companies around the world -- not only in South Asia -- are seeking to take control of their logistics and maximize the supply chain.

A wide variety of Supply Chain Management (SCM) solutions are now available to South Asian enterprises to help them control and maximize their interaction and transactions with suppliers. These solutions range from consulting to internal SCM integration using SCM software to the complete outsourcing of Supply Chain tasks and processes.

This *Executive Guide to Supply Chain Management in South Asia* provides decision makers in South Asia with an understanding of SCM solutions and the implications for senior executives. It provides recommendations and observations based on extensive discussions with senior executives across South Asia, resulting in a unique, localized perspective.

INPUT conducted a survey of 210 organizations (35 per country) in each of six South Asian countries: India, Indonesia, Malaysia, the Philippines, Singapore and Thailand. The survey involved interviews with two senior executives in each organization -- the senior executive in charge of procurement and the senior IT executive -- for a total of 420 executives interviewed.

This *Executive Guide* provides an executive-level summary of the findings of this survey, and offers detailed profiles of selected providers of SCM solutions. These are the vendors that we recommend as the first point of contact for any South Asian organization seeking to leverage current technology and requiring best-of-breed SCM solutions. The focus of the *Executive Guide* is on providing a localized perspective on the needs of South Asian organizations, highlighting trends and areas of opportunity.

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Executive Summary

Supply Chain Management (SCM) is a hot topic, in South Asia as well as in North America and Europe, because of the critical importance of the supply chain to any company in the manufacturing or distribution industries. A critical success factor -- if not a critical factor for survival -- is the effective and efficient control of suppliers.

Effective management of the supply chain offers significant advantages to companies looking to gain a competitive edge. Companies around the world that have taken a lead in implementing SCM solutions have reported such important advantages as:

- reduced costs and higher margins
- improved order fill rates and faster time to market for new products
- significant reductions in inventory and fewer inventory imbalances
- improved cash flows and working capital

Just as technology is helping companies to better plan and integrate processes through Enterprise Resource Planning (ERP) solutions, it is also helping companies to better manage their interaction and transactions with suppliers. SCM takes ERP a step further, helping companies manage resources beyond the enterprise as well. In fact, ERP and SCM often go hand-in-hand, since the process of integrating enterprise-wide processes also needs to involve the integration of the supply chain.

A growing number of organizations are benefiting from the outsourcing of supply chain processes that are integral to the efficient delivery of product. They are relying on experts in fulfillment to manage the process for them, from taking a customer's order to final delivery of the product.

Companies taking advantage of supply chain outsourcers are able to not only ensure reliability in fulfilling customer orders while often reducing costs by taking advantage of the economies of scale offered by outsourcers.

The use of supply chain outsourcing has been particularly strong in the technology sector, where there is a tradition of outsourcing significant pieces of the supply chain.

This study found that companies in South Asia are using SCM solutions to:

- gain a competitive edge
- ensure on-time delivery
- respond to changing markets through a faster time to market for new products
- obtain quick and accurate information on their supply chain and supplier activity
- make their business more efficient and effective
- optimize resources and keep inventory to a minimum

Despite all the advantages offered by SCM solutions, only about half of the large- and medium-sized manufacturers surveyed in South Asia have implemented such solutions.

One key observation of this study was that there is a general lack of awareness of supply chain management, and the technology solutions currently offered, among executives in South Asia.

Effective management of the supply chain is a critical success factor for any manufacturing or distribution company in South Asia. Effective supply chain management is not only an essential to lowering costs and improving efficiency, it is also essential to ensuring on-time delivery and customer satisfaction. The state-of-the-art SCM solutions available today are helping local companies leap-frog the competition and move into the forefront of supply chain management.

What are SCM Solutions?

As the name implies, Supply Chain Management solutions help businesses manage the entire supply chain. Specifically, they help in managing and planning demand, supplies, sourcing, procurement and transportation.

Usually, the solution involves a combination of SCM applications and implementation services, but can sometimes involve services such as consulting or outsourcing.

Executives looking for technology solutions to meet their SCM needs have often been confused by conflicting messages from vendors offering different types of solutions. On the one hand, there have been the ERP vendors highlighting the SCM capabilities of their products. On the other hand, there have been vendors selling specialized SCM applications.

Historically, there have been important differences between ERP systems and specialized SCM systems. However, this is changing. A rapid convergence between ERP and SCM software has been taking

place. The ERP vendors have awoken, and are rushing to add more sophisticated SCM functionality to their ERP products. The presence of Baan in this *Executive Guide* is testimony to that point. At the same time, the leading SCM vendors -- notably Manugistics -- have also been expanding their functionality, further encroaching on the area inhabited by the ERP vendors.

Another aspect of this trend is that both ERP and SCM software are being made more modular, so that companies can plug-and-play with components of different vendors more easily than in the past, when both ERP and SCM software were large pieces of code that were harder to integrate.

While there is greater choice in the SCM applications being offered, there is also greater choice in the SCM services being offered. In recent years, new services have come on the South Asian scene from integrated supply chain services and solution providers -- such as Modus Media International -- that can dramatically improve the efficiency of fulfilling orders and getting product to market.

For South Asian executives looking for state-of-the-art SCM solutions, these trends translate into greater choice and better value. Each of the many SCM solutions available today offer greater functionality and integration than in the past, and each provides their own unique solutions to the SCM needs of South Asian businesses.

SCM applications and solutions typically focus on managing four key aspects of the supply chain:

Demand Planning: Looks at past performance and historical trends to determine current and future production. These can dramatically improve the accuracy of demand forecasting, resulting in reduced inventories and shorter lead times. By exchanging order and forecast information on a real-time basis with suppliers, manufacturers can ensure just-in-time delivery.

Supply and Procurement Planning: Covers replenishment requirements and makes sure safety stocks are at appropriate levels. It also helps to make it easier for staff to order through procurement channels and for the organization to better control procurement.

Manufacturing Scheduling: Looks at available resources and devises a production schedule based on "constraints", or real-world restrictions. It can automatically adjust manufacturing plans if certain supplies are unavailable or if other problems occur. Production equipment can be monitored in real-time, and corrections made as needed. It can also ensure that equipment is taken out of service in a controlled, planned manner to ensure that downtime is shorter

and any impact minimized. The end result can be a dramatic improvement in the use of available resources and equipment.

Transportation Planning: Determines the best, most cost-effective method for the transport and distribution of goods throughout the supply chain. It can ensure that transportation assets are maximized and that delays to production schedules are minimized.

Some vendors are more focused on one area, such as manufacturing scheduling or demand planning; some provide solutions across all four areas. Each manufacturing or distribution company has its own needs, priorities and requirements. To meet those needs, there is an impressive array of SCM solutions being sold and supported in South Asia today, enough to ensure that the needs of almost any organization can be met.

Solutions that manage the relationship with suppliers are, increasingly, being linked to solutions that manage the relationship with customers -- known as Customer Relationship Management (CRM) solutions. By linking SCM solutions with CRM solutions, customer requests and orders can be tied directly to suppliers, production and delivery. The result is better service to the customer combined with a more efficient organization.

SCM solutions are also being designed with the Internet in mind. Initially, this has involved Web front-ends for suppliers and customers, Web catalogs, and typical transactions being sent over the Internet instead of via the more expensive and complicated EDI. However, most SCM solutions are moving beyond this to provide the complete integration of Web technology.

The Use of SCM Solutions in South Asia

Making the enterprise more efficient and profitable by managing the supply chain is a major issue and concern for senior executives across South Asia. And, it is an issue that is of growing importance as competitive pressures force companies to squeeze margins even further. This study found that the two biggest concerns among senior executives in South Asia are getting products out faster and making sure they have the information -- in real time -- to carefully manage the supply chain. (see Exhibit I on the following page). It is important to note that time to market and on-time delivery have emerged as critically important issues for South Asian executives.

Other key concerns include the ability to accurately plan and forecast production needs, efficiency in production and the use of resources and maintaining good relations with suppliers.

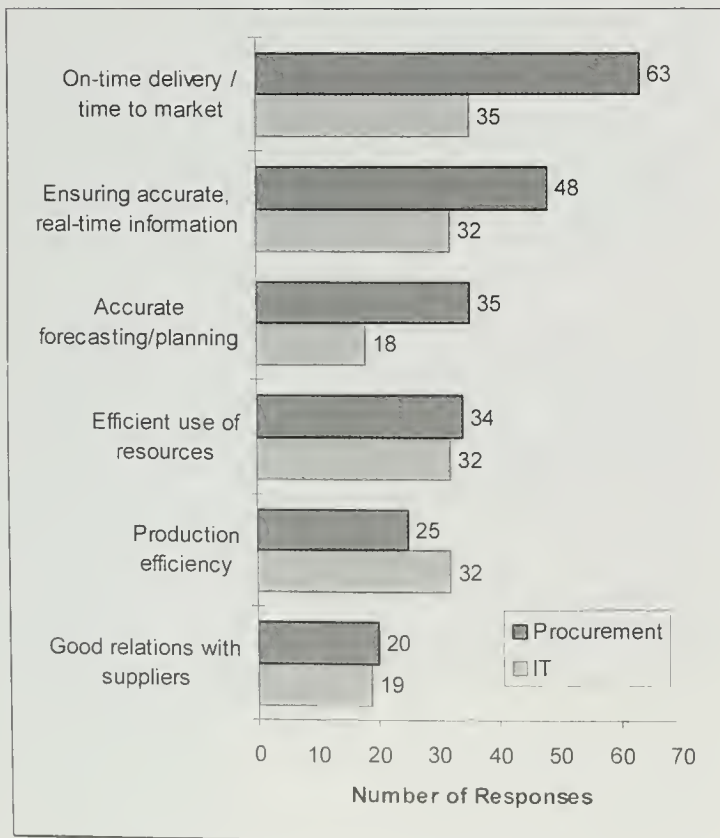
In India, the key concern of senior IT management was to ensure the availability of accurate, real-time information, to ensure accurate forecasting and planning and to address management reporting needs. The senior procurement executives had similar concerns, but were also concerned about on-time delivery and time to market.

In Indonesia, the two key concerns for both senior IT and procurement managers were to ensure a fast time to market for products and the availability of accurate, real-time information.

In Malaysia, ensuring accurate, real-time information and accurate forecasting/planning were the top two concerns for both IT and procurement executives. IT executives also mentioned a concern for meeting management reporting requirements while procurement executives noted a concern for improving time to market and on-time delivery.

Exhibit I

Biggest Concerns of South Asian Executives in Managing the Entire Supply Chain



Note. Multiple Mentions
Sample: 210 Organizations Surveyed

Source: INPUT

Reducing cost was the key concern in the Philippines. IT executives were primarily concerned about minimizing production costs and improving production efficiency, while procurement executives were concerned about on-time delivery and time to market, as well as ensuring the efficient use of resources.

In Singapore, both IT and procurement executives were concerned about on-time delivery and time to market, as well as ensuring the efficient use of resources. IT executives also noted a strong concern about ensuring that accurate, real-time information is available.

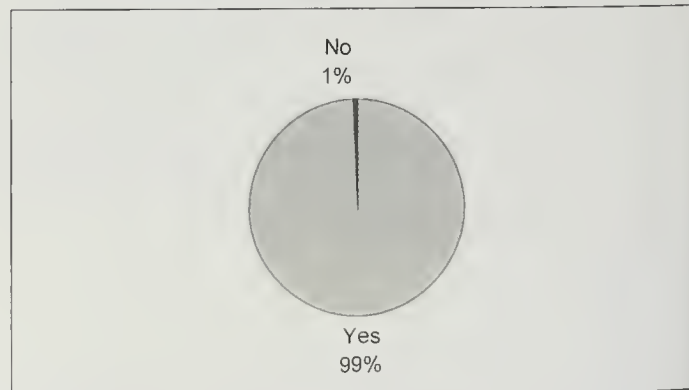
The biggest concern for executives in Thailand was on-time delivery/time to market as well as ensuring production efficiency. IT executives were also concerned with reducing costs.

The concerns highlight the growing importance for South Asian executives to take greater advantage of technology in gaining a competitive edge, and to adjust to shorter, more fragmented product life cycles. In many cases, this can involve significant enterprise-wide change. Companies re-engineering their business processes around state-of-the-art supply chain applications are one example. Another example are the many information technology and telecoms companies that are outsourcing nearly all their supply chain processes to supply chain management companies, or business process outsourcers as they are sometimes called.

Technology is widely seen as an important, if not essential, tool in addressing the challenges of managing the supply chain and improving production efficiencies. All but two of the senior procurement executives interviewed expressed the view that technology can help executives better manage and optimize functions across the supply chain.

Exhibit II

Can Technology Help to Better Manage Functions Across the Supply Chain?



Sample: 210 Senior Procurement Executives

Source: INPUT

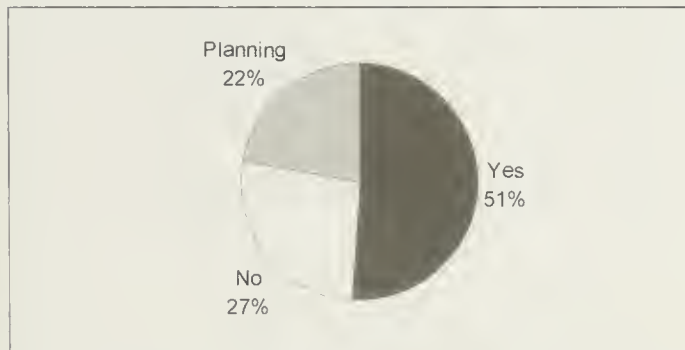
Given such a strong endorsement of the contribution technology can make to an enterprise in managing the supply chain, one might expect all of these organizations to be taking advantage of such solutions to better streamline their operations and improve efficiencies. However, that is not the case. While senior executives have little doubt about the important contribution of technology to managing the supply chain, many South Asian executives remain unconvinced or unaware of the value these available solutions to their company.

Still, about half of the organizations interviewed have already implemented SCM solutions, with almost half of the remainder planning to implement such solutions (see Exhibit III). Thus, about three-quarters of the companies surveyed are either using SCM solutions or planning to do so. The figures for organizations using SCM solutions include those that have installed SCM modules of ERP applications.

Those companies that have implemented SCM solutions are finding these solutions to be a valuable weapon in their fight to improve efficiency, ensure the availability of accurate, real-time information and to facilitate shorter time-to-market cycles.

Exhibit III

Is Your Organization Using SCM Solutions?



Sample: 210 Senior IT Executives

Source: INPUT

The number of companies currently using SCM solutions was highest in Indonesia, Singapore and Malaysia, and lowest in Thailand.

The strongest indications of planned SCM solution activity were seen in India, Malaysia and Thailand.

Key areas where organizations are planning to implement SCM solutions include:

- Manufacturing & production planning
- Purchase & materials planning
- Transportation management & planning
- Replenishment planning
- Supplier collaboration

South Asian organizations have implemented SCM solutions primarily in the areas of replenishment planning, manufacturing planning & scheduling and purchase & material planning (see Exhibit IV).

