Silicon Valley
WORLD INTERNET CENTER

Synchronized Supply Chain Management in the Internet Age:

A Focus on Mid-sized Business Needs and Solutions

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Proceedings

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http://www.worldinternetcenter.com

Introduction

Thanks to low-cost Internet technology, mid-sized companies can now streamline internal processes, set up electronic links with customers and suppliers to communicate and transact business, and expand into new markets. New Web-enabled capabilities level the playing field for mid-sized companies and allow them to continue to do business as their customer's expectations and requirements change. For example:

- Companies now take orders from customers and sales representatives over the Internet, replacing less efficient faxing and mailing of order forms.
- Customer service representatives see order histories on the Internet as they field service calls, allowing them to better serve customers without barraging them with questions.
- Companies use their websites to market services, explain products, and link to distributors and suppliers, making for one-dot shopping for visitors to the sites.

For mid-sized companies to survive in the Internet Age, however, they must keep pace with Fortune 1000 companies. An "Internet year" has been defined as 90 days, and the rate of change in today's business world is faster than it has ever been. Mid-sized companies often need help Web-enabling their supply chains as fast as possible.

Supply chains make up all phases of business relationships, from acquisition and processing of raw materials to final delivery and support of finished goods, including:

- Order entry
- Inventory management
- Product documentation

- Planning and forecasting
- Sales reporting
- Order processing and management
- Procurement
- Manufacturing
- Billing
- Financial reporting

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Many eBusiness solutions providers for Web-enabling supply chains focus on Fortune 500 clients. If a company cannot spend one or two million dollars on front-end eCommerce and back-end integration, it often has nowhere to turn for help developing an effective supply chain management strategy. Large companies such as General Motors are teaming with firms like Oracle to make their supply chains more efficient. Mid-sized companies must realize the same efficiencies to stay in business.

To respond to customers' wants, mid-sized companies need to adopt the dynamics of the larger players to keep their supply chains functioning. Strategies include leasing applications through Application Service Providers (ASPs), arranging for turnkey solutions from Business Solution Providers (BSPs), and integrating operational elements through vertical market portals. Also, firms such as Centegy Corporation in Fremont, California, are emerging expressly to provide integrated eBusiness solutions for mid-sized companies.

As well as redefining supply chain management, the Internet Age is changing the organizational structures and skill sets mid-sized companies need to adapt in order to thrive. Today's managers must be forward-looking and embrace change. The autocratic structure of organizations must give way to a model that empowers people and encourages self-management. Employees have to learn

more quickly and adapt to constant change. CEOs and entry-level workers alike must take an entrepreneurial approach to their jobs and learn to work collaboratively.

It is not an easy time for mid-sized companies, but possibilities abound. The changes brought about by the Internet should result in lower costs, closer relationships with customers and suppliers, and increased revenues and management control.

The Think Tank Session at the Silicon Valley World Internet Center on November 17, 1999 focused on three areas of special interest to mid-sized companies in the Internet Age:

- Special Challenges Faced by Mid-Sized Companies
- A Case Study to Delineate Challenges Faced by Mid-Sized Companies
- New Organizational Structures and Skill Sets Necessary in the Internet Age

Challenges Faced by Mid-Sized Companies

For the purposes of the Think Tank Session, mid-sized companies were defined as those with annual revenues of between $25 and $500 million and with more than 25 employees. These companies often have the same supply-chain problems as larger players as they struggle to integrate with their parent firms or their supply-chain partners.

Many mid-sized companies have the same complex operations as their large-sized counterparts. An AMR Research report published in 1999 found that 58 percent of mid-sized firms operate internationally; 36 percent maintain international manufacturing or distribution facilities; 62 percent manage multiple sites; and 44 percent comprise multiple entities.

