Maximizing Your Adaptability –
surviving and winning the high tech supply chain challenge

UPS Supply Chain Solutions℠

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A UPS Supply Chain Solutions
White Paper

In the high tech industry, where companies must often redesign all or part of their product offerings every few months, the pace of change is unlike any other. What is in today is out tomorrow. Products are quickly introduced, skyrocket to success, and just as quickly are replaced by newer, better technology. This on-going cycle requires companies to build supply chains that are as ever-changing and adaptive as the products that rocket through them.

...supply chain efficiency is no longer enough; adaptability is just as important...

Even in the midst of a "down economy," the high tech industry pumped out an impressive array of innovative, successful consumer products, such as digital cameras, MP3 players and plasma TVs driving the need for new and shifting supply and distribution networks. The demand curve for such products is notoriously hard to predict. In an industry where profitability can slip away a short one or two quarters after a product is released, successful supply chains are those that can flex to accommodate unexpected changes in demand (above or *below* forecast) and unanticipated disturbances in supply chain flow.

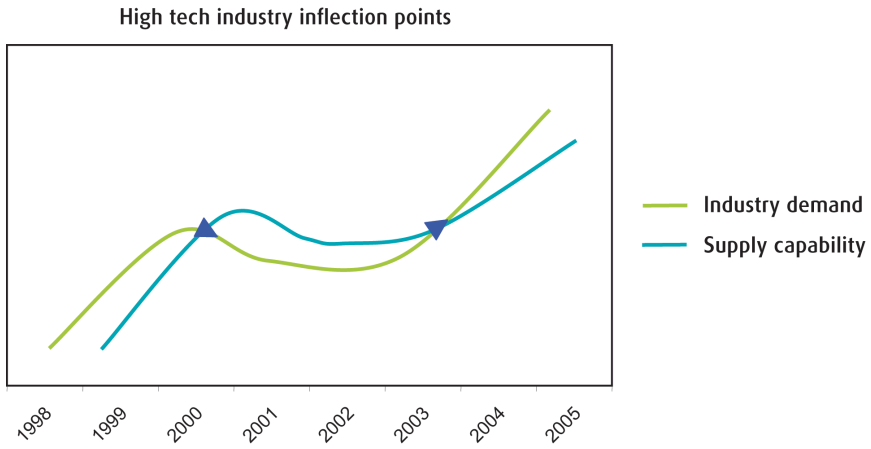
The last several years demonstrate that even the best-in-class supply chains are not always prepared to deal with the effects of external factors such as the West Coast port strike or the outbreak of SARS. Changing circumstances, near-constant product innovation, and aggressive competition illustrate that supply chain *efficiency* is no longer enough; *adaptability* is just as important to remain best-in-class.

Living with inflection points

In the closing months of the last economic boom, many firms were immersed in long-term initiatives to increase capacity and build infrastructure. However, when the economy turned, industry capability outstripped demand. and high tech businesses suddenly had to adjust their growth-oriented supply chains from expansion to contraction. The effects of this classic inflection point (see Figure 1) were considerable cost reductions and rationalization efforts. Companies rushed to adjust to new market realities and modified their supply chains to sustain shareholder value, increase net income and shrink expenses. Some made it. Some did not.

Those that made it find themselves facing the crossroads of a new inflection point – fighting to catch up to growing demand with a supply chain geared toward shrinking capacity and supply. This places many high-tech companies one step behind and without the flexibility to adapt quickly enough to maximize returns.

Figure 1: High tech industry supply capability continues to trend behind industry demand



...failing to prepare for...an inflection point may be the difference between company survival and extinction.

The costly intersection between the corners of expansion and contraction, shareholder value, ever-changing products, and unpredictable events should cause forward-thinking executives to consider some key questions about the adaptability and flexibility of their supply chains:

- What aspects of our supply chain are most vulnerable in sustaining profitability?
- How can we adjust our supply chain to sustain profitability at and beyond the next inflection point?
- What is the business impact if we do not capitalize at this next inflection point?