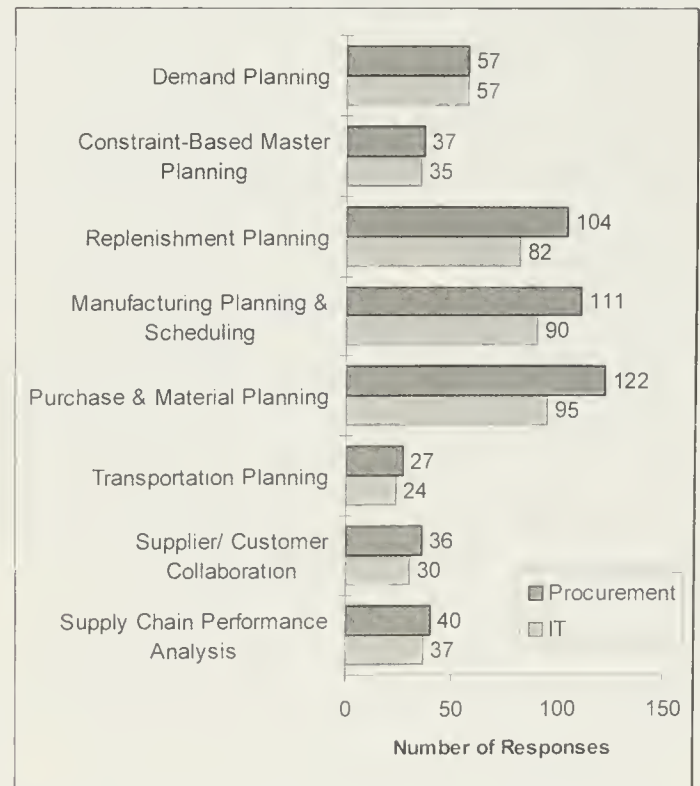
As highlighted in Exhibit IV there were differences between the IT executives and procurement executives surveyed as to what SCM solutions were installed in their organizations. At 27 organizations the procurement executive said they were using SCM solutions but the IT executive said they were not.

There appear to have been two factors behind this difference:

1. Senior IT executives tended to count only significant, enterprise- or department-wide SCM solutions, while some senior procurement executives included simple, PC-based applications.
2. Departments sometimes implement relatively small applications of which the senior IT executive is not aware.

Exhibit IV

Types of SCM Solutions Currently in Use



Note: Multiple Mentions

Sample: 210 Organizations Surveyed

Source: INPUT

There were some differences in the current use of SCM solutions by country within South Asia. Specifically, the use of:

- demand planning was strongest in Indonesia and weakest in the Philippines;
- constraint-based master planning was strongest in India and Indonesia and weakest in the Philippines and Thailand;
- replenishment planning was strongest in Singapore and Indonesia and weakest in Thailand and the Philippines;
- manufacturing planning and scheduling was strong in all the countries, especially Indonesia and Malaysia;
- purchase and material planning was strong in Singapore, Malaysia and Indonesia, with India not far behind;
- both transportation planning and supplier/customer collaboration was strongest in Singapore and weakest in the Philippines;
- supply chain performance analysis was strongest in India and Indonesia and almost non-existent in the Philippines.

Both groups of executives -- procurement and IT -- surveyed said they were quite satisfied with the SCM solutions they had installed, with the IT executives showing, on average, a slightly higher level of satisfaction as compared to the procurement executives.

One comment made by the executives interviewed was that it was very important -- for many, extremely important -- that their SCM applications be integrated into their organization's 'back-end' systems. However, many also indicated that they were less than satisfied with the current level of integration. For many, the problem stems from having older, legacy 'back-end' systems combined with new, state-of-the-art packaged applications. Unfortunately, for most there are no easy answers or quick fixes to this problem.

This study found that South Asian manufacturers and distributors rely primarily on EDI and the Internet to interact electronically with suppliers. However, this is changing. The Internet has become the preferred means of interacting electronically with other businesses, and should eclipse EDI over time.

Making their business more efficient through better planning, reducing inventory by optimizing resources and obtaining good, accurate information on their supply chain in real-time are the three key benefits that senior executives across South Asia are looking

for from SCM solutions (see Exhibit V), although each group of executives had their own views as to how SCM solutions could benefit them.

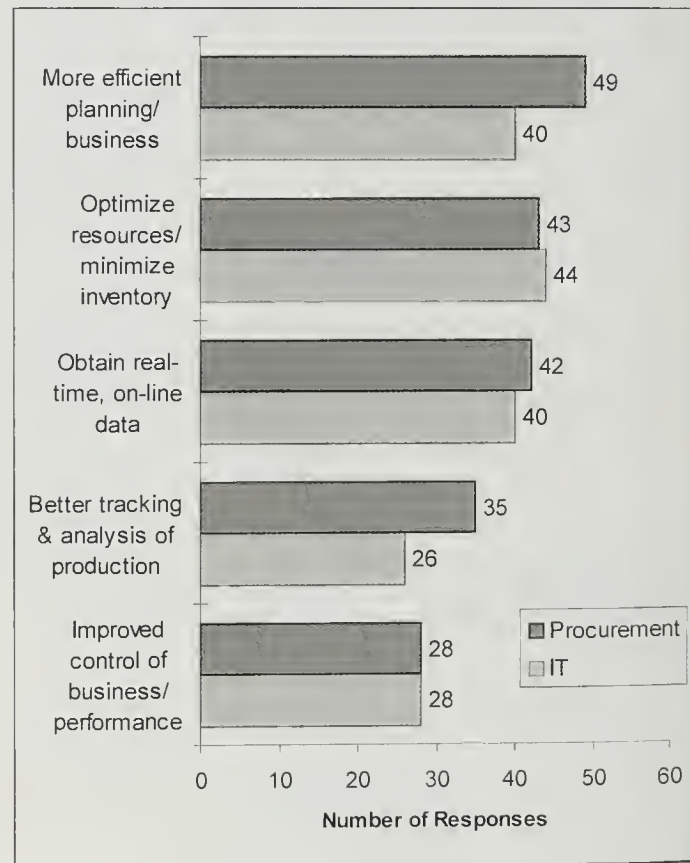
In India, executive have been looking to SCM solutions to help optimize resources. IT executives have also been looking for SCM solutions to provide real-time, on-line data, while procurement executives have also been looking for SCM solutions to help them meet market needs.

In Indonesia, IT executives have been looking for SCM solutions to help in improving business efficiency, while procurement executives have been looking for quick, accurate information on the supply chain.

In Malaysia, the IT executives have been looking for SCM solutions to help them better control the business and the supply chain, while procurement executives have been looking for better, quicker and more accurate information on the supply chain.

Exhibit V

Key Benefits Sought from SCM Solutions



Note: Multiple Mentions
Sample: 210 Organizations Surveyed

Source: INPUT

In the Philippines, the IT executives have been looking for help in maximizing resources, getting better, real-time information, and better controlling the business; procurement executives have been looking for help in better tracking supply chain activity, improving the

speed and accuracy of information available and improving relations with suppliers.

In Singapore, IT executives have been looking for SCM solutions to help provide the real-time, on-line data they need, while procurement executives have been looking for help in making the business more efficient and optimizing resources.

In Thailand, IT executives have been looking to lower costs and make operations more efficient, while procurement executives have been looking for better information and data.

Executives interviewed in this study from organizations that had implemented SCM solutions were satisfied with the ability of their SCM solutions to deliver the key benefits sought at the beginning of the project. Many indicated a very high level of satisfaction with the results and achieved benefits.

South Asian enterprises that have implemented SCM solutions are seeing clear and tangible results, and benefits that are providing a competitive advantage. This should serve as a wake-up call for companies that have not yet implemented SCM solutions or that have not yet made management of the supply chain an integral part of their processes.

Recommendations

Companies of all sizes in South Asia are experiencing the challenge of maintaining margins while fending off competitors and adjusting to changing markets. To help them meet this challenge, companies in South Asia's manufacturing and distribution industries are looking to better manage the supply chain and optimize efficiency in their operations.

SCM solutions are helping businesses to better manage the supply chain, lower inventory levels and optimize resources. Most of those in South Asia that have implemented SCM solutions have seen tangible benefits as a result. In many cases, the benefits have been not only been tangible but significant. Those that have not implemented SCM solutions, or have not made these solutions an integral part of their processes, are finding themselves at a competitive disadvantage. The extent to which SCM solutions provide a competitive advantage will only increase.

In light of this study, INPUT offers the following recommendations:

1. **Ensure that a supply chain focus is in place** within your organization. SCM solutions can only facilitate and automate SCM processes. If the processes are not in place, implementing SCM solutions will be difficult and, possibly, ineffective. Make sure that your organization has a strategic
2. **Gain a better understanding** of the SCM solutions -- both applications and services -- available in South Asia today. Take the time to explore how technology can help you and your organization to better understand and optimize the supply chain. Whether you decide to implement SCM solutions or not, make sure you have the information to make an informed decision.
3. **Consider outsourcing SCM tasks and processes**, looking at the options and services available today. Investigate services offered in such areas as assembly/kitting, warehousing and distribution, demand management, transaction management and report, response management and fulfillment.
4. **Consider implementing SCM solutions in stages**, and consider bringing in outside consultants and systems integrators to help. Given the significant benefits of a proper implementation, it makes sense to make sure that it is done correctly and efficiently.
5. **Ensure executive buy-in on** any SCM decision. The implementation of SCM solutions involves multiple departments, so it is important to have the full support of the top management.
6. **Involve all relevant departments throughout the process.** The effective implementation of a SCM solution ensures that the project is integrated, and that the right information is delivered to the right people. While the executives surveyed highlighted the importance of enterprise-wide integration for SCM solutions, most of the SCM solutions implemented in South Asia today are not well integrated. A lack of communication between departments within large- and medium-sized organizations was often the cause.
7. **Link the project to overall objectives and needs.** The SCM solution needs to be tied to the objectives and goals of the business. Linking the company's goals and objectives to the implementation of the SCM solution will help ensure that it results in clear, practical and measurable results to the enterprise.
8. **Educate and train.** Ensure that adequate training and education are provided to the staff involved. In particular, make sure that the sales, marketing and support staff understand the technical aspects of the solution, and that the technical staff understand the business aspects of the solution. Since suppliers and partners are involved, consider the need to extend training to relevant staff of suppliers and partners as well.

Profiles

Profiles of Selected
Supply Chain
Management
Solution Providers
in South Asia

Baan 11

Optimal Network 16

IBM® 21

manugistics Leveraged Intelligence 26

MODUS MEDIA
INTERNATIONAL 31

ORIGIN 36

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Company Background

Baan Company is a leading global provider of enterprise business solutions, with systems implemented at approximately 13,000 customer sites worldwide. Founded in The Netherlands in 1978, Baan has dual headquarters in Barneveld, The Netherlands and Herndon, Virginia, United States of America.

Designed to meet the growing needs of a broad range of companies, Baan enterprise solutions enable companies to continuously reduce software complexity and cost, enhance ease of use, and bring value to a company's own customers and partners. Benefiting

mid-market and large-scale multinational companies alike, Baan enterprise solutions enable organizations from all industries to master change, drive strategic business growth, improve business processes, reduce operating complexity, and increase corporate flexibility.

Baan, a public listed company on the NASDAQ (BAANF) and ASE (BAAN), achieved revenues in fiscal year 1998 of US\$736 million. The company presently employs more than 4,700 professionals worldwide.

Integrated Business Solutions

As integration has always been a key component in the Baan solution strategy, it is no surprise that Baan offers one of the broadest sets of integrated enterprise applications, which extend beyond the enterprise to reach a company's customers and suppliers.

This comprehensive portfolio of integrated solutions includes best-in-class, component-based applications that span an organization's entire value chain including E-Business and Web Commerce, Customer Relationship Management (CRM), Supply Chain Management (SCM), and Enterprise Resource Planning (ERP). Baan also offers a global network of support, consultancy and education services – including 11 application service provider (ASP) partnerships, more than 200 reseller relationships and 14,000 trained consultants. This broad reach provides your company with the infrastructure to achieve your goals and gain a competitive advantage.

Supply Chain Management Solutions

Baan Supply Chain Solutions is a suite of best-of-breed advanced planning products that focus on Supply Chain management. Each product plays a role in providing solutions in specific planning domains. Collectively, the products provide an overall solution for managing the flow of material through an enterprise and between trading partners.

Supply Chain Designer

-- For supply chain modeling and optimization; used to model and optimize design and planning of global logistics supply chains including infrastructure design, facility location and sizing, resource allocation, transportation and inventory strategies, service level analysis, and profitability studies.

Supply Chain Coordinator

-- A tactical manufacturing and distribution planning tool which optimizes the trade-offs among production, inventory and transportation over multiple time periods. It is ideal for supply chain problems involving seasonal changes in demand and production changeover costs and setup times.

Demand Planner

-- A comprehensive enterprise demand planning solution in the broader context of the supply chain planning market. It combines large-scale demand forecasting, interactive demand planning, promotion and event management, flexible data analysis, automatic demand monitoring and exception reporting.

Planner

-- A comprehensive application for manufacturing and distribution planning in a multi-site environment. It has a mechanism that provides global visibility into all resources, constraints and demand and supply plans across multiple facilities, so that a global supply chain operations plan can be created. It allows planners to create scenarios for decision support. The result is a constraint-based plan that maximizes throughput and minimizes cycle time.

TransPro

For transportation planning; optimizes planning & operational transportation decisions involving freight consolidation, mode/carrier selection, and pooling. This product is for companies that use third-party carriers in addition to, or instead of using their own dedicated fleet.

-- A strategic planning tool designed for shippers and third-parties who must analyze and negotiate pricing bids from carriers. The application inputs are shipping requirements and carrier bid responses that handle selected lanes of freight. It then optimally chooses the least cost set of carriers to fulfill the shipping volumes. A number of operational constraints such as minimum carrier commitment levels, maximum number of carriers to select, etc., can be imposed.

BidPro

-- Optimizes routes that must cover a large number of customers in concentrated areas, such as meter reading, waste collection, postal delivery and collection, and newspaper delivery. It organizes customers into logical and manageable territories, minimizes the total number of routes needed, and optimizes the route sequence of territories and roads.

RoutePro

This strategic route planning tool optimizes fixed or master routes, designs territories, balances and optimizes customer service frequency over days of the week, and sizes fleets.

-- For optimization of the routing & scheduling of transportation assets, usually private or dedicated trucking fleets.

Scheduler

-- It creates feasible schedules that coordinate plant activities with market demand. Its powerful models simultaneously consider the capacity, availability, qualifications, and interdependencies of all resources - employees, machines, tools, and materials. It operates standalone or integrated with enterprise and plant software.