The following were challenges identified in the areas of collaboration and strategic alliances necessary to Web-enable a supply chain:

- Getting internal staff and supply chain partners to accept new systems and technology

- Training
- Lagging business processes
- Tying the business model to technology
- Making people's lives easier
- Dealing with more tailored models than you can plug in
- Customer acceptance of new technology
- Scalability and growth: which system to use
- People needs vs. technology
- Defining what technology solutions to bring to bear
- Customization of technology solutions
- Lack of external focus
- Integrating suppliers into the system

After careful deliberations, key challenges for the mid-sized companies were identified as:

- Cost
- Time to implement
- Legacy system integration
- Need to focus beyond regional needs

A case study was examined to address these key challenges for the mid-sized companies.

Case Study Analysis

To explore the challenges faced by mid-sized companies using the Internet to facilitate their supply chain management, participants were given a "typical" case study which focused on today's real world issues.

The hypothetical company was called The World, Inc. (TWI). This company develops and distributes a one-stop wireless device for monitoring and managing information on the Internet. This new and innovative product (N&I) is a must-have for high-tech employees on vacation as well as trendy teenagers. The product has passed all usage and regulatory tests. The one-stop wireless device (N&I) has five main components: small display, CPU, wireless modem, input device, and TWI software.

TWI expects to see more than a million units of N&I over the next six months (mostly in the United States,

Western Europe, and Japan). TWI must start production by January 1, 2001, in order to hit the profitable period before the beginning of vacations in July of that year. TWI has no manufacturing plants nor does it desire a long-term manufacturing commitment to one company. Its strategy is to exploit unused manufacturing capacity around the globe. TWI will sell N&I products via the Web only. In order to be successful, it must keep the cost of supply-chain management down.

The following aspects of supply-chain management were considered in the context of the hypothetical company: demand planning, order execution, and fulfillment. In building its strategy, key questions for this hypothetical mid-size company included:

1. Defining a collaboration strategy and select "partner firms."
2. What technologies would be needed and what companies are best positioned to provide quick implementation?
3. What new skills would be required and what organizational structure(s) would allow successful implementation?

Demand Planning

For TWI, key elements for Demand Planning involves the following:

Technology	e-Pioneers
Web/HTML	Everyone
Web tracking	ILUX
	Aptitude
	Summary, net

Table 1: Technology and ePioneers for Demand Planning

- Getting the company up and running quickly to roll out a product with mass applications.
- Dealing with and understanding multiple market segments.
- Developing initial inventory and in six months building up a level of inventory in the system.
- Working in partnership with firms that can provide the initial data.

Figure 1

TWI Cycle Time Inventory
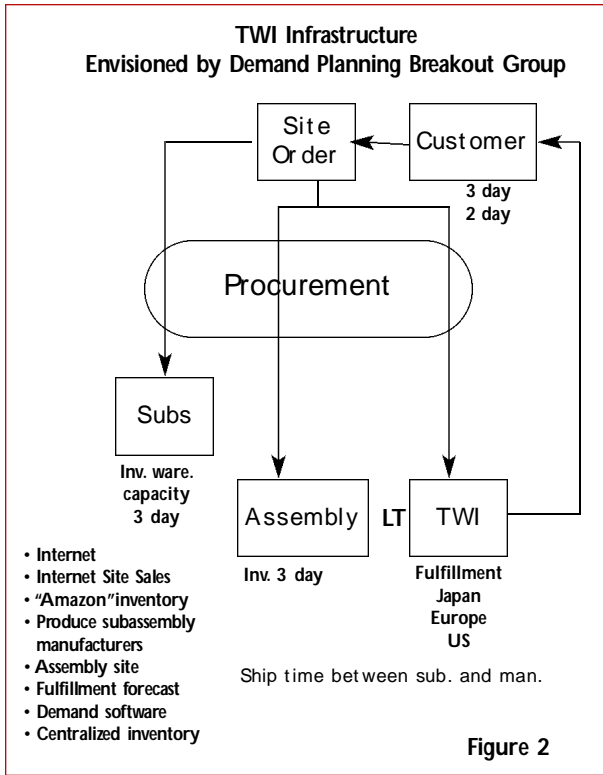Envisioned by Demand Planning Breakout Group
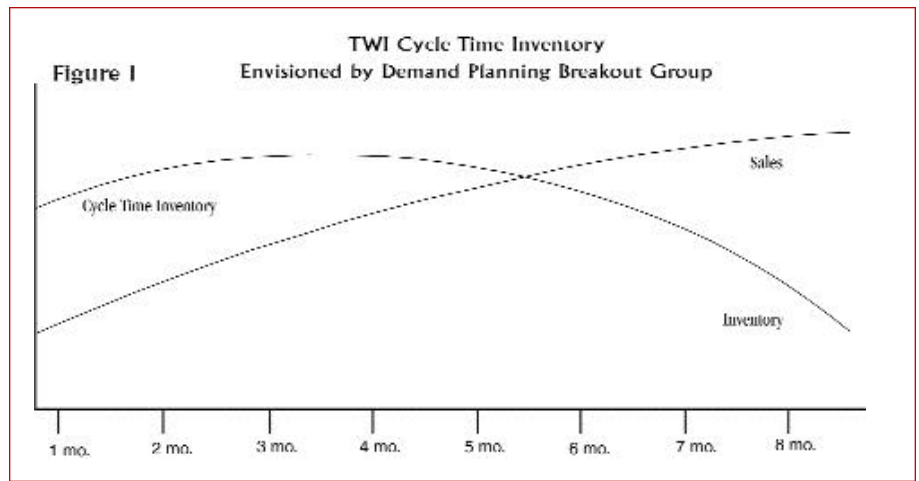
- Designing a complete supply chain in eight days, including one to two days for the fulfillment side.