In the high tech world, the reality is that failing to prepare for and capitalize on an inflection point may be the difference between company survival and extinction.

A plan for every possibility?

While Figure 1 illustrates the most recognizable inflection points – those brought on by general economic trends and industry-wide swings in demand followed by the subsequent over and under capacity effects – there are many other smaller-scale events that can drive such inflection points. The savvy supply chain executive must balance both internally and externally driven, all of these possibilities with industry-wide trends.

The big question arises: can a supply chain be designed to be adaptable enough to handle all inflection points?

One of the more confounding inflection points, which is both the bane and the gain of any high tech company, is innovation. Whether it is the constant introduction of new product categories, such as digital cameras and MP3 players, or the strategic entry of non-traditional players into new market segments, such as the migration of traditional PC companies into the consumer electronics, high-tech companies require a supply chain strategy that can stretch beyond today's capabilities. While remaining prepared for a new inflection point to arise that might cause contraction.

Other inflection points may result from labor unrest. Because many companies rely on outsourcing and complex supply chain networks, they can no longer manage labor relations strictly within their own organizations. Consequently, executives must also be vigilant for labor unrest among partners and suppliers. The West Coast port strike is an excellent example of this situation.

The most unpredictable of the inflection points are those created by natural events such as earthquakes, floods, wars, political unrest, harbor closings and more.

The big question then arises: can a supply chain be designed to be adaptable enough to handle all possible inflection points? The reality is that no company can completely plan for every business possibility, nor is such an approach economically feasible. What can be done, however, is to identify those products or those areas of the supply chain that are "mission critical" and lack back-up or alternatives. Then focus on building flexibility and minimizing vulnerability in those areas to improve adaptability, regardless of the cause of the next inflection point.

Assessing adaptability

Where to begin? The first step is to look at the supply chain of each new or existing product line or category and determine the areas most vulnerable to demand fluctuations and business disruptions. The overall adaptability of a supply chain is determined by the interdependence of its core architectural elements: supplier relationships, inventory management, production execution strategy, distribution network and customer annuity programs and aftermarket service. Evaluating a supply chain design must include looking at each of these areas and assess their importance and levels of risk.

Supplier relationships

- How quickly can suppliers flex capacity?
- How dependent are you on single suppliers? Do you have alternative suppliers identified?
- How quickly could you pull out and replace a supplier?
- How quickly and accurately can you communicate with suppliers?

Inventory management

- How much visibility do you have into inventory throughout the supply chain (both upstream and downstream)?
- Who owns inventory at each point in the supply chain?
- Does inventory build-up pose a threat of excess and obsolesence?

Production execution strategy

- How quickly can you add or reduce system-wide capacity?
- Is there redundancy in your manufacturing capability?
- Does your manufacturing strategy allow you to leverage the latest technology advances quickly?

Distribution network

- How many entities are involved in the distribution network? Who is responsible if something goes wrong?
- Are your distribution centers located to allow quick response to demand shifts?
- Do you have alternative providers identified?

Customer annuity program and aftermarket service

- How easily could you change the response time of your aftermarket service program?
- Are you prepared to handle returns due to an unexpected quality problem in the field?
- How much visibility do you have into inventory and demand of spare parts and returns?

Adaptability is not a yes/no question. It is a continuum that must be adjusted for multiple factors.

Particular care should be given when evaluating supply chains for new product families or product lines. Successful supply chains in one area cannot necessarily be adapted to serve another market or product line. For example, a supply chain that operates flawlessly for a PC manufacturer may share little resemblance with one needed to deliver (or return) PDAs or plasma screen TVs.

Evaluate supply chain decisions not only based on cost and investment, but also with respect to commitment time. An approach that makes sense today from a cost perspective may lock-in a supply chain configuration long beyond what is practical. Consider not only if the supply chain can adapt, but how quickly, at what cost, and how easily it can be changed again.