Execution

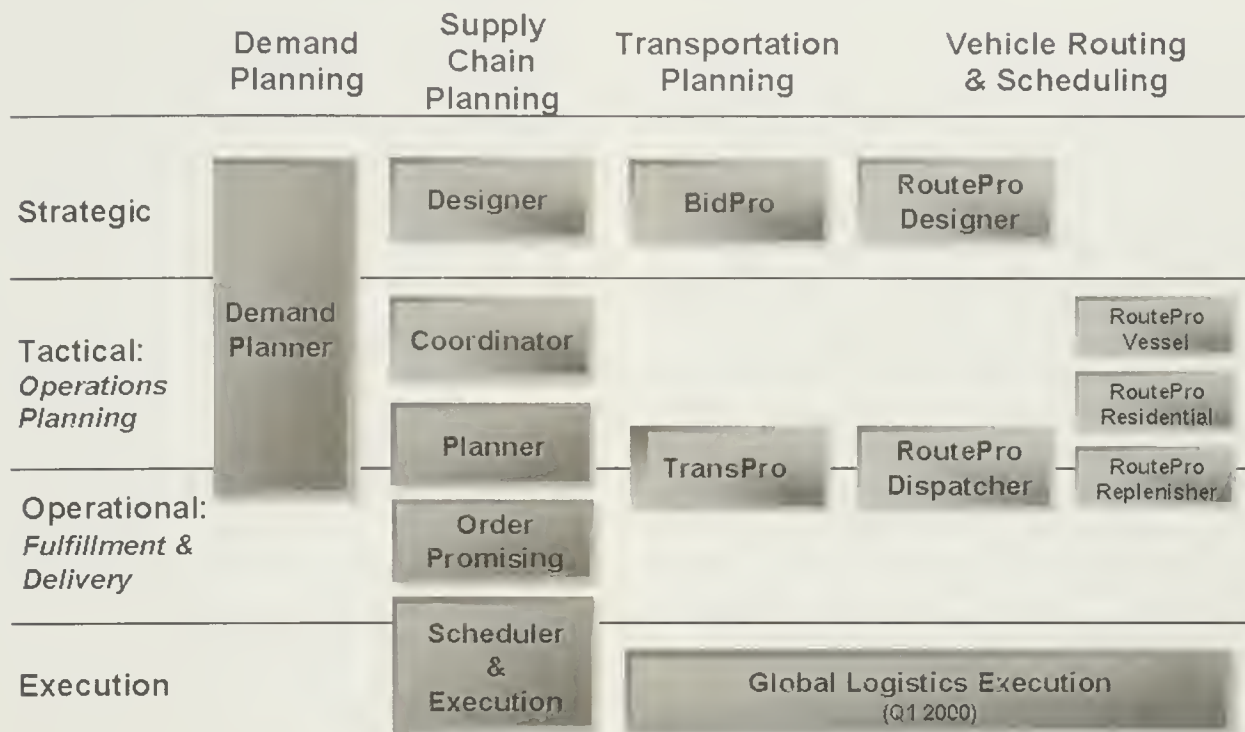
-- It oversees and tracks plant floor activity. Through terminals, PCAEs, or handheld devices, operators can review dispatch lists, order status, and work instructions. It provides real-time work status information that eliminates miscommunication of statuses, priorities or component shortages.

E-Supply Chain Suite

The E-Supply Chain Suite includes Web-based applications focused on managing the interfaces among knowledge workers within and among enterprises in the area of supply chain management. E-supply chain applications are built on top of the Baan Collaborative Application Framework (CAF), which supports rapid development of intelligent, Web-based collaborative applications.

Keeping material and information flowing through the extended value chain is the prime objective of Baan e-supply chain collaborative applications. Lack of timely information, trust and visibility are some contributing factors responsible for the slow pace at which information and material lurch through some supply chains. These factors constitute barriers among you and your business partners as well as within your enterprise. These barriers impede the flow of information and materials across the value chain, which translates into misuse of expensive commodities like time and inventory. The breaking down of these barriers represents a major opportunity for most organizations to improve their competitiveness.

Baan Supply Chain Product Family



Key features of applications in the Baan E-Supply Chain Suite include:

- **Enterprise-wide visibility:** secure, customizable, browser-based desktop to examine the health of the supply chain, to make information requests on different business objects and to drill down to related data.
- **Dynamic data updates:** data modifications and their impacts on other objects are propagated dynamically using true push technology throughout the extended network.
- **Intelligent alerts:** notification of events based on customizable, predetermined conditions. Events such as projected inventory problems, resource shortages and shipping delays are propagated dynamically. Users can drill down from alerts to information required to resolve problems. Alerts can be used to trigger workflow activity.
- **Approval process:** internal and external negotiation on business objects such as plans, schedules and orders, including multiparty negotiation, broadcasting and bidding supported by alerts, e-mail and Microsoft's NetMeeting.

Sector Competencies

Baan's Manufacturing Supply Chain suite is targeted at the following industries:

- Electronics
- Metal Components
- Automotive
- Aerospace
- Industrial Equipment
- Primary Metals
- Furniture
- Pulp and Paper

Baan's Logistics Supply Chain suite is targeted at the following markets:

- Transportation and Third Party Logistics Providers (3PLs)
- Food and Beverage
- Consumer Packaged Goods (CPG)
- Chemicals
- Retail
- Utilities

Baan's Supply Chain business partners in the South Asia region are Deloitte Consulting - Consulting Alliance, and IDSC - a Singapore-based reseller.

Case Studies

DuPont Merck

Automated Order Routing & Mode Selection

The Client

The DuPont Merck Pharmaceutical Company is one of the world's largest manufacturers of pharmaceutical products. Its Atlanta distribution center alone serves 3,000 customers across the United States, as well as Puerto Rico and Guam.

The Problem

DuPont Merck sought an automated solution to the manual mode and service level selection system used at their Atlanta facility. The new automated system had to be capable of satisfying all customer delivery requirements while minimizing shipping costs.

The Solution

Using CAPS Logistics' software, the DuPont Merck Pharmaceutical Company was able to automate order routing in Atlanta.

Orders containing customer identification, product information and delivery dates were downloaded daily from DuPont Merck's mainframe. The application automatically selected the most cost effective mode and service level that satisfied all delivery requirements and constraints, such as time windows, nature of product and order size. Within each mode, orders were assigned service levels such as Priority, Ground, TL or LTL.

The application also stored all orders in a database for use in global distribution cost modeling analysis. This feature allowed DuPont Merck to create "what-if" scenarios involving customer shipping preferences and restrictions, product shipping requirements, seasonal fluctuations, and cycle times between date ordered and date received.

The Results

By automating their routing process, DuPont Merck was able to project a 10-15% saving. Tom Ramberger, DuPont Merck's Manager of Materials and Logistics, said, "DuPont Merck's future plans are to use CAPS Logistics software to expand analyses to include Europe in global distribution cost modeling and mapping."

General Mills

Providing the 'Breakfast of Champions' to the world, General Mills strives to achieve competitive advantage in the consumer food industry race for shelf space and market share. With revenues totaling \$6.8 billion, General Mills ranks among the largest consumer foods companies in the world. Using a CAPS/Baan solution General Mills is in the process of refining its supply chain plan, ultimately saving the company millions of dollars per year.

The Background

In 1866, Cadwallader C. Washburn built his first flourmill on the banks of the Mississippi River in Minneapolis, Minnesota. Six stories high, it was the largest flour mill west of New York. Uncertain the demand for wheat flour would ever grow to match the new company's supply, some called the mill "Washburn's Folly". As if to prove critics wrong, today, General Mills, has plants, mills and distribution centers in over 27 locations spanning the United States, Canada, Mexico, Europe and Asia.

General Mills is a leader in the baking, dinner and side dish products business with a 100 year history providing some of the most widely recognized food products in North America (for example, Gold Medal flour, Bisquick baking mixes, and an array of Betty Crocker dessert and cake mixes). Also a leader in the multibillion-dollar snack market, General Mills' Snacks Unlimited division produces well-known brands including Fruit Roll-Ups, Pop Secret microwave popcorn, Nature Valley granola bars and Bugles corn snacks.

General Mills' largest business, Big G cereals, features some of the best selling cereals on the market: Wheaties, Chex, Kix, Total, Lucky Charms, Golden Grahams, Trix and Cheerios. These products provide the most powerful brand franchise in the cereal industry.

The Challenge

General Mills has experienced tremendous growth for more than 100 years. To handle the company's numerous products and locations, General Mills developed a large and complex supply chain. By 1995, General Mills supply chain was too complex to be analyzed and understood without sophisticated modeling tools.

General Mills first explored engaging outside consultants to assess supply chain strategies. "We talked to consultants about strategic supply chain analysis," explains Bruce Barquist, director of finance at General Mills. "Supply chain modeling tools were at the core of the consultants services, and they relied

heavily on CAPS/Baan software. Based on their input we decided to implement CAPS/Baan ourselves.”

General Mills needed to examine the interrelationships between the links in its supply chain. By analyzing trade-offs in the selection of suppliers, shipping lines, plants, and inventory locations, General Mills sought to reach a higher level of productivity, optimize performance, and reduce costs. Storage capacity, customer demands, production rates, and costs all had to be considered. CAPS/Baan was the tool General Mills needed. “At General Mills we consistently want to achieve higher levels of service,” states Barquist. “We felt CAPS/Baan would get us to the next level.”

The Solution

In 1995, General Mills purchased CAPS/Baan Supply Chain Designer and Supply Chain Coordinator for both strategic and operational purposes. General Mills uses CAPS/Baan to perform manufacturing network optimization, evaluating the optimal size, number and location of manufacturing facilities. This process takes into consideration all components of a manufacturing facility’s supply chain and distribution network including raw material costs, freight costs and customer locations. Using CAPS/Baan, General Mills is modeling its manufacturing network and identifying opportunities for further refinement.

General Mills also uses CAPS/Baan to design optimal distribution networks. CAPS/Baan has helped General Mills determine where to locate new warehouses, what size the warehouse should be and what products should be handled. Tactically, General Mills uses CAPS/Baan Supply Chain software when making specific short term decisions such as which plants should produce which products, in what quantities and when. “We use CAPS/Baan when making product sourcing decisions,” says Barquist. “CAPS/Baan helps us evaluate the size of the distribution network, and how best to meet customer demands.”

The CAPS/Baan solution plays a role in General Mills’ financial decisions as well. “We use the CAPS/Baan models when determining whether to invest in new technologies and whether we should increase warehouse capacity,” emphasizes Barquist. “The CAPS/Baan solution guides us in making investment decisions such as distribution of capital.”

The Results

Using CAPS/Baan Supply Chain optimization tools, General Mills has optimized both its manufacturing and distribution networks. General Mills has restructured its manufacturing network by increasing the size of certain production facilities while shutting down or modifying others.

General Mills uses CAPS/Baan tools to create models that enable product sourcing decisions such as where to produce specific products to minimize costs and when to use single sourcing versus multiple sources for materials. General Mills adjusted the size of its distribution network based on the CAPS/Baan models. “We have made significant decisions about adjusting our manufacturing and distribution networks based on CAPS/Baan models,” said Barquist. “We have saved millions of dollars based on those decisions.”

General Mills now relies on the CAPS/Baan modeling for an objective perspective when making business critical decisions. “The CAPS/Baan optimization tools have gained such credibility based on the financial results of projects we have already completed that we no longer make a final decision on a project until we’ve modeled it,” says Barquist. “Both Senior and mid-management employees rely on the information CAPS/Baan provides”. Moving forward, General Mills anticipates continued use of CAPS/Baan. “We’ve been using CAPS/Baan for four years and we still have a queue of modeling projects to be done,” explains Barquist.

By using CAPS/Baan as a strategic tool, General Mills has gained insight into its business on many levels. The company has a better understanding of its operations and key supply chain leverage points. “As you utilize the models and understand your business better, you enrich your own understanding of how things work,” says Barquist. “Using CAPS/Baan, General Mills personnel have become better judges of where opportunities exist and how to get to those opportunities, even without having to model and analyze.”

Compaq

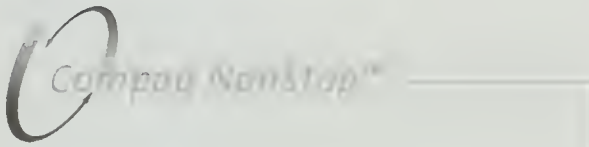
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What is the Global Value Chain?

The Global Value Chain (GVC) optimizes the business' ability to efficiently move its business assets (products, transactions, and information) from their source of origin to their point of delivery. As the end-to-end flow of those assets is made more efficient and customer responsive the cost of inventory management, business process management, time management and money management is reduced. This includes developing efficient supply chain practices, efficient transaction and information chain practices, and trading partner enabling. The use of this information improves the effectiveness of the customer interaction and ideally enables customization of each interaction to meet the individual's specific needs.

Customers input into the GVC with business requests such as orders or information requests, the Enterprise processes these requests utilizing one or more of its internal functions such as; **Enterprise Resource Planning, Shop Floor, Engineering, Planning or execution, or utilizing information or processes from its Suppliers**. Assisting in these requests, considered outside of the GVC in Compaq's model are the additional functions of business such as **Customer Relationship Management and Knowledge Management**.

The GVC exists to answer a number of business problems including the need for speed, flexibility, and the integration of legacy applications. Speed is essential and enables organizations to rapidly create new products and processes in the support of changing business models. The Internet, as an applied technology, has increased the frequency of the rate of change in the marketplace. This increase in the rate of change directly affects how organizations must adapt and change. The need for flexibility is most often an issue in the supporting computing infrastructure. No longer are companies allowed months or years to implement new business processes with enterprise applications. Legacy applications will exist for the near future and must be included in any information technology plan. Legacy applications have a limited ability to change, and are often characterized by inflexible human and system interfaces, outdated programming paradigms, and large investments in technology, training, and support.

Compaq's NonStop eBusiness – Overview

The GVC provides a critical component of an Enterprise's business solutions and must be robust, scalable, secure, and flexible to support a manageable and dynamic business process organization. On this foundation, the building blocks of business processes, whether Internet processes such as customer and supplier access or Intranet processes such as Manufacturing ERP or Process Control, can be assembled with minimal effort.

NonStop® eBusiness is not just about the availability of the "hardware" technology IT vendors are willing to guarantee. Systems availability becomes dependent on public network availability, partner and service provider availability, and Inter-application availability. Scalability becomes susceptible to last mile and network bottlenecks. Application management challenges expand to include cross-partner and application status monitoring and remediation. Security architectures must encompass encryption, authentication, and authorization capabilities for system-to-system and internal and partner users. *NonStop® eBusiness* is about predictability; *always* being able to take your customers order by *always* being open for business.

Compaq defines the predictable, *NonStop® eBusiness* environment, in terms of four key dimensions: availability, scalability, manageability, and security. Compaq delivers solutions by developing value-added capabilities for each of these dimensions.

For eBusiness, **availability** is defined as the continuous delivery of accurate business services as measured by the customer of those services.

Scalability for eBusiness is defined as the ability to meet dynamic capacity requirements without interrupting service operations.

Security for eBusiness has even broader consequences. Security for eBusiness is defined as the ability to ensure the confidentiality and integrity of a business and its customers' assets.

Manageability for eBusiness is defined as the ability to monitor operational and application metrics and proactively ensure continuous business operations.

In summary, Compaq NonStop™ eBusiness solutions consist of the following key characteristics:

Software: Best-of-breed packaged applications or custom software and the required underlying system software.

Services: Systems integration and support services provided by Compaq and their worldwide network of service partners and ISVs.

Hardware: Delivered on Compaq servers.

Validated: Functionally tested with solution-level documentation, configuration, installation and management guides, or equivalent service offerings to ensure reliability and confidence.