To accomplish these tasks, the company has to get its website up quickly. Given, the short time cycle, technology must be purely Internet-based. Thus, the company needs people with Internet skills as there is no time for training. Regarding the company's infrastructure, there will be few centralized organizations. In terms of demand planning, the organization will be vertical. The company has to move at Internet speed.

Table 1 represents the technology and the current companies (the "e-Pioneers") making effective use of this technology for demand planning.

Figure 1 represents the cycle time inventory for TWI.

Figure 2 represents the case study company infrastructure.

**TWI Infrastructure
Envisioned by Demand Planning Breakout Group**

Site Order

Customer
3 day
2 day

Procurement

Subs
Inv. ware.
capacity
3 day

Assembly | LT | TWI
Inv. 3 day

Fulfillment
Japan
Europe
US

Ship time between sub. and man.

• Internet
• Internet Site Sales
• "Amazon"inventory
• Produce subassembly
  manufacturers
• Assembly site
• Fulfillment forecast
• Demand software
• Centralized inventory

Figure 2

Order Execution

For Order Execution, TWI identifies the following elements in its collaboration strategy with the supply-chain sector as key:

• Back office access to all suppliers (including real-time order tracking)
• Identification and qualification of vendors
• Certification of all partners
• Two-way reliable communication and demand
• Common quality metrics along the entire supply chain
• Verification of geographical coverage (location of factories)

TWI also identifies these relevant technologies as necessary for Order Execution:

• Localized applications
• Internet-based enterprise network
• Built-in backup systems for FAX and voice response

• Auditable messaging system
• Systems easy to integrate with back offices
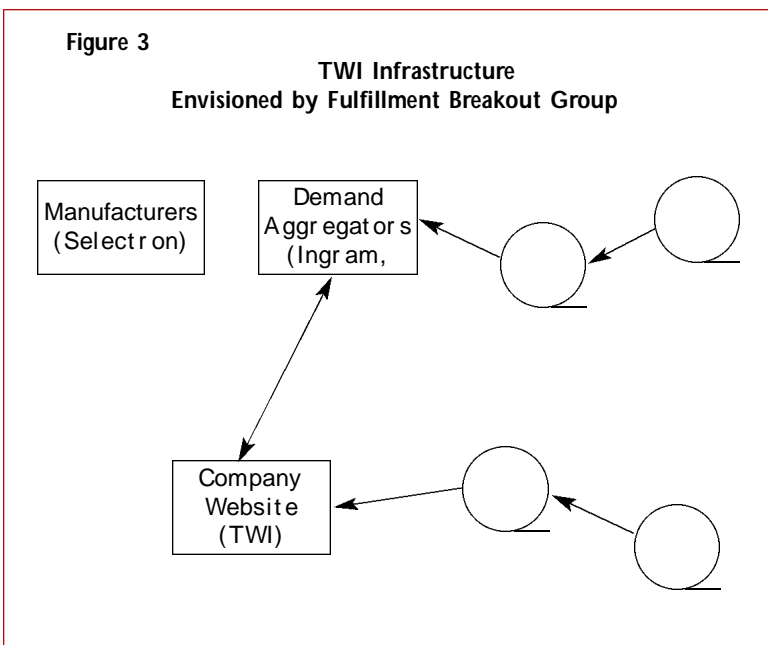• Virtual Source Network (V-Source)