Study the answers to all of these questions. Determine which elements of the supply chain are the most vulnerable. Does the organization fully understand how inflection points will impact the various elements, particularly those managed by suppliers and partners? Assess the financial impact of a breakdown in the supply chain and use it as a guide to determine the best course of action. Some risks are too small to warrant investment in adaptability while others absolutely require it.

Adaptability is not a yes/no question. It is a continuum that must be adjusted for multiple factors. Similar to the Theory of Constraints, quite often companies spend a great deal of time and effort on an adopted focus in the hope that this single element (e.g., sourcing contracts) will help them attain "adaptability." In reality, time and resources would be better spent across multiple fronts, (e.g., processes, asset base, inventory holdings, distribution channels, etc.).

Consider the case of Apple's popular iPod®. Flexibility began at the design phase as the company and its design partners rejected a space-saving but more risky and expensive ASIC chip and instead opted for an approach based on commonly available components. This decision, along with a focus on design aesthetics and the leverage gained through the capabilities of their partners, allowed Apple to get to market quickly while minimizing risk.[1]

The question at hand is not whether another inflection point will occur, but when will it occur?

Developing a plan to increase adaptability

In an Institute for Supply Management survey conducted after the 2002 West Coast port strike, 41 percent of supply management professionals said that the situation harmed their normal supply chain activity yet only twenty-five percent of the respondents said that they were making contingency plans.[2] Is this a rational response? The question at hand is not whether another inflection point will occur, but when will it occur? It is certain that the high tech industry will continue to experience significant swings in supply and demand.

Contingency plans, business continuity plans, back-up plans – they may go by many names, but in reality each of these means good old-fashioned business planning and risk management. This type of planning has fallen out of favor as companies have tried to cut costs, improve productivity, reduce redundancy and, ultimately, maximize shareholder value and stock price. But, as the old adage asserts, "an ounce of prevention is worth a pound of cure." Identifying areas of vulnerability, designing flexible supply chains and developing plans for adapting to changes in demand or interruptions in the supply network takes relatively minor effort but can pay-off with huge dividends.

Given the complexity of today's supply networks, a good place to start is often in the area of supplier relationships. Wherever possible, develop an alternative or flexible sourcing strategy, whether you are insourcing, outsourcing or both. For those components that are custom-designed or for other reasons cannot be easily migrated

[1] "Inside the Apple iPod Design Triumph," Erik Sherman, *Electronics Design Chain*, Summer 2002.
[2] "How did the West Coast Dock Strike Affect the Nation's Supply Chains?" Institute for Supply Management, Media Release, December 5, 2002.

to a new supplier, supply chain partners should be chosen carefully, and contracts with this sole source should be very adaptable. In such cases, the traditional approach has been to balance cost vs. supplier technical capability. Adaptability is an equally important variable in this equation. It may be well worth the cost sacrificed to secure a supplier with redundant production capability, one who can move product to new regions, can quickly provide additional capacity if a product "takes-off," or with whom you can easily integrate forecast and demand systems in order to lower overall supply chain inventory.

This applies not only in the supplier-customer relationship, but to other supply chain partners as well. When selecting logistics partners, consider future growth plans. If you have aspirations of distributing products globally, consider at inception whether a partner can provide global logistics knowledge and capability. If aftermarket is a major revenue stream or major customer service requirement, find a logistics partner who can help facilitate this often overlooked, but highly important, segment of the supply chain.

...when looking at my supply chain which factor is the most constraining and how can I relax its confines?

Is adaptability possible?

Adaptability, then, is a process along multiple fronts vs. a single desired state. So while a company may achieve a certain level of adaptability, high tech innately requires fluctuation. Because of this, the questions at the forefront of each executive's mind should be – when looking at my supply chain, which factor is the most constraining and how can I relax its confines? Since this is an on-going process — as one factor becomes less stringent, other exposures come to light — one has to ask, "What would an adaptable supply chain look like in practice?"