Delivered: Through Compaq and their partnerships with a worldwide network of resellers, systems integrators and strategy consultants.

The Web is changing how we all do business. To thrive in this new economy, you need a strategic partner that understands what it takes to Web-enable your business strategy, and you need solutions that make it faster and more cost-effective. Compaq, with their history of providing fault tolerant systems, pioneering modern day clustering, developing highly available and scalable Internet application architectures and providing application integration expertise can now bring it all together via a web-enabled building block approach.

Everyone talks about e-business. With NonStop™ eBusiness solutions, Compaq is doing something about it. Compaq have everything you need to meet your e-business objectives and reap the rewards of the Internet economy. Their formula for success starts with the best partners in the business.

Best-in-class partners: Compaq's best-in-class partners are central to the success of Compaq NonStop™ eBusiness solutions. Industry leaders such as Cisco, Microsoft, and Oracle have enthusiastically endorsed the Compaq NonStop™ eBusiness strategy.

Hardware, software, and services: Together with their partners, Compaq offers one of the world's most comprehensive - and complementary - set of computer hardware, systems software, application software, and

services for the creation of Internet-enabled e-business systems. The goal? Uninterrupted business capability for you.

The Building Blocks Approach

The Physical Architecture of NonStop® eBusiness Platforms and Systems is comprised of building blocks.

The building blocks approach to building integrated systems requires that component "building blocks" contain all of the functionality and features required for NonStop® processing within the scope of the particular "block". Integrated solutions consist of collections of these "blocks", interacting together to form a complete end-to-end business process, the Global Value Chain. Standardization of the integration technology and semantics provides the "mortar" for integration of applications, Internet communications, and business processes into a complete system. The common semantics, coupled with methods for translation and marshaling of data between applications, allows systems to be assembled from large-scale components (applications, databases, web sites) while maintaining the availability, scalability, security, and manageability required for NonStop® eBusiness.

Each building block contains the application, hardware, and network capability required for a bounded business process. The application is supplied fully configured, and appropriately scaled and tuned for the business, on the appropriate hardware, ready to plug into the network and participate in the integrated system.

High Availability Features: Compaq provides both Intel and Alpha based servers with high availability features. These features include hot-plug redundant power supplies and hot-plug SMART (Self-Monitoring Analysis and Reporting Technology) hard disks. Some of the platforms have additional features such as redundant Network Interface Cards (NICs), redundant hard disk array controllers, hot-plug PCI slots and hot-plug redundant cooling fans.

StorageWorks Options: As the world's largest supplier of multi-user storage systems, Compaq continues to lead by leveraging industry standards to meet customer requirements for open storage solutions. Compaq StorageWorks uniquely provides a full range of highly available, infinitely scalable storage systems required for an Internet-based NonStop® eBusiness environment.

Compaq Insight Manager and BMC Options: Compaq Insight Manager continues to provide SNMP-based manageability for Compaq devices; the Compaq Insight Management NT and NetWare agents

now also provide access to device data using a web browser over the industry-standard HTTP protocol as well as continuing to provide SNMP support.

Hardening and Service Level Agreements:

Throughout the IT lifecycle, Compaq Services offers service and support to help customers plan, design, implement and manage storage as part of their overall computing environment, including systems, storage and networks. At any point in the lifecycle, customers can choose storage-related consulting and support services from Compaq.

Additionally, through FutureSourcingSM, Compaq can manage all or part of customers' computing environments on an outsourced basis, so that CIOs and IT staff can focus on core business issues and future IT needs. Customers can access the capabilities of experienced Compaq service professionals and a global operations management infrastructure for their storage area networks.

Common Integration Architecture

Usage of the XML semantics across all the connecting components, such as the Microsoft Site Server and Compaq's BusinessBus integration technology, permits a flexible and extensible integration by not limiting the message content to pre-defined structures. Within the GVC, various building block components include:

Web Interface: Microsoft Site Server, Netscape, Microsoft Internet Information Server, Apache Web Server on LINUX, Netscape Enterprise Server on Compaq Tru64 UNIX

ERP: SAP R/3, PeopleSoft, Oracle Apps, Baan, JD Edwards, SSA, Glovia

MES / Production Control: Base10, Foxboro, USDATA, Novation, Promis, AspenTech, PARtech

SCM: i2, Manugistics, Paragon

Engineering Support: NovaSoft Novation, Documentum

Quality Analysis: Beckman LIMS

Building Block Architecture

Trends within the GVC are moving toward increased customization of products and a shorter, more predictable order fulfillment cycle. This demands an infrastructure that guarantees timely information flow, as well as resource and material availability.

Compaq has developed a standard way of delivering these infrastructures. Standard building blocks consisting of hardware, software, communication and integration technologies are assembled to meet specific business requirements. These generic building blocks, when coupled with industry-specific application software, are used to create powerful,

industry focused solution architectures that guarantee the high availability demanded by today's market.

NonStop® eBusiness Enterprise System(s)

The NonStop® eBusiness Enterprise System or Systems illustrates the importance of Enterprise Application Integration (EAI). EAI is used to combine Intranet and Internet architectures in a seamless process to flow business data through from the initial customer order to manufacturing, distribution, and delivery.

The Compaq BusinessBus

Messaging: BusinessBus provides message-brokering, data marshaling, and service management.

Recoverable Queuing: BusinessBus uses standard queuing methods with recoverable queuing as an option, providing guaranteed message delivery. The BusinessBus application wrappers encapsulate the application-specific access mechanisms, thus isolating these specifics from the user.

Integration Manager: The major problem with building an integration of multiple application components is the great disparity of the communication semantics of the applications to be integrated. The Integration Manager solves this problem by performing the message and data translations and message marshaling required for business communication.

Swappable Components: The common integration semantics, combined with the message-based processing of the Integration Manager allow upgrades and changes in the integration architecture, including the replacement of an application with a different one, with no impact on the other integrated component applications.

Management Tools: BusinessBus contains several management tools for monitoring the status and performance of the services on the BusinessBus network.

BusinessBus in the Global Value Chain

BusinessBus provides the optimum cross-platform messaging tool for the integration of the components within the Global Value Chain. It is particularly suited to Intranet applications, and perfectly compliments the Microsoft Distributed interNet Applications (DNA) architecture as provider of Internet applications. Together they form a complete linkage between the customer, supplier, and manufacturing organizations to move products, services, and information from the source to the consumer.

Availability

Redundancy and failover - BusinessBus has the ability to configure a backup system in the event of a system outage. It also provides redundancy, where more than one system offers the same service.

Recoverability - BusinessBus can be configured to recover messages where the message link is lost, the message process is lost, or where the system is lost.

Guaranteed delivery - BusinessBus is a layer on top of a reliable message queuing infrastructure, which can guarantee message delivery even in event of system and application downtime.

Scalability

Replication of servers and services - Multiple instances of services, running on multiple platforms in either heterogeneous or homogeneous environments provide scalability limited only by hardware capacity.

Self-describing messages based on XML -

Traditional messages are of a limited size and construction, whereas self-describing messages are flexible and of unlimited size.

Multi-platform - BusinessBus runs on multiple platforms and integrates across all supported platforms, providing a complete solution to the integration, which is independent of the choice of hardware and operating system.

Performance - BusinessBus performance in messaging far exceeds the closest competitor.

Multi-transport - BusinessBus is layered on multiple messaging transports (BEA MessageQ, MSMQ, MQ Series, and, in the near future, TIBCO).

Application wrappers - BusinessBus offers an extensive library of reusable application wrappers, designed to access specific - or types of - applications by the access means supported by those applications. The application wrappers allow you to connect your applications to the integration platform without the need for modifying the applications.

Security

Auditability - BusinessBus provides straightforward audit capability to trace messages and transactions throughout the integrated system.

Security services - BusinessBus provides a layer of security to the messaging transport, controlling access to services through a simple but effective protection scheme.

Manageability

Common integration architecture - Usage of self-describing data, straightforward API, and reliable message queuing provide a simple and effective architecture for the intranet integration.

Management tools - BusinessBus provides a complete suite of tools for monitoring, managing, tuning, and reconfiguring the application integration.

Integration Manager - The Integration Manager is designed to isolate client applications from the information structures and representation used by wrapped applications.

Case Studies

Solutia

With nearly \$3 billion in annual sales, Solutia is a leading chemical company with plants worldwide. The company relies on Compaq Alpha platforms and SAP R/3 software to streamline its supply chain, while Compaq BusinessBus software and Compaq Services provide seamless integration and uninterrupted information flow between SAP and dozens of applications at Solutia plants and distribution partners.

Today, Compaq Alpha platforms and SAP R/3 software provide the foundation of a new enterprise architecture that spans 18 Solutia sites. Compaq BusinessBus, enterprise application-integration software from Compaq Services, enables more than 60 diverse applications across the company to share data with the SAP environment.

Johnnie Foster, CIO of Solutia, says that Compaq Services and Compaq BusinessBus software were the keys to implementing a seamless, integrated solution - and fast. "A lot of vendors say they can do SAP integration fast and cheap. We went with the BusinessBus solution because it actually works," says Foster. "Other approaches require custom coding for each system interface, and in some cases, replacing our base-level infrastructure. With the BusinessBus approach, we have a single integration channel to link any client application to SAP. We preserve our investment in existing systems, while we gain the flexibility to upgrade or change those systems."

Ray Mooney, integration director at Solutia, led the enterprise-wide integration effort with a team of just six Solutia experts. "If we went with a traditional approach for SAP integration - using ABAP coding, custom Remote Function Calls (RFCs) - we would have needed an army of programmers and a 70-week extension of the project," says Mooney. "With the BusinessBus solution, we're using a half dozen people to support the integration needs of a \$3 bn company. We estimate that the BusinessBus approach saved Solutia tens of millions of dollars in integration costs."

Faster Integration and Rapid Results

Compaq consultants trained Mooney's team in the BusinessBus software and worked alongside them. Mooney says the first project focused on Solutia's tire-beaming operation. In just 60 days, Solutia and Compaq experts integrated the plant's manufacturing execution systems, laboratory information

management systems and material handling systems into the SAP R/3 environment. As integration continued in plants across the globe, Solutia gained expertise in the BusinessBus software, dramatically shortening project implementation times.

Employees on the shop floor can now access vast repositories of product and process data to track quality and production parameters, and bin-to-bin product movement. Management uses this same data to aggregate high-level views of manufacturing performance, total inventory turns and total cost.

Foster sees business benefits that go far beyond the time and cost savings of the BusinessBus integration approach. "We're capitalizing on real-time information to move product through our supply chain - from customer order to delivered goods - faster and more cost effectively than ever before," states Foster.

Integration Keeps Business Flowing

The SAP R/3 system is built on a highly available array of nearly 30 Compaq AlphaServer systems running the Compaq Tru64 UNIX operating system. Solutia configured the SAP system into three distinct environments: operations, enterprise reference and financials. Each environment contains two or three AlphaServer systems running the Oracle7 database, and up to seven SAP application servers. Mooney says Solutia's worldwide operations place heavy demands on the environment. BusinessBus software keeps it all running smoothly - for nearly 2,400 registered SAP users worldwide and as many as 1,200 concurrent users during peak month-end periods.

"We operate 24x7 and process 3.5 million SAP transactions per month through the BusinessBus software," says Mooney. "That's about 1.5 transactions per second, so the BusinessBus solution is always processing some sort of update. If anything interferes with the transaction flow, we know instantly, thanks to BusinessBus monitors that Compaq developed for us."

BusinessBus to Simplify E-Commerce Initiative

Next, Mooney says he will extend the system upstream to raw material suppliers. To do so, Solutia will implement Web-enabled SAP R/3 solutions and enter the world of e-commerce. Again, the BusinessBus approach will help. "With the BusinessBus solution, we have an integration channel that doesn't care what's on either end - what the enterprise-resource planning system is or what the client system is," says Mooney. "BusinessBus software creates downstream benefits that we haven't yet capitalized on."

Foster says the successful BusinessBus solution caps a relationship with Compaq that spans many projects

over many years, and continues to grow stronger. "The Compaq team is responsive and easy to work with; we've had some of the best Compaq engineers and consultants working shoulder to shoulder with our own staff," he says. "Compaq is a willing partner who's with us for the long haul."

CrossWorlds and Compaq Save Nortel Networks Time and Money

Nortel Networks is now live with the CrossWorlds application, enabling Nortel Networks to:

- Save time and money with the elimination of manual data intervention and reduction of incorrect data entry
- Save money by avoiding additional hardware expenditures (currently used to maintain the custom interface)
- Ease the overhead burden, and cost of ownership associated with maintaining point-to-point interfaces between enterprise applications, for both interface enhancements and enterprise application upgrades
- Leverage the CrossWorlds Clarify Connector to create and update the installed product base, thereby avoiding the need to maintain application logic within the custom interface itself
- Accomplish real-time customer updates and installed base between SAP and Clarify
- Leverage CrossWorlds configurable email notification which enables real-time recording of customer updates

Nortel Networks implemented the CrossWorlds Customer Interaction application on Compaq's ProLiant 7000 server as their integration platform. Compaq's scalable ProLiant servers enabled Nortel Networks to run truly distributed packaged applications across Bay's global operations.

Jorge Taborga, Nortel Networks says "With CrossWorlds in production we have seen that it takes one third of the time to integrate our enterprise applications when compared to our past custom integration projects. We can rely on CrossWorlds to support our mission critical applications, achieve the production readiness we need and deliver ongoing value that is cost effective so we can bring timely solutions to market".

For customers who require flexible network computing, Compaq standards-based servers enable them to achieve more sustainable business advantage with their IT investment because of Compaq's superior integration of technology, tools, partnerships and services. Compaq's servers fit many IT considerations and aspirations through a line of enterprise, workgroup, departmental and entry-level servers, optimized for growing environments and space-constrained rack environments.

IBM

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Company Background

IBM is the world's largest information technology company with 80 years of leadership in helping businesses innovate. The company creates, develops and manufactures computer systems, software, networking systems, storage devices and microelectronics. IBM also has the e-business expertise that combines forward-thinking, creative problem solving, innovative technologies and proven implementation skills, to deliver the right innovative e-business solutions that generate real business results and competitive advantage in the new global economy.

The company's 225,000 employees provide expertise within specific industries, as well as consulting services, systems integration, solution development and technical support. Highly regarded for consistently translating the most advanced technologies into the greatest values for their customers, IBM can help you integrate existing systems and new decision tools across your enterprise, worldwide. For example, IBM is the largest provider of server computers in the industry, offering a broad range of products that feature the performance, reliability and scalability required by companies of any size.

IBM's Focus

IBM works with their customers to help them achieve greater profitability and improved value by optimizing the performance of their supply chains and by extending those benefits across diverse communities of trading partners. IBM also offers customer relationship management products, tools and services

that integrate all business processes into a single, seamless, information-driven organization. Connecting departments like sales, marketing and data management creates a customer-centric enterprise that will build profits and gain an increased return on investment.