TWI researches other companies making effective use of these technologies and identifies the following as technology providers: Scient, Extricity, Global Sight, Siebold Systems, Bowstreet, Market Fusion, and Baker Street.
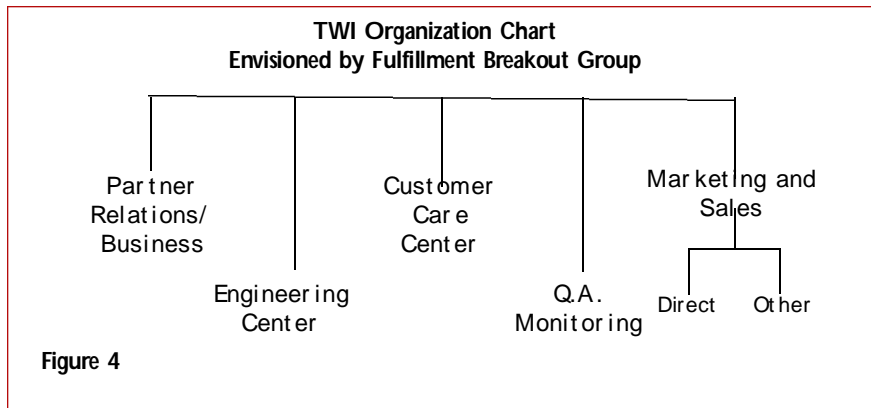
Finally, TWI concludes that the following skills are necessary for effective Order Execution:

• Windows2000/NT
• Strategic sourcing in purchasing
• Multicultural language capability
• Holistic supply management (beyond just the company)
• Collaborative abilities

Fulfillment

Regarding Fulfillment, advertising is identified as its first priority. TWI decides on Internet marketing (search engines and website) and standard media, including radio and print. Advertising drives customers to the company website, which, in turn, conveys information about the

Figure 3

**TWI Infrastructure
Envisioned by Fulfillment Breakout Group**

Manufacturers
(Selectron)

Demand
Aggregators
(Ingram,

Company
Website
(TWI)

TWI Organization Chart
Envisioned by Fulfillment Breakout Group

Partner Relations/ Business

Engineering Center

Customer Care Center

Q.A. Monitoring

Marketing and Sales

Direct   Other

Figure 4

structure of existing partner companies. The following skills are necessary for the company's success:

- Collaborative skills
- Engineering skills
- Customer care skills
- Quality assurance skills
- Marketing and sales

A strong and important emphasis is put on sales, marketing and advertising skills; customer care skills; and quality assurance skills.

product. The company must then create links to the nearest locations where customers can buy the product.

The company will need to aggregate the demand driven by the Internet links. It decides to form a relationship with a company, such as Ingram Micro, that already has the capability to aggregate the demand. The short time frame necessitates the outsourcing of demand aggregation initially, but once the company is off the ground, it will need another solution, one that will scale upwards as relationships between the company's web partners and its manufacturers become more efficient. The company that aggregates the demand can tie directly into an outsourced contract manufacturer.

The most important element is that demand is worldwide, driven by websites around the globe. A key question, then, becomes how to monitor the enormous input and maintain quality control. The answer is technology-based, that is, to monitor quality, the company must link from its website to the aggregator.

