

# Protecting Revenue Through Supply Chain Risk Management

Loss of revenue is the biggest risk to any business. Today, supply chain managers are figuring in the calculus of risk management at this strategic level, quantifying supply chain impacts on revenue as well as on the more traditional domain—costs.

Supply chain managers have become so involved because responding to demand within the narrow window of opportunity is critical. If a company cannot serve customer demand when it presents itself, then the company has lost the demand. Companies have more control over cost; therefore it is easier to manage than demand or revenue. “To build or not to build?” is the only decision to be made when demand and cost are the primary considerations. However, managing revenue is vital, since most companies are looking to grow their bottom line.

While most supply chain managers talk about risk in terms of natural and man-made disasters, such as typhoons or terrorism, in truth such catastrophes are rare. The opportunity to win—or lose—a customer, however, comes up every day. So, the risk to revenue is constant.

## Organizational and process complexity

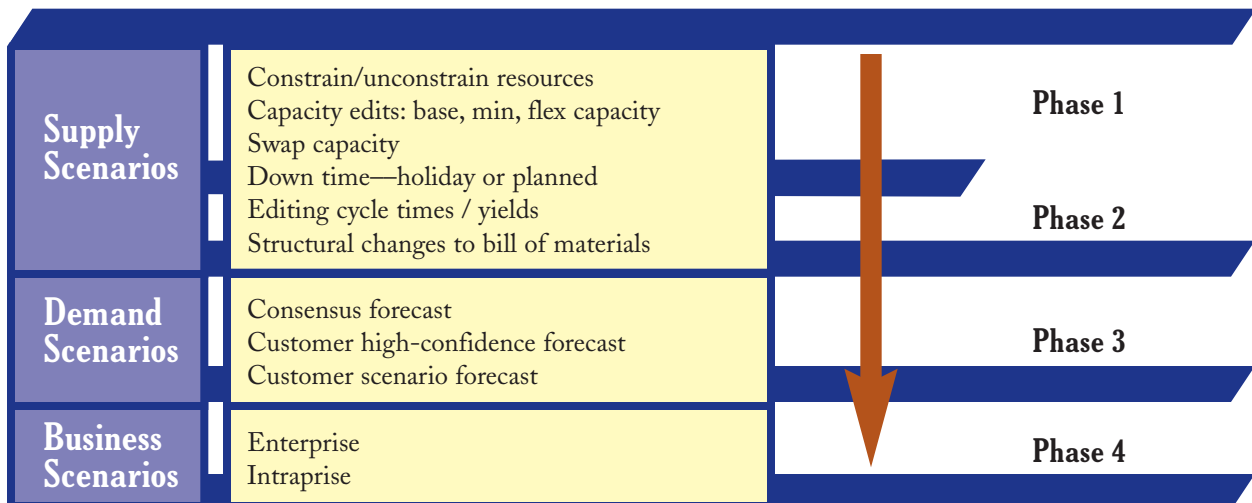
There are many ways to grow a business, but all of the options are moot if the supply is not in place. Growth can

come from a push to keep up with demand for a unique product produced by a limited number of suppliers. For example, poly-silicon is currently in tight supply and in high demand—mainly because of the rise in solar-cell technology, which results from the high price of gas and oil and increased world-wide interest (and policy) regarding “green” technology.

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Consumers’ increasing demands for more options and the corresponding reaction from businesses have led to a proliferation of products on the market. This is the situation today in the electronics market space. As consumers clamor to have more fashionable and more feature-rich devices in their pockets and on their desktops and dashboards, semiconductor customers are inevitably creating more complex risks for supply chains. How? They’re requiring firmer commitments