Furthermore, IBM offers a unique, end-to-end approach to supply chain management, which embraces a holistic view of organizational processes, both within and beyond the enterprise. By aligning their breadth of resources, expertise in business process reengineering, strategic relationships with selected software providers, stable of advanced technologies, multi-billion dollar investment in R&D and the intellectual capital gleaned through their own internal supply chain experiences, IBM provides *single source* accountability for full supply chain transformation, from business assessment through process design, software and hardware selection, implementation, comprehensive system integration, and operation. As IBM customers around the globe are learning, competitive business strategies are now being enabled, not hobbled, by the imperatives of IT integration.

IBM's Positioning

Designed to build on what you have, IBM offers end-to-end e-business solutions for supply chain management that are designed to integrate with your company's customer service and e-commerce processes. IBM offers you the consulting, application solutions, middleware, choice of hardware platforms, extent of partnerships, services know-how, and financing to help you complete this transformation successfully.

IBM's own record of achievement in operating one of the world's largest and most complex supply chains has been internationally lauded with the highest honors of operations research, the distinguished Wagner, Edelman and INFORMS awards.

IBM was amongst the first companies to recognize the importance of e-business in the exchange of data, information and knowledge throughout the supply chain. IBM's expanded e-business services and solutions encompass new and enhanced offerings that take advantage of the Internet to connect people within the enterprise, connect the enterprise with its customers and suppliers and by moving out to wide, new markets through the worldwide web.

Through their alliances with the world's leading vendors of application software, such as i2 Technologies and EXE, IBM helps companies create and execute innovative supply chain strategies that exploit best-in-class application functionality to

address emerging competitive demands while building on established IT investments.

Through their highly acclaimed Supply Chain Management consulting practice, IBM has launched leading companies worldwide onto the fast track for leveraging the power of e-business. They have done it by developing practical, achievable strategies for increasing efficiency and growth across the value chain, tailored to the unique business needs of respective industries. From process assessment to benchmarking, from strategy development to organizational change management, few know e-business better than IBM – who are well positioned to guide organizations through the complex transformation that defines survival in the twenty-first century.

Supply Chain Management Solutions

Through the extensive resources of their Global Services group, IBM provides a wide range of business and information technology (IT) services for supply chain management. Among these are:

Advisory consulting services to help clients understand what issues they need to solve, why and in what sequence.

Performance services that leverage IBM's consulting expertise and tools to collect and analyze complex business issues.

Solution services to implement, integrate and manage IBM and third-party solutions.

Transformation and re-engineering services, often involving complex engagements that can include assessments; changes in process, organization, technology and trading partner relationships; as well as implementation, integration and management of multiple solutions across multiple business units and geographies.

IBM Supply Chain Management Services Connect to Capitalize on Supply and Demand

As organizations strive for operational excellence to maximize resources and reduce costs, they are looking at their own supply chains to find new ways to streamline business processes and create business value. By extending their enterprises through an effective supply chain, companies can improve their competitive position by quickly meeting customer demand, decreasing time to market and increasing flexibility to react to market trends. Whatever your industry - raw materials, manufacturing, wholesale, retail or healthcare - your company's operational performance affects customer satisfaction and

business growth. By connecting to capitalize on supply and demand, you can optimize opportunities with remote partners in an ever-changing global economy.

IBM Supply Chain Management Services consultants can help you identify and address the elements that affect your supply chain efficiency, including inventory reduction, supplier relationships and your IT strategy. IBM can recommend solutions that reduce wasted time, improve product delivery and enhance trading relationships to sustain your competitive advantage.

Add Value to your Processes

Recently, organizations have begun to incorporate e-business technologies to buy and sell products and services within the global marketplace. Using these technologies allows you to easily link to strategic partners and trim the infrastructure that comprises your supply chain operation. IBM can assess your current processes, analyze your market and review industry trends to recommend solutions that will save time and money by using the Web to improve collaboration and communication with all participants.

IBM can help you benefit from Internet technologies by sharing information with your strategic trading partners so you can respond to customer demand efficiently. IBM work with many of the world's leading supply chain software providers, so they recommend the best solution to provide you with a unique competitive advantage.

Receive a Comprehensive Business Analysis

All processes involved in a supply chain contribute to the overall success of your organization. IBM services encompass more than just a Web site or a software package. IBM has the people, processes and technology to assess your industry, simulate your supply chain processes, understand your goals and implement a tailored solution that achieves real business value.

IBM consultants can assess, plan, develop, organize and implement your supply chain management process to help contribute to the overall success of your organization. IBM consider the following processes when recommending a solution:

- forecasting and demand planning
- strategic sourcing and procurement
- customer order fulfillment and customer service
- transportation and shipment management
- distribution networks and warehouse operations
- production logistics
- integrated supply and demand management

Whether you want to leverage new e-business technologies, or just optimize your current processes

and technology, IBM can help identify key improvement areas to maximize your resources for a total supply chain management strategy.

Rely on Experience

IBM consultants can extend industry-specific experience and skills to your supply chain management solution. As one of the largest companies in the world, IBM has applied proven methodologies and e-business value to reengineer their own supply chain process - resulting in reduced costs and significant improvements in inventory turns and cycle time for supply/demand planning and the order-to-delivery process. IBM can use those experiences and solutions to help you improve customer service, enhance operational performance and grow your business.

Application Framework for e-Business

IBM solutions for business integration are built to the specifications of the IBM Application Framework for e-business, which means they work across all major operating systems and use open industry standards and the best of modern technologies. The platform independence of The Framework allows you to create a consistent computing environment that can bring together different systems from different trading partners. It is this consistent environment that allows you to respond flexibly and rapidly to the ever-changing demands of business. The result is a much easier way to implement cross-enterprise business solutions that work the way you want the enterprise to work - instead of how your systems dictate. It is all possible without replacing applications, installing totally new systems, or learning too many expensive new skills. Here are examples of such solutions:

IBM MQ Series

The IBM MQSeries family links diverse applications and business processes. Trading partners depend on the ability to move a lot of information reliably and quickly across multiple systems. The IBM MQSeries family provides an open, scalable, industrial-strength messaging and information infrastructure, enabling enterprises and beyond to integrate business processes.

MQSeries is the natural way to connect ERP and CRM systems to your supply chain, moving the many different types of information encountered reliably between these very different environments.

IBM Secureway family

The ability to support and make effective use of intranets, extranets, and the Internet is paramount for competitive delivery of your company's goods, services, and information. The stumbling block is how

do you re-engineer existing networks and applications, which are all quite diverse, so that they work with one another. The IBM SecureWay software family holds the answer. SecureWay Software provides integrated directory, connectivity and security between users and applications in diverse networks.

SecureWay integrates basic infrastructure requirements to provide the secure network platform needed to bring supply chain partners together.

Security is a key element. IBM SecureWay FirstSecure provides a comprehensive framework for securing all aspects of a supply chain network. With FirstSecure you can build on your current investments with modular, interoperable offerings. It provides virus protection, access control, traffic content control, intrusion detection, encryption, digital certificates, firewall, toolkits and implementation services.

IBM Websphere

The days of static, slow, low-function Web sites have passed, particularly for any company wanting to compete with the best e-commerce players on the global stage, or work closely and efficiently with supply chain business partners over an extranet. Yet building a powerful, enterprise-level Web or extranet presence is not simple - you need solutions that deliver a lot of functionality out-of-the-box, with the power to be extended and customized to your needs. IBM WebSphere application server provides the framework you need for a full-service Web site, equipped with all the components necessary for secure, high-throughput transactions over the Web. IBM WebSphere focuses on providing infrastructure for developing and deploying server-side Java.

Lotus Domino

Supply chain efficiency is all about strong partnerships. Supply chain partners need an effective mechanism to share information and collaborate on ideas to work better together. Lotus Domino provides the basis for them to do this. Lotus Domino is an application server built to support the rapid delivery of collaborative Web applications. Unlike the IBM Websphere application server, which is about providing high-speed transactions, Domino is about collaboration. Nevertheless, the two products do work together to complement each other's strengths.

IBM's Strategic Alliances

i2 Technologies

The IBM/i2 Technologies alliance is helping customers around the world optimize their supply chains by integrating them into a single, strategically orchestrated whole. Whether your organization is

ready to migrate to a Web-enabled, e-business supply chain or to extend the capabilities of your current legacy systems, IBM and i2 can help you compete in tomorrow's marketplace.

Supply chain management is a key component of i2's RHYTHM suite of eBPO solutions. In fact, i2 is a recognized leader in Supply Chain Planning and Optimization. Together, i2 software and IBM's servers, technology and services are improving supply chain operations end-to-end around the globe.

IBM has created a new Supply Chain Services Practice to aid companies in reducing inventory, increasing delivery performance and enhancing production capabilities. The practice — which currently totals 80 consultants and is expected to double in the coming year — complements the existing 500 IBM supply chain management consultants worldwide. In addition, a new IBM Supply Chain Logistics Solution Group provides integrated logistics solutions to the retail, wholesale and consumer products marketplace.

The Supply Chain Assessment — a one-to-three-week consulting engagement by IBM — identifies value that could be gained by applying world-class supply chain management techniques to an enterprise.

EXE

IBM and EXE Technologies have a global strategic relationship that combines the strengths of both companies to provide supply chain customers with powerful integrated solutions that will help them transform into e-businesses.

These solutions are initially targeted to customers in the automotive, consumer packaged goods, electronics, retail and wholesale distribution industries. They are designed to rapidly transform a company's traditional distribution operations into modern multi-channel eFulfillment Centers (eFC) by offering collaborative supply chain execution applications, consulting, technology, and integration skills on a global basis.

The relationship with EXE extends IBM's supply chain solutions through the proven integration with EXE's EXceed (TM) eFulfillment solution with i2 Technologies' eBusiness Process Optimization (eBPO) suite and Industri-Matematik (IMI)'s VIVALDI Advanced Order Management System.

IBM and EXE, sharing a common e-business and supply chain vision of enabling companies to put their businesses on the Web, will collaborate on strategy, marketing, sales and development.

IBM's Key Strengths

IBM has many competitive advantages in the supply chain management arena.

- IBM has a unique ability to provide complete, end-to-end supply chain solutions. IBM delivers services, consulting and systems integration, including a blueprint for creating inter-enterprise e-business.
- IBM offers a solution breadth - including customer care and payment system solutions that are unmatched by other vendors.
- IBM has developed industry expertise across a broad range of industries, and demonstrated to provide end-to-end supply chain solutions.
- IBM has years of experience and an established presence around the world that is unrivaled by any other supply chain management vendor.
- IBM itself is at the center of one of the world's largest supply chains, has managed that chain internally, and is leveraging that experience to help customers through supply chain management consulting engagements worldwide.
- IBM has extensive operations research and optimization mathematics expertise, and is available to help solve the most challenging customer problems.
- The supply chain planning functions of the future will be deployed across intranets, extranets and the Internet for dynamic and instant access to the most current data. IBM's e-business solution capabilities can be matched by few vendors.

Case Studies

Safeway Stores plc, UK

The Challenge

Safeway, a large supermarket chain with more than 500 stores in the UK, faced the following challenges; differentiating the company in a highly competitive market; obtaining and keeping loyalty; leveraging data assets and using technology to build barriers to entry.

Safeway has introduced considerable micro-marketing activities with detailed personal offers made on 12 million occasions in 1997, and has made a point of taking corporate action as a result of the detailed tracking of consumer preferences. The next step was introducing the Supplier Information Service, a collaborative system designed to reduce stockholding, give better availability and reduce wastage.

Supplier Information Service (SIS)

The Internet-based SIS was designed to enable effective and structured two way communication between Safeway and its trading partners, allowing both parties to concentrate on the common goal of getting the product to the consumer as effectively as possible.

The system uses the latest Internet/Network Computing technologies to enable the two organizations to co-operate and communicate effectively, no matter where the supplier is located.

How the system works

The system uses Java-based network computing technologies to effectively produce a window on Safeway for its suppliers. Safeway's information systems constantly record how much the customers are buying, predict how much they are likely to buy and then calculate how much stock must be sent to the stores and how much must be ordered. The resulting information is all stored securely in a parallel IBM DB/2 data warehouse on IBM System 390 Enterprise Servers. The server was provided and is operated by IBM's International Global Network (IGN) Internet Content Hosting and the communications back to the mainframe in Safeway's data center is an IGN service.

The SIS allows this information to be available within seconds of its creation, using an Internet browser, to the desktops of both the suppliers' and Safeway's own personnel.

This information becomes the basis for collaborative management of the supply chain. This collaboration is extended further into the fields of effective business-to-business communication with the ability to manage new product introductions and joint forecasting and planning of product promotions. Other valuable information such as key contracts, organizational structures, terms and conditions are also available as a reference to aid the communication process.

Perceived benefits

The clear goal of the SIS is increased sales through better product availability. By integrating supply chains and focusing on an end-to-end process Safeway aims to significantly reduce the number of instances where it is out of stock of a product. The system facilitates integration of the supply chain and hence helps achieve these benefits. The information will only be of use once the business processes are enhanced to make use of it. Safeway is engaging in a series of ECR score card processes and business process re-engineering to ensure that the processes are put in place to capitalize on the systems development.

Benefits to suppliers

The shared benefit of increased sales through better product availability is obvious. Less obvious benefits will be achieved as the suppliers start to use the information provided within their internal manufacturing and logistics operations. By using prediction of customer demand the suppliers will be able to better plan their production and distribution activities which should also enable a reduction in inventory levels and therefore working capital.

Results

The pay-back from the SIS are beginning to show – availability of products in trial stores has risen from 92% to 96%, depot service levels are up 5% and the accuracy of promotional forecasts has reportedly risen by 10%.

DaimlerChrysler

In 1989 Chrysler Corp. launched an initiative called Score (Supplier Cost Reduction Effort). Score challenges suppliers in Chrysler's "Extended Enterprise" to seek out and identify opportunities to reduce costs. Score was the way for them to document cost reductions and quality enhancements in a variety of functions including design, manufacturing, logistics, sourcing and administrative transactions. To date, Chrysler's Score program has saved the company US\$ 2.5 billion.

In the past Chrysler simply ordered their suppliers to reduce prices for services and parts when volumes increased. Today, Chrysler works with suppliers as partners to find ways to be more efficient and to mutually reduce costs. Chrysler wanted to make it easier to share information and guide the creation of Chrysler-specific suppliers. Care is taken to ensure that the supplier has sufficient incentive to participate.

Score is an IBM Lotus Notes application, Chrysler starts the process by equipping suppliers with a Notes ID and password. Suppliers may then gain access to the Chrysler Score system via the Internet or via a modem. Upon entering the system, what they see is an online form with various fields into which they can enter identification codes and a description of the cost savings.

With a push of a button, their cost saving/quality improvement proposal goes to Chrysler for review by one of the company's buyers. If the proposal has merit, a series of Notes work-flows are ready to move it to finance and purchasing groups for evaluation, as well as to engineering for feasibility testing.

The benefits to suppliers include identifying quality methods and reaping identical cost benefits due to shared cost savings.

Manugistics

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Company Background

Manugistics Group, Inc. (Nasdaq: MANU) is one of the leading providers of eBusiness solutions that enable intelligent decisions across trading networks.

Anticipating the needs of business in the Internet economy, Manugistics' solutions empower network trading partners to make the right decisions for profitable growth. Powered by Manugistics NetWORKS™ family of products, these solutions ensure real-time decision-making at eSpeed.