The supply chain infrastructure is depicted in Figure 3.

The company must also have an organization in place, represented in Figure 4.

In summary, the company's fulfillment strategy is to form relationships with worldwide dot com companies that have distribution channels and stocking capabilities. Regarding technology, the strategy is to leverage the infra-

New Organizational Structures and Skill Sets

The Internet Age is changing the organizational structures and skill sets necessary for mid-sized companies to survive. It is creating new roles, redefining existing roles and providing incentives for outsourcing many functions within mid-sized companies.

New Roles

The following are new roles are key for mid-sized companies:

- Global Experts. The need is for broad-based expertise in both business practices and cultural issues.
- Knowledge Managers. The need is for the management of data through knowledge transfer.
- Process Managers. This is not necessarily a dedicated role. People serving other functions may have process management responsibility. A CIO or manufacturing person, for example, may have responsibility for the entire order processing function. There may not be a need for this role full time, but it may be combined with other roles, especially in matrix organizations.
- Relationship Mangers. The need to manage relationships exists with suppliers, customers, and in various alliance-type relationships, transcending marketing and purchas-

ing roles. Mid-sized companies, like their larger counterparts, will need to develop a whole series of business relationships.

• Information Architects. This term is used extensively in website development and management. It relates to website layout and architecture, especially for sites with thousands of pages. The information architect role is more than IT and focuses specifically on website development these days.

Changing Roles

In response to the need for new skills, existing roles are changing. These include:

• Human Resource (HR) Managers. HR managers will be involved increasingly in development and training, and will need more of a multicultural focus. Key questions will be how a company trains and who does the training.

• Managers. Managers in general will be more like coaches and facilitators who develop self-management capabilities among employees. Traditionally, an employee looked at his or her manager as someone who knew more than the employee and understood all the specifics of an employee's functions. In the increasingly complex world of supply chain management, that will not necessarily be true.

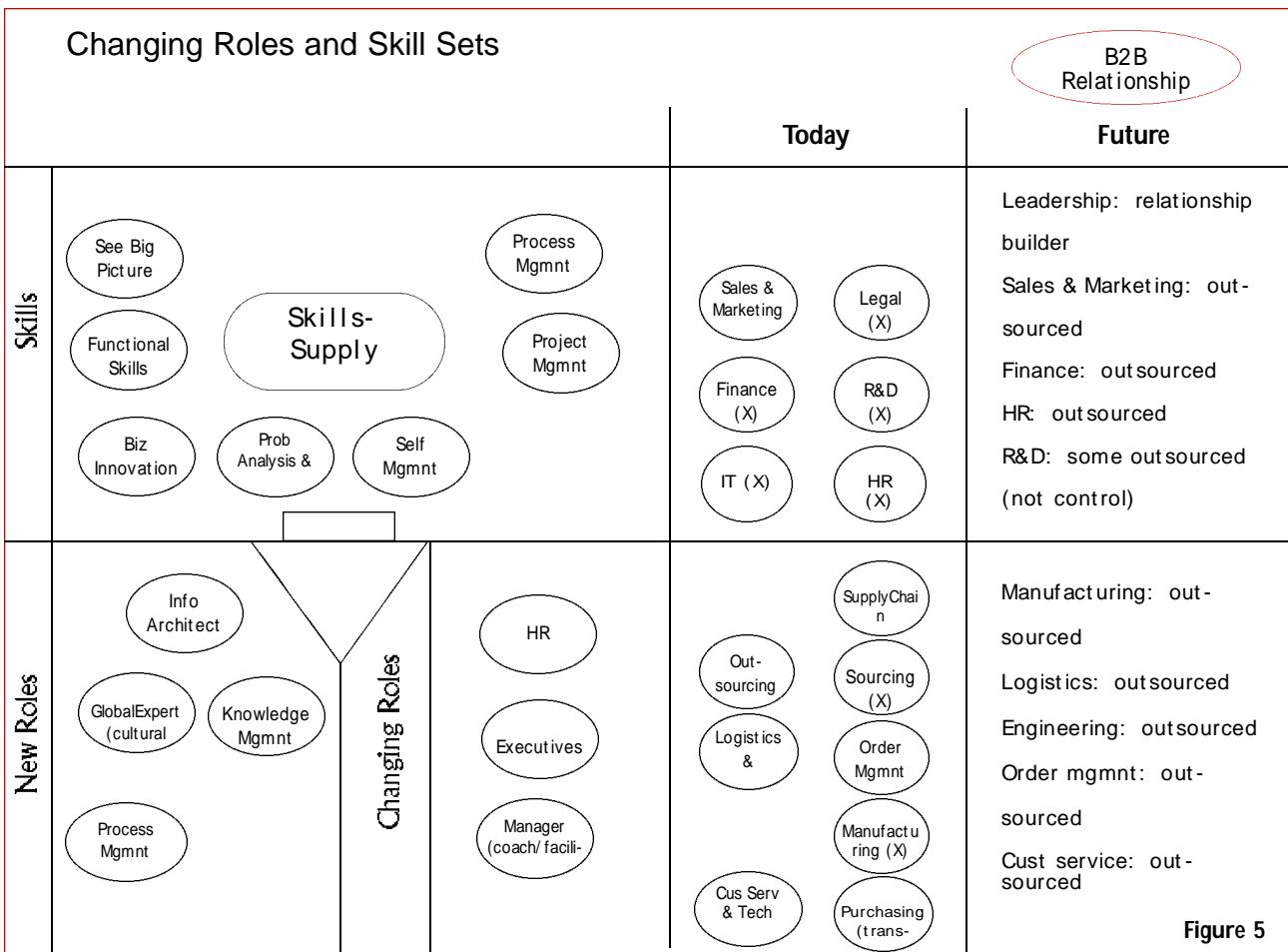• Executives. Executives will need a bigger picture, a global picture, and will need to think more quickly.