One example can be demonstrated by LeapFrog Enterprises. Thanks to early electronic point of sales (POS) signals from their four key customers, this maker of electronic educational toys identified in August 2003 that demand in the approaching holiday season for their new LittleTouch LeapPads® would be double original forecasts. Luckily, Leapfrog had selected a Chinese supplier, Capable Toys Ltd., whose strategy was to differentiate based on design and manufacturing capability.

The two companies worked together to meet the challenge. By quickly increasing manufacturing capacity and enhancing product design to improve quality, Capable Toys was able to increase throughput by 80 percent in a matter of weeks. In the meantime, Leapfrog took the lead in securing additional supplies of key

components such as microchips and special paper and in arranging alternative (and faster) shipping options to get the hot toys to market.[3] While this extra effort cut into product margins, LeapFrog was able to keep holiday shelves stocked and, in the end, had a winning product on its hands. "As we expected, strong holiday sales of our new platform and software learning products produced solid results and growth for LeapFrog in 2003," said Mike Wood, president and chief executive officer of LeapFrog.[4]

One good, solid way of achieving flexibility is to seek guidance from outside experts.

Contrast this with the holiday experience of Motorola. The company was unable to meet the demand of its wireless customers for several new camera phones in the fourth quarter. The company was slow to recognize and react to critical component shortages which left it scrambling for additional suppliers. The incident left many in the industry surprised since competitors were experiencing no such supply problems. The shortfall in phones forced key customers to de-emphasize the Motorola models in their holiday marketing blitz, ultimately effecting sales for the supplier, Motorola, and its customers.[5]

How do you achieve adaptability?

The very frantic pace of the high tech industry, the rapid introduction, growth and maturity of new innovations, the need to release better and faster products every nine to twelve months, the never-ending mismatch between supply and demand – these all add up to create an environment that requires reinventing supply chains rapidly. This constant state of flux, while daunting, also provides the opportunity to constantly reevaluate and improve supply chain adaptability. One good, solid way of achieving flexibility is to seek guidance from outside experts like UPS Supply Chain Solutions consulting services which is comprised of seasoned supply chain management veterans who have operated and managed supply chains for some of the largest high tech companies.

Why do you need outside expertise? Given the dynamic nature of the high tech industry, most companies' supply chain executives have their hands full just keeping up with the relentless influx of new technologies, sourcing suppliers, meeting product launch dates, procuring inventory, managing distributing networks, and maintaining aftermarket service. The day-to-day gymnastics of supporting the latest and greatest product offerings leaves little or no time for the larger issues like rationalizing the industry's next inflection

[3] "Behind Hit Toy, A Race to Tap Seasonal Surge," Geoffrey A. Fowler and Joseph Pereira, *The Wall Street Journal*, December 18, 2003.
[4] "LeapFrog Enterprises, Inc. Reports 2003 Net Income Up 67% on Sales Increase of 28%," Company Press Release, February 10, 2004.
[5] "Parts Shortage Crimps Motorola," Jesse Drucker, *The Wall Street Journal*, December 5, 2003.

point or preparing for the next unpredictable event.

No doubt, this type of strategic, heads-up thinking could be done internally, but it takes a significant investment in time. And, it can be difficult to envision alternate ways of achieving supply chain adaptability when one is so entrenched in the system. Bringing in the external resources of UPS offers the clear advantage of unbiased views of current supply chain vulnerabilities and ways to develop plans for adapting to changes in demand or interruptions. Not many analysts or shareholders will accept the excuse that contingency plans just didn't account for the unexpected, the interruptions, the disasters, or the fluctuations in customer demand. A properly executed, adaptable supply chain can flex, expand, and contract in any and all directions.

Call us today, so today's high tech supply chain can easily flex into the uncertainties of tomorrow.

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