Manugistics is known as a software company that delivers results. This success is echoed by their 900+ strategic client partners, including companies such as Avnet, Compaq, Dayton Hudson, Exel Logistics, Nokia, Timberland, The Limited, Unilever and Wal-Mart.

The company's solutions are the preferred choice by companies with dynamic requirements across trading networks. These companies include those with any of the following characteristics: eBusiness initiatives, large volume, multiple channels, short product life cycles, complex distribution networks, a variety of customers seeking new ways of doing business and third parties such as contract manufacturers and

logistics providers. Examples of these consumer-driven industries include: apparel/footwear/textiles, automotive, consumer products, retail, consumer durables, semiconductor, electronics and high technology, food & beverage, chemical and energy, process industries and pharmaceuticals.

In its fiscal year ending February 2000, Manugistics achieved revenues of US\$154.2 million, with about 10 percent of that figure generated from business in Asia. Triple-digit revenue growth is forecast for the region this year. The company has over 900 employees and more than 20 offices worldwide.

Manugistics' Partners

Manugistics is dedicated to integrating its solutions with other leading companies in related fields to provide comprehensive solutions to its customers.

Through these partnerships and Manugistics WebWORKS Open Application Integration™, Manugistics can easily be integrated with a variety of critical applications, including Enterprise Resource Planning (ERP), transaction systems, execution systems, legacy systems, warehouse management systems and point-of-sale data that affect or complement the supply chain.

To its strength, Manugistics has strategic partnerships with ERP organizations, including SAP, Baan, SSA, J.D. Edwards, Marcam and Oracle. In addition, Manugistics has developed strategic alliances with world-class consulting partners, such as Andersen Consulting, Hewlett Packard Consulting, CSC, Deloitte Consulting, Ernst & Young, KPMG, Kurt Salmon Associates, IBM Consulting and PwC to provide implementation and consulting assistance to Manugistics' clients.

Manugistics eBusiness Solutions

Intelligent Decisions for eBusiness

Leading organizations can no longer operate as separate entities. Global manufacturers have working partnerships with their customers, suppliers and worldwide subsidiaries. This environment demands intelligence for real-time decision-making and access to information.

As part of their strategic investments for Internet-based initiatives, Manugistics announced in 1999 its new eBusiness solutions strategy to the market - Manugistics NetWORKS solutions. With over 20 years of experience in supply chain management, the company is extending its solutions focus from supply chain management to intelligence for eBusiness networks. Built on the Manugistics WebWORKS™ architecture, these solutions are designed to power

eBusiness networks. Now businesses and their trading partners have the technology to share, view and execute decisions based on real-time information. This increased visibility of critical information for the trading network translates strategy to action, delivering profitable growth at eSpeed.

NetWORKS™



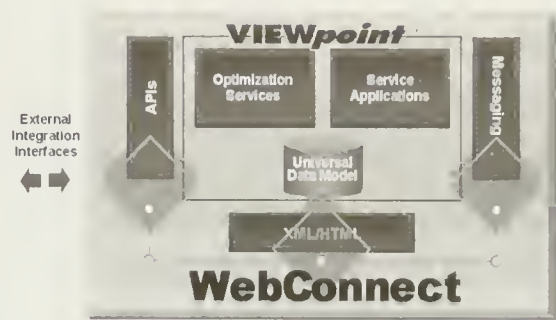
Anticipating the dynamic needs of business in the Internet economy, Manugistics' solutions empower network trading partners to make the right decisions for profitable growth. Manugistics' solutions deliver tangible value, making them critical to your success and imperative to remaining competitive. Manugistics is providing solutions that are easy to implement, realize near-immediate results, and, most importantly, deliver the power of intelligent decisions to your eBusiness.

Recognizing the demands of eBusiness, Manugistics has rapidly adapted to the new, Web-based environment and repackaged its proven products into the new NetWORKS suite that addresses the specific needs of eBusiness order fulfillment. This includes optimization engines that service the entire supply chain and service applications that enable visibility, collaboration, and analysis across complex eBusiness trading networks.

Manugistics WebWORKS™ Architecture

Manugistics WebWORKS Architecture provides a robust foundation for: dynamic planning and optimization engines, navigation and scenario management, open application integration, extreme scalability, the Universal Data Model, and electronic commerce.

The dynamic planning and optimization engines are built around speed, reliability, extensive configurability, and optimal results. Seamless synchronization allows the planning and optimization engines, universal data stores, external communicators, and collaboration services to share current information. With the Universal Data Model, you have the comprehensive data to support your eBusiness trading network in a relational format. This allows for ease of access and integration into the information technology enterprise, as well as query retrieval, information formatting, and sharing across the global trading network.



manugistics NetWORKS™



NetWORKS Collaborate™ is a business-to-business, electronic commerce solution that collaboratively creates and maintains joint business plans, monitors the execution of those plans, and measures their success.

Through NetWORKS Collaborate, you can create and maintain partnership business processes and rules, including planning content such as market activity calendars, demand and replenishment plans, material designs and requests, shared production plans and schedules, and transportation requirements. Processes can be tailored to the desired relationship with each partner individually - allowing you to share replenishment and manufacturing schedules with one customer, for example, where you might only share replenishment schedules with another.

NetWORKS Collaborate compares critical planning and event information and uses 'push' technology to proactively direct you to the most significant issues that face your trading network. Much like popular Internet subscription programs, you can customize the areas of interest and set rules around which events or planning information are relevant.



NetWORKS COMMIT

With NetWORKS Commit™ you can provide accurate, reliable, real-time promises and commitments to customer requests by simultaneously performing availability checks of inventory, production, materials, manufacturing scheduling, distribution, and transportation -- then immediately allocating appropriate resources. If a request can't be satisfied, NetWORKS Commit automatically evaluates substitution and configuration alternatives based upon pre-set rules. Through user-defined prioritization, NetWORKS Commit enables preemption as necessary to ensure that critical resources are always devoted to your highest priority customers.



NetWORKS DEMAND

NetWORKS Demand™ acts as your early-warning system, accurately predicting future customer demand, alerting of potential supply problems, and finding patterns undetected by traditional solutions. It enables your company to understand customers' demand drivers, to accurately predict customers' future needs, and to unify disparate planning processes through its multi-model framework and collaboration.

NetWORKS Demand offers multiple forecasting algorithms in conjunction with advanced causal modeling to assist you in identifying critical factors that drive demand. Intelligent modeling accurately predicts future customer demand and allows for management overrides, all avoiding the costly mismatch of demand and supply. By including both market planning and demand planning capabilities, NetWORKS Demand links product mix, promotion, and price analyses with traditional demand forecasting.



With NetWORKS Fulfillment™ you can orchestrate the time-phased storage and flow of supply to match demand, and you can provide end-to-end visibility, minimize inventory investment, and reduce logistics costs while you maximize customer service.

NetWORKS Fulfillment integrates inventory and replenishment planning to create time-phased inventory plans that respect multiple time horizons - days, weeks, and months -- and that recognize the interdependencies of the network on customer service and inventory investment. Warehouse space, shipping and receiving capacity, and customer delivery windows are all simultaneously respected, providing you with real-time network visibility of planned shipments, in-transits, available inventory, and expiring product. By dynamically searching for product availability throughout the network, NetWORKS Fulfillment minimizes lost revenue by ensuring customer requirements are met despite unanticipated delays in production, cross-border shipments, or transportation.

NetWORKS Vendor Managed Inventory™ (VMI) gives you visibility into demand at the trading partner level — often where the consumer or purchaser is found — to improve the flow of products, eliminate inefficiencies, and lower costs. NetWORKS VMI creates a consumption-based demand forecast and compares the forecast to inventory on-hand and in-transit to determine customer site requirements and shipment recommendations.



NetWORKS MASTER PLANNING

NetWORKS Master Planning™ acts as your trading network 'command center', simultaneously optimizing the use of constrained resources to improve customer service and profit while reducing asset investment. It also provides simultaneous optimization of materials, capacity, inventory, transportation, and distribution constraints across multi-site manufacturing, distribution, and supplier networks. As the command center of your trading network, NetWORKS Master Planning produces an optimized plan to allocate and coordinate limited resources based upon your own user-defined strategies.

As unexpected events such as production breakdowns, distribution delays, or material shortages occur within the trading network, NetWORKS Master Planning sends you an alert and then immediately employs the appropriate optimization technique to quickly repair the plan to meet customer commitments. This coordinated, synchronized response enables you to quickly capitalize on new revenue opportunities and instantly identify and overcome trading challenges.



NetWORKS MONITOR

NetWORKS Monitor™ gives you the ability to effectively manage your trading network by providing you with visibility of critical exceptions and performance indicators effecting your demand and fulfillment processes. With NetWORKS Monitor, you have the ability to create exceptions and alerts based upon user-defined business rules and targets. NetWORKS Monitor is designed to support a push model of exception and information management for numerous business processes. Electronic alert messaging automatically provides you with notification of any business rule violations that could effect your demand and fulfillment processes. In addition, a central user interface provides for "one stop shopping" allowing you to quickly view and resolve all of the critical exceptions and performance indicators.



NetWORKS ONEVIEW

NetWORKS ONEview™ is a set of applications based on industry-standard OLAP technology that enables operational monitoring, performance measurement, business process design, and network policy setting. Its multi-dimensional analyses will increase the speed, accuracy, and efficiency of knowledge discovery and proactive decision making. These applications extend your insight by providing business process-specific analyses based on data synthesized from Manugistics

applications, ERP systems, financial systems, marketing systems, and POS data providers.

NetWORKS ONEview provides you with an intuitive, out-of-the-box decision-support system that alerts where action is required, analyzes causality, and supports the best decisions for the business issues faced each day.



NetWORKS Procurement™ dramatically cuts purchasing and expediting costs by optimizing procurement decisions and increases customer service through real-time supplier connectivity. NetWORKS Procurement has all the tools a buyer needs to make the best purchase decisions and improve overall productivity. The Buyer's Workbench contains supplier allocation logic and allows individual buyers to analyze, summarize, and deploy their part requirements over time by supplier. The order building capability in NetWORKS Procurement applies purchase optimization techniques to orders from suppliers, internal divisions, or trading partners in a VMI/CRP relationship and allows users to specify constraints associated with building loads of orders to optimize resources.

NetWORKS Procurement enables Internet-based collaborative trading network communications at eSpeed — providing a powerful and easy-to-use way for buyers and suppliers to streamline their relationship for improved responsiveness. It delivers the ability to rapidly share new schedule projections, including flex ranges, directly with suppliers. The supplier is able to respond with its ability to meet the scheduled material requirements.



NetWORKS Scheduling™ dramatically reduces your manufacturing cycle times and improves customer service by optimizing constrained manufacturing and materials resources, profitably producing and/or packaging customized products. NetWORKS Scheduling provides a full range of scheduling and sequencing capabilities — from regenerative to incremental. Its rescheduling capability allows the schedule to evolve from day to day as conditions change instead of being thrown away every time a new schedule is generated. This evolving schedule provides two key advantages: control, enabling the schedule to remain stable because it's not continuously destroyed and re-created; and speed, so the schedule can be quickly revised to meet new conditions.



NetWORKS Strategy™ eliminates guesswork by enabling you to quickly and easily make optimal supply chain network design and policy decisions and seamlessly integrate these decisions into operational and tactical planning processes. NetWORKS Strategy provides an accurate, time-phased view to support network design, network optimization, and network and resource utilization analyses. By modeling trading network implications, NetWORKS Strategy determines your most profitable business strategy, including: optimal inventory levels, product mix, optimal production, storage, and distribution locations, optimal lane volumes, and appropriate seasonal pre-builds.

NetWORKS Strategy recognizes the multiple dimensions of time, location, product, customer, cost, and profit. Its sophisticated optimization techniques simultaneously balance profits, time-phased demand and supply, fixed and variable costs, varying transportation and manufacturing lead-times, and global constraints such as tariffs and value-added taxes.



NetWORKS Supply™ optimizes critical material planning decisions and dynamically substitutes and allocates constrained materials. The results are a quick and dramatic reduction in cycle time and material costs with increased service and market share. NetWORKS Supply supports detailed bills-of-material (BOMs) and optimizes the use of constrained materials through advanced substitution logic that considers alternate suppliers and configurations, and supports the complete product life-cycle from design through end-of-life.

With NetWORKS Supply, time-phased needs from distribution, production, or customer orders are brought together across multi-site internal and, if applicable, external networks. You can balance your constrained material needs against production or current supplier commitments and evaluate potential shortages for substitution. NetWORKS Supply will explore substitution and allocation alternatives simultaneously in real time and contact supplier alternatives via the Internet for availability.



NetWORKS Transport™ dramatically cuts cost and order cycle time by providing global transportation planning and execution capabilities, whether you are a manufacturer, distributor, retailer, or third-party service provider. Your transportation professionals world-wide

can reduce freight costs and access real-time shipment information.

NetWORKS Transport's global optimization and execution gives you the capability of running your entire transportation organization with a single application. Its multi-modal capabilities orchestrate the most efficient combinations of modes to fully optimize your transportation plans. Its optimization creates continuous moves, allowing you to maximize carrier equipment and reduce costs. Its execution capabilities allow you to pay your freight bills, track your shipments, and analyze and report on historical transportation data. With NetWORKS Transport, you will have full visibility of all freight movements including inbound, outbound, and inter-facility shipments.



NetWORKS Visibility™ provides in-transit inventory visibility and control of individual components through the shipment process. NetWORKS Visibility supports extensive "track and trace" capabilities to monitor the status of every customer order, including current and historical views of all transactions associated with each shipment to help you identify problems before they occur. Companies can track shipments in real-time at the line item, container and shipment levels.



WebCONNECT

NetWORKS WebConnect™ provides a complete integration solution within the enterprise and across organizational boundaries for your global trading network. It enables you to quickly implement the Manugistics NetWORKS suite within your enterprise and reduce the time, cost, and risk of a solution approach that incorporates multiple applications. WebConnect allows the Manugistics suite to be used for critical business decisions, such as order promising, production planning, purchase requisitions, and routed transport loads. WebConnect then facilitates communication with execution software such as ERP (eg., SAP, SSA, and JD Edwards) as well as complementary applications like WMS and MES. In addition, WebConnect extends the integration architecture beyond the enterprise to facilitate integration across the Internet.

bstreamz.com & b-networks.com

To speed solution delivery and the rate at which you can realize the benefits of NetWORKS, Manugistics also offers b-networks.com — Manugistics' hosted solution designed to power today's eBusiness trading networks by providing companies with a pre-built infrastructure that allows the sharing of information, real-time visibility, and seamless channel linkage.

b-networks.com™ is an additional option to help you further your eBusiness success. Manugistics' bstreamz.com™ is a set of sponsored trading networks that delivers even greater functionality and benefits to their clients. With Manugistics NetWORKS solutions as their foundation, these market-specific trading networks provide trading partners with an existing architecture — managed by Manugistics — as well as co-marketing of the network, and valuable domain expertise. The result is a trading network that leverages Manugistics' solutions, knowledge base, and assets to the fullest.