Figure 5

X = eliminated in future

Outsourcing

Looking ahead, mid-sized companies will eliminate or outsource many of their supply chain management functions, including:

- Manufacturing
- Logistics
- Sourcing
- Order management
- Customer service (tech support only)
- Purchasing

Only three supply chain management roles are likely to remain inside the company:

- Services Manager (new, Web-based role)
- Supply Chain Manager (expanded network-related role)
- Leadership

Taking this a step further to companies as a whole, it is highly possible that the following functions will be outsourced (wholly or partially):

- Research and Development
- Human Resources
- Information Technology
- Finance
- Sales and Marketing
- Lega

Conclusion

A significant conclusion of the Think Tank Session was that many large company functions and departments will be moved outside. A company will be left with a few key internal elements to manage as functions are increasingly outsourced. One all important new role will emerge: Business-to-Business Relationship Management.

Points offered in support of the conclusion:

- A company will need leaders to broker across the evolving and complex interrelationships in supply-chain management whether it is Web-based Services Managers or a Supply Chain Managers.
- These company leaders will need a skill set large enough to decide when to outsource, to determine what the company is getting, and to understand how the company will manage the overall process.
- At the end of the day, when a company ships a product, the management team is responsible for all the outsourcing. Company leaders must be able to deftly manage many relationships.

Figure 6 represents the changing roles and skill sets needed for mid-sized companies.

Thanks to low-cost Internet technology, mid-sized companies can now afford to streamline their internal processes, set up electronic links with customers and suppliers to communicate and transact business, and extend their reach into new markets. The new Web-enabled capabilities level the playing field for mid-sized companies and make it possible for them to continue to do business as their customers' expectations and requirements change. To realize these opportunities requires Web-enabling all aspects of the supply chain, creating new organizational structures, and defining new job requirements which require newly defined skills for changing roles and responsibilities. Those companies that strive to incorporate these developments well are the companies that will succeed in the future.

These proceedings were written by Ms. Molly Prescott, Molly Prescott & Associates, and Mr. Jeff McNish, a free - lance writer.