Manugistics' Vision

To partner with clients to deliver results, market value, and innovation through the delivery of intelligent decisions for global eBusiness trading networks. The objective of competitive supply chain design is to weave each of the trading partners into a seamless fabric of information flow, physical distribution flow and cash flow for the benefit of the end customer.

A 1999 study of Manugistics' client benefits by Benchmarking Partners proved that they improve efficiency and enhance customer responses.

- 25% reduction in transportation costs
- 33% improvement in inventory carrying costs
- 67% reduction in supply lead time
- 65% improvement in order fulfillment time
- 23% improvement in forecast accuracy

Sample Customers

Through helping some of the world's most recognized companies make profitable business decisions, Manugistics has emerged as one of the leaders in its field. In Asia, Manugistics have over 50 clients, and they have success stories across all industry verticals, some examples of which are given below:

Warner Lambert, a leading pharmaceutical manufacturer, received significant benefits within 12 months of implementation, increasing order fill rate to 99% and reducing supply chain costs by \$2.2 million.

Tenneco Automotive increased order fill rates to 96%, improved inventory turns by 25% and reduced inventory levels by 50% at both its own facilities and at its customer sites.

Alcatel, one of the world's largest telecommunication component manufacturing companies, obtained ROI in less than 12 weeks and posted a 25% reduction in past due orders.

Payless Cashways, a full-line building materials and lumberyard retailer, saved hundreds of thousands of dollars in shipping costs just 4 months after implementing the first phase of Manugistics NetWORKS Transport™ Solution.

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Company Background

Modus Media International, Inc. is a leading, global provider of extended supply chain management services for the technology industry. They provide a broad range of outsource services including content management, software manufacturing, hardware assembly, and order fulfillment. Their services extend to front-end e-commerce and response center order processing, as well as to back-end financial management, reporting, and customer care. Clients

include original equipment manufacturers (OEMs), independent software vendors (ISVs), and leading consumer electronics, telecommunications, and Internet companies.

Headquartered in Westwood, Massachusetts (USA), Modus Media has 4,600 employees and 20 Solution Centers worldwide with an aggregate square footage of approximately 2 million. Their global network spans Australia, China, France, Ireland, Malaysia, The Netherlands, Singapore, Taiwan, United Kingdom, and the United States. Modus Media also holds minority-owned interests in joint ventures in Japan and Korea.

What are the Business Challenges associated with the Supply Chain?

- Time to market
- Marketing and brand development
- Customer relationship management
- Inventory obsolescence or packaging changes
- Fulfillment logistics
- Unforeseen product demand

Challenges are everywhere. The new economy is changing the way companies think, act, and deliver products to their customers. Faster product cycles and the ripple they create throughout operations — including procurement, production engineering, manufacturing, quality testing, distribution, and payment processing — test the forecasting skills of operations management. Meanwhile, upstart competitors and innovations in e-commerce challenge marketing professionals to stay ahead. Regardless of the issue you face, your business is successful when resources are focused on your core competencies. Since 1982, leading companies have turned to Modus Media for their core competency — overseeing the logistical and customer service details of extended supply chain management. By responding to your customers' inquiries and building your electronic storefront, Modus Media's front-end capabilities help strengthen your customer relationships. They also ensure products are manufactured and delivered — to the channel or direct to the consumer. Their customized and comprehensive supply chain management services support all of your business' front-end and back-end operations.

So whether your challenge is the physical or online world, or both, Modus Media has the global infrastructure you need.

Supply Chain Management Solutions

Modus Media's mission is to be the global supply chain management infrastructure for technology-enabled commerce. They offer clients a diversified range of services to address extended supply chain management needs. Their offerings are divided into two main categories - Content Manufacturing Solutions and e-Fulfillment Solutions - with a full range of services consisting of:

- E-Commerce Support Services
- Response Centers for Telephone, Facsimile, E-mail, and Web
- Content Management
- License Administration
- Procurement
- Materials Management
- Media Replication
- Kitting & Assembly
- Fulfillment & Distribution
- Customs & Export Compliance
- Financial Management & Reporting
- Customer Care

Content Manufacturing Solutions

Operations managers need to support inventory demands and service levels, but in today's changing world, forecasting often has less to do with the market and more to do with dynamic product cycles. Modus Media identify products that can be built to order, and use their capacity and speed to reduce your inventories and risk of obsolescence.

Modus Media can manage your operations under even the tightest production schedule and during seasonal peaks. By selecting and storing critical parts, they manage inventory and quality control for all your software manufacturing and hardware assembly needs. Their Content Manufacturing Solutions are targeted to provide outsourced supply chain management services to ISVs and OEMs, and are flexible enough to allow them to match the appropriate operating model to address the distinct supply chain requirements of each client. For ISV clients, they offer flexible, just-in-time delivery programs that allow the shipment of packaged software products to be closely coordinated with clients, inventory, and distribution channel requirements. For OEMs and other hardware manufacturers, they act as a single source for sub-and final-assembly, packaging, and fulfillment for hardware kits.

Modus Media's Content Manufacturing Solutions consist of the following services:

Content Management: Modus Media maintain systems that enable them to respond quickly to frequent changes in their clients' bills of material and rules that dictate the specific hard-ware components and software to be included in shipkits for different product configurations. They also manage the large amount of data files and images used to produce clients' software and documentation in multiple versions.

Procurement: Modus Media manage the purchase of raw materials and subassemblies from vendors selected either by their clients or by them. Their procurement management services include vendor evaluation, product price negotiation, forecasting product quantities and managing the timing of purchases.

Materials Management: By integrating their ERP system with client forecasts, Modus Media can provide automated inventory management to assure real-time stock counts of a client's products, documentation, and other items. They also provide to their clients web-based management information, including pricing information, reorder levels, and inventory values to support consistent and timely stock balances.

Manufacturing: Modus Media convert content into various media formats that can be distributed to their clients or directly to the distributor or retailer. This content is often intellectual property, such as licensed software products that are distributed to end-users in the form of a diskette, CD, or manual.

Assembly: Modus Media use a streamlined assembly process to incorporate various components and parts into a finished product or subassembly.

Fulfillment and Distribution: Their fulfillment services include order processing, picking, packing, warehousing, and shipping. They also streamline and customize the fulfillment procedures based upon each client's requirements. Modus Media's 20 Solution Centers facilitate compliance with export regulations and provide regional shipping efficiencies. They provide detailed reports on their supply chain activities in multiple currencies and languages.

e-Fulfillment Solutions

When you partner with Modus Media, you get an integrated approach to e-commerce that spans the storefront to the back office. Their e-Fulfillment Solutions are targeted at helping you build loyal and profitable customer relationships. On the front-end, they partner with your sales, marketing and engineering departments to help build an e-commerce

storefront. On the back-end, they directly link your store-front (your existing site or one they build for you) into their integrated response management system to enable 24X7 transactions, customer data capture, and timely product delivery. Real-time, web-based reporting provides you ongoing visibility into purchase activity and product inventory levels so you can make real-time marketing decisions. Modus Media's e-Fulfillment Solutions turn great ideas and great products into global online success stories. When you open for e-business or your net sales surge beyond your wildest dreams, you can trust Modus Media to manage your digital supply chain from end-to-end.

All research suggests that sales via the Internet will continue to skyrocket. One thing is certain – as your net sales grow, so will the costs and complexities of managing the global digital supply chain. From storefront development to response management to fulfillment, Modus Media is the business behind many successful e-businesses, fulfilling from 100 to 10,000 online orders per month.

Modus Media's e-Fulfillment Solutions comprise the following services:

- Web site design, web storefront development, and real-time connection of web sites to fulfillment operations;
- Response centers, including telephone, facsimile, e-mail and web;
- Accounts receivable collection programs;
- Online, multi-currency payment processing;
- End-user support for product inquiries;
- Returns, refunds, and rebates processing;
- Reporting on end-user activity; and
- Electronic license distribution services.

Strategic Positioning

Because their approach to adding value to your supply chain is both integrated and global, you have a partner that's anywhere in the world you need to be. Their facilities span North America, Europe, and Asia Pacific. They help you capture market share by responding to changes, adapting to regional needs, and providing 24-hour a day, 7-day a week support and sales services. Modus Media's supply chain services can free you to focus on developing and marketing your products.

Their key differentiators are summarized below:

- **Global Positioning**

Modus Media has the solution to a growing business in a shrinking world: global facilities and resources. Their 20 Solution Centers support your business through peak season, worldwide releases, or any other operational challenge your company faces.

- **Technology**

Modus Media is on the leading edge of technology — using best-of-breed applications to provide companies with material resource planning (MRP), alternative payment processing, and worldwide systems and reporting that integrates with their own fulfillment systems. Because they invest in and integrate e-commerce, response center, and supply chain technologies, you don't have to — your capital and resources are available to focus on your core competencies.

- **Proven Results for Dynamic Businesses**

Operations managers need to support inventory demands and service levels, but in today's changing world, forecasting often has less to do with the market and more to do with dynamic product cycles. Modus Media can help manage your operations under even the tightest production schedule. By selecting and storing critical parts, they manage inventory and quality control for all your software manufacturing and hardware assembly needs.

They also offer:

- Documentation printing and packaging
- CD-ROM/diskette replication
- Inventory management services
- Assembly and packaging
- Full-service conventional and digital pre-press operations
- Demand print and production services
- Computerized distribution and tracking
- Return-materials processing
- Reporting

Since the early 1980s, Modus Media has been a leader in the outsource services industry. Today, with 4,600 employees worldwide, Modus Media is a global provider of supply chain management services to the technology industry. In fact, *Business Week* recently ranked Modus Media among the top 20 leading private information-technology companies in the U.S.

- **People**

The Modus Media business manager acts as your single point of contact and manages all aspects of your program. They manage customer operations according to a fact and result-based Business Management Model, so you have one team accountable for your business and your communications.

- **Proven Quality Systems**

Modus Media globally subscribes to ISO-9000 and COPC-2000 (Customer Operations Performance Center) standards — so you know their facilities and

processes have been tested, reviewed, and strengthened. Annual re-certification and process validation assures you of their continued commitment to superior quality. Plus, their own rigorous "Validating the Value-Add" performance-measurement test examines their actions, determines their value to clients, and validates their activities through measurements.

• **On-Demand Manufacturing**

At the heart of their demand-driven program is a content management system that stores your media products in digital, production-ready form. Through secure online access, you can make updates as needed and trust that orders are fulfilled with current product versions. Sales orders are automatically converted to production orders, and product content is then sent to printing or media replication. A high-speed network links their extensive replication systems and more than 50 digital print engines. Modus Media also can manage your complex and constantly changing set of printed documents with a minimum of inventory. They can expedite long print runs as well as short updates to existing documentation to get your materials to market quickly.

• **Response Management & Fulfillment**

Customers contact you from every corner of the globe, and Modus Media is there to answer them. Their highly trained customer care representatives manage millions of customer communications every year. Whether your customers speak Spanish, English, Japanese, or one of a dozen other languages, they are on the line to represent your product in every major market. They act as your sales and service

organization — using e-mail, telephone, fax, and postal communications to manage orders, answer product inquiries, register users, up-sell, and cross-sell. You get a one-stop solution that moves as the market does — to include secure e-commerce Web sites, online credit card authorization, database creation and maintenance, and much more. Most importantly, Modus Media assures quality by managing every order from initial response to fulfillment through their global and integrated systems.

• **Channel Program Management**

Simplify the management of your global marketing programs through a single, trusted point of contact. Modus Media integrates marketing, manufacturing, and fulfillment in one complete package. Their experts support your business in covering all channel program details, whether you're going through the channel or direct to the consumer. They can help you reach your customers through subscription and educational courseware programs, seminar registration, and license management.

Why Outsource?

- Improve business focus
- Accelerate reengineering benefits
- Share risks
- Allocate resources for other projects
- Reduce and control operating costs
- Free-up working capital for other investments, especially marketing
- Access resources not available internally
- Gain control of a function that is difficult to manage

e-Fulfillment Extended Supply Chain Model



Studies have repeatedly shown that a “proven track record” and “industry expertise” as the most important factors in selecting an outsourcing partner. For over 18 years, Modus Media has built a strong reputation by delivering on promises and performing consistently. As a supply chain partner to many leading technology companies, clients entrust them with their intellectual property and content – and know these will be handled with confidentiality and security. This kind of trust is earned over time and has been rewarded by several long-term client relationships that have grown in scope and volume. With their established track record of performance, they have expanded into different industries such as telecommunications, computer peripherals, consumer electronics, and medical devices.

Case Studies

Reducing Lead Times While Increasing Inventory Turns

The Challenge

The client had over US\$4 million in obsolete inventory due to forecasting errors, inefficient channel management and excessive lead times in the manufacturing cycle. To maximize profit and reduce costs, the client needed to change their manufacturing model. The client looked to Modus Media for a solution to reduce inventory levels, reduce manufacturing lead times and increase inventory turns.

The Solution

Prior to the implementation of the new manufacturing model, the client built-to-forecast. 90-day forecasts were used to procure raw materials, manufacture subassemblies and build each SKU. The client would then store materials and finished goods.

Modus Media proposed the implementation of an On-Demand Manufacturing model. This model better fit the needs of the client and significantly reduced manufacturing lead-time and inventory, while increasing inventory turn rates – a build-to-order model. Component raw materials are ordered and stored using min/max inventory levels, based on the client’s prior consumption.

The Results

The On-Demand Manufacturing Model reduced manufacturing lead-time from 90-days to less than 10. Inventory turn rates rose from 3.5 to 12.

Lowering build quantities, better warehousing techniques and the use of min/max levels reduced the time necessary to build an order from 5.7 days to less than 24 hours. Inventory value dropped by 83% with no stock-outs, saving US\$5 million a year.

ISP Changes Global Fulfillment Vendor in 4 Weeks; Improves Service Levels

Modus Media manages fulfillment services for a national Internet Service Provider (ISP) with 1.2 million subscribers. The scope of business covers order consolidation, manufacturing, and fulfillment of 10 to 20,000 CD kits each day.

The Challenge

The client demanded a successful transition from a competing vendor in four weeks. The program had to tolerate spikes in demand and unpredictable market adoption. The client would provide 27 different order input sources that would have to be consolidated into one order per day. Additional requirements included address verification, profanity scrubbing, SKU assignment, registration code assignment/verification, and on-line order status and tracking.

The manufacturing process involved receiving a daily order file, creating a daily work schedule, printing name and address information, and distributing product to end users via USPS and UPS. Each day averaged 15,000 addresses and more than 30 SKUs. The goal was to deliver CDs within 48 hours, 98% of the time.

The Solution

Modus Media’s Solution Center used a team-based decision-making approach, combining people from various departments to create several important process improvements. These included packaging re-design and a new way to handle incoming order files from the client’s several response centers. This proactive approach created better service and was warmly received by the client. They also incorporated a Web-based tracking system that enabled end-users to view the status of their orders online.

Modus Media procured enough finished goods inventory from the previous vendor to allow for the lead-time necessary to purchase the required components. This allowed them to fulfill orders immediately while they began building their own product.

The Results

The Solution Center achieves 99% on-time, 75% same-day and 98% within 48-hour deliveries for this client. They also achieve a 24-hour turn time in >90% of all shipments to this client, far exceeding their performance metric. They recently re-designed their process to reduce turn times even further, and expect to report significant results very shortly. From the beginning of the business relationship, Modus Media has taken a proactive approach to helping this client to reduce their inventory levels by suggesting product redesigns to reduce costs.

Origin

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ORIGIN

Company Background

ORIGIN is a global IT services and consulting firm with over 18,000 employees around the world. ORIGIN provides a full spectrum of business and IT solutions for global corporations and other complex extended enterprises through operations in 32 countries. A leader in enterprise outsourcing, ORIGIN is represented by over 1,200 professionals in major Asia Pacific countries such as Australia, China, Hong Kong SAR, India, Japan, Malaysia, Taiwan, Thailand and Singapore (RHQ).

ORIGIN's unrivaled track record includes expertise in a number of industries including process manufacturing, oil & gas, chemicals and

pharmaceuticals, high-tech electronics, consumer packaged goods, and banking & finance. ORIGIN's key customers include ICI, Lucent Technologies, Philip Morris, Philips, Procter & Gamble, Shell and Unilever.

ORIGIN was formed in 1996 through a merger between BSO/ORIGIN and Philips Communications & Processing Services. Annual revenues of around US\$ 2 billion were achieved in fiscal year 1999, with approximately US\$ 42 million generated from the South Asia region. The company maintains headquarters in the Netherlands, U.S. and Singapore and is a member of the Royal Philips Electronics group of companies.

ORIGIN Heritage

ORIGIN is the result of a merger between BSO/ORIGIN and Philips Communications & Processing. BSO/ORIGIN was incorporated in the Netherlands in 1972 and was the largest Dutch IT consulting company in the Netherlands. Their focus was application development and automation technology for manufacturing, trading and government corporations. BSO/ORIGIN had strong entrepreneurial roots and its success was based on their founder's (Eckart Wintzen) famous cell concept. Each cell (i.e. business unit location) would grow its business and staff strength until a maximum size of no more than 100 employees. Once it reaches this size, it would be split into two cells, which would thereafter continue to grow separately and independently. This proved to be a winning formula with customers and employees due to its high customer focus and employee empowerment, and BSO/ORIGIN became the premier IT consulting house in the Netherlands.

Philips Communications & Processing was a subsidiary of Philips, the large Dutch electronics giant, which offered Data Center and infrastructure management services. Their services were widely used by all the Philips companies around the world and several large European manufacturing companies. Their strengths were their systematic and disciplined processes, using leading technologies and tools, which were critical in running mission-critical enterprise infrastructure systems globally.

With the merger of these two companies, ORIGIN is now able to deliver full lifecycle solutions and services to their customers, ranging from consulting, implementation, development, installation, managed operations, maintenance, helpdesk and support. Bundled with ORIGIN's strong global presence and unique focus on employee and customer relationships, ORIGIN has continued to see growth in all their target markets.

The continued emphasis on globalization and increasing complexity in technology has also helped fuel the demand for ORIGIN services as rapid implementations and reliable continuous support continues to be a focus for multinationals aiming for business efficiencies on a regional or global scale.

Main Business Activities

ORIGIN operates with a customer-driven matrix structure comprising of:

- Account Management & Consulting, which focuses on customer relationship management and technology consulting
- Three Service Groups which are described in more detail in the next section, namely:
 - Enterprise Solutions
 - Professional Services
 - Managed Services
- Support Management (Human Resources, Finance, Marketing, etc.)

The organization can be illustrated as follows:



Enterprise Solutions

ORIGIN's Enterprise Solutions deliver an integrated industry-based, enterprise-wide solution encompassing ERP(Enterprise Resource Planning), CRM (Customer Relationship Management), SCM (Supply Chain Management) and MES (Manufacturing Execution Systems) based on best-of-breed specialized function solutions. ORIGIN consultants help re-design or re-align the business processes, implement solutions, train the users, roll-out to multiple sites or multiple countries worldwide, manage the entire project and the change processes. In line with the e-business trends, ORIGIN's latest packaged solutions for the enterprise are web-enabled and cover both business-to-business and business-to-consumer functionality.

Professional Services

ORIGIN's Professional Services portfolio is wide ranging and includes Consulting, Application development services and E-Commerce services. The Professional Services group specializes in providing customized solutions to meet the unique needs and precise requirements of clients. With ORIGIN's ability to understand and integrate the various components of their customer business and IT ecosystem, the customer is well positioned to take advantage of the next wave of innovation to gain the competitive edge.

Since 1999, ORIGIN has placed added emphasis on emerging technology areas such as E-Business, ERP Second Wave arenas (i.e. CRM, SCM, etc.), Outsourcing and Knowledge Management. Last year, ORIGIN acquired a team of about 50 E-Commerce professionals in the US who are now leading the E-Commerce initiatives globally.

Managed Services

ORIGIN's Managed Services comprises IT infrastructure management, Managed operations, Applications support, Enterprise systems management and Customer support services. Managed Services provides ORIGIN's customers the flexibility of reorganizing their structures across geographies, time zones and functional areas, thus allowing more agile business set-up and operations.

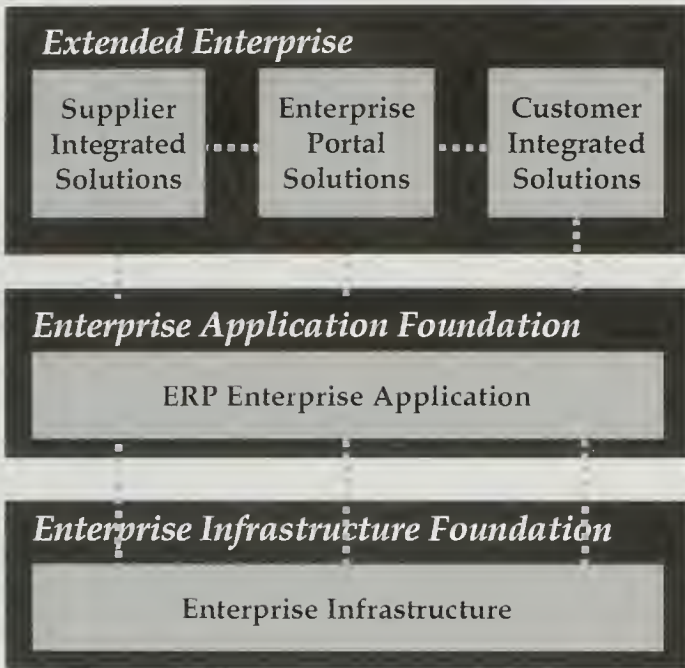
ORIGIN's solution is based on the EMS (Enterprise Management Systems) which is designed for 24-hour-7 day-a-week coverage of business critical systems. This means operational stability and reliability for your business, both enterprise-wide and internet-wide. This also includes the ORIGIN Support Center, which provides 'Follow-the-Sun' telephone support globally.

Enabling the Extended Enterprise

ORIGIN's strapline is "*Sharing the power of knowledge*", which acts as a reminder to themselves, their customers and partners that ORIGIN makes an ongoing contribution as a global information technology services provider.

ORIGIN succeeds by increasing the value of their customers' extended enterprise through the creative use and ongoing management of information technology. ORIGIN views the extended enterprise in two distinct ways. One is helping a company extend the boundaries of its technology so that it touches its customers, suppliers and vendors, using approaches such as Supply Chain Management (SCM) which incorporates a complete e-commerce perspective of business processes.

The e-commerce perspective, also referred to as e-business, recommends that the enterprise has to approach electronic commerce from three views, namely the customer, the employee and the supplier. All three components are critical to the enterprise business model and should move at the same pace for operational effectiveness and efficiencies. The ORIGIN e-business perspective is depicted in the diagram below, whereby CRM is offered in the Customer Integrated Solutions category.



ORIGIN's Supply Chain Management Framework

ORIGIN's Supply Chain Management goal is to help client companies achieve supply chain excellence through seamless integration of their supply chain by providing them with value adding solutions focused on the following: customer responsiveness, cost reduction, total supply chain integration, information relevance and financial optimization.

The above business issues create a challenge for Supply Chain Managers to integrate supply chain performance across all facets of a business. ORIGIN believes that this can be achieved only through the integration of seven key supply chain elements, illustrated as follows.



SCM Strategy Development

ORIGIN's *Rapid Assessment* diagnostics tool will help you as a Manager to determine improvement opportunities in your supply chain, identify the current state of your supply chain and allow you to benchmark results with other companies across all industries. This assessment process focuses on measuring achievement across six integration elements (Customer Integration, Operations Improvement & Integration, Supplier Relationship Integration, IT Integration, Relationship Integration and Performance Measurement Integration) that characterize leading supply chain performance.

Supplier Relationship Integration

The challenge for companies is to be able to seamlessly integrate and synchronize their operating processes into those of supply partners (material or service) in order to meet increasingly broad and demanding end-customer expectations. To make this a reality, ORIGIN offers the following value added procurement solutions:

- Web-enabled procurement, using the leading B2B Procurement software (SAP, Manugistics, Concur, i2, Ariba)
- Best practice procurement processes geared toward reducing procurement costs (e.g. Outsourcing Practices, Supplier's Supplier Programs)

Internal Operations Improvement and Integration

Internal Operations Improvement and Integration focuses on cross-functional planning, sourcing, manufacturing and delivery. The goal is to link internal work processes into a seamless, synchronized process that supports customer requirements, reduces operational cost, standardization of policies and procedures, streamlining operations and work routines and improvement of your network structure and deployment of physical assets. To do this, ORIGIN uses a proven Supply Chain methodology which integrates the well known concepts of business process reengineering, benchmarking, best practice analysis and selection and use of state-of-the-art software solutions. This methodology not only focuses on internal operations integration but also includes the other integration elements, which are:

- Customer Relationship Integration
- Internal Operations Integration
- Supplier Relationship Integration
- Performance Measurement
- Relationship Integration
- Information Technology Integration

Relationship Integration

Companies often overlook the importance of including relationship integration as part of their supply chain initiative. As a result, lack of cooperation and conflict arises between partners leading to delays emerging from uncoordinated operations. Relationship Integration focuses on development of a shared vision and objectives among customers and suppliers about interdependency and the principles of collaboration. To do this, ORIGIN will help clients establish rules of cooperation with suppliers and customers by focusing on the following:

- Clarification of roles and responsibilities
- Development of rules, policies and procedures needed to facilitate collaboration, conflict resolution and termination of relationship between partners
- Information sharing design and collaboration.

Performance Measurement

Performance Measurement focuses on development and maintenance of internal and supply chain performance metrics. To achieve this, ORIGIN will help clients identify performance metrics that affect the supply chain's ability to deliver value to the customer

and establishment of performance standards and measures.

Information Technology Integration

Information Technology Integration focuses on the development and design of an integrated information architecture to facilitate exchange of timely and accurate information across the supply chain. To achieve this, ORIGIN offers the following services:

ORIGIN's Overture lets you outsource the extraordinary burdens of deploying and managing the enterprise throughout its life cycle. ORIGIN will support your company's need for continuous change by building, managing, and sustaining your IT environment. Overture consists of several offerings, which are founded on ORIGIN's nearly two decades of proven services in Consultancy, Implementation, Operating and Support.

Enterprise Life Cycle Management representing the ultimate in outsourced solutions through full, customized outsourcing for IT infrastructure and staff. ORIGIN assumes responsibility for business and functional innovation, as well as business continuity in conjunction with external parties and your supply chain.

IT Life Cycle Management that extends across the life cycle of your enterprise application environment (mainstream ERP and legacy applications). ORIGIN provides full IT outsourcing services and takes responsibility for technical and functional innovation.

Enterprise Applications Outsourcing in which ORIGIN assumes responsibility for operating and maintaining enterprise applications, as well as responsibility for IT continuity.

Enterprise Application Service Provision containing a bundled package of services designed for mid-tier trading companies, including pre-assembled industry solutions powered by the leading enterprise application providers.

Enterprises Solutions Toolkit includes a full suite of leading e-commerce, Advanced Planning System and ERP integrated software solutions (SAP, Manugistics, Baan). Services include:

- Project Management and Consulting
- System Configuration and Implementation
- Total integration of all applications from supplier to customer

ORIGIN's Strategic Positioning

ORIGIN is highly regarded for its expertise in the following industry sectors:

- Hi-Tech Electronics
- Consumer Packaged Goods
- Process, Chemicals & Pharmaceuticals
- Banking & Finance

A major advantage of ORIGIN is their knowledge of these industries due to their employees' background in these areas coupled with strong technical capabilities. Many of its employees are from the High-Tech/Electronics and Process/Chemicals industries due to ORIGIN's long-standing strength in outsourcing

and successful retention of these transferred employees by providing a new IT profession for them.

Coupled with their strong operational processes and implementation methodologies, ORIGIN is able to 'repeat' successful projects rapidly and operate world-class managed operations.

An often heard feedback from their customers is that ORIGIN employees are fun to work with. Although not promoted as key differentiator to the market, there was an article published in a leading IT magazine entitled "ORIGIN – Employer of Choice". The article mentioned that ORIGIN is a company which lives their company values i.e. 'walks the talk'.

Sample Customers

Customer	Type of Institution	Customer Comments	Project Details
Energetic Solutions	Formerly known as ICI Explosives, is a leading Chemical-Explosives company	"ORIGIN recognized the high value of consultants we needed – and provided them. We were able to add immediate value to the business." - Dennis Wilson, Project Director	Business Challenge Standardization of business processes and elimination of non-value adding tasks, reduce cost of legacy support systems ORIGIN Approach ORIGIN was able to quickly respond to their BPR needs and displayed their capability to offer BPR projects with small consulting involvement. Results An estimated saving of US\$ 2.5 million, standardized process, reduced cost due to outsourcing of SAP support services.
Cadbury Confectionary	A leading brand in the Food industry	"Only ORIGIN could provide international backing and expertise" - Paul Coghill, Information Services Manager	Business Challenge Need for an integrated application ORIGIN Approach ORIGIN was asked to join the project to reduce the risks and complexity of the project by using the consultants experience and proven skills. ORIGIN provided customization, prototyping, implementation and testing and training services. Results Improved market position and strengthened its number one position in New Zealand.
Renault	One of the leading brands in the automotive industry	"More than a service provider, Renault needed a partner. ORIGIN stood and delivered" - Jorge Greco, Renault	Business Challenge To replace their legacy system with one integrated system, improve cost efficiency. ORIGIN Approach ORIGIN provided Renault with a complete SAP R/3 implementation package at a fixed price. This included: Project Management, Functional and technical consulting, and training

INPUT Services For IT Buyers

INPUT provides a variety of business advisory services to our clients. Through the expertise of our business and financial experts, we assist our clients in making strategic decisions, maximizing their performance, and growing their business. Our services include:

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- Financial Planning
- Business Succession
- Retirement & Estate Planning
- Income & Expenses
- IT Financial Reporting & Budgeting
- Tax Preparation Services

IT & Business Consulting

- Supply chain management, inventory management, and procurement
- Supply chain optimization and demand management
- Supply chain integration and supply chain optimization
- Business process optimization and demand management

Legal and Compliance Services

- Contract management and compliance of business operations
- Contract management and compliance of business operations
- Contract management and compliance of business operations
- Contract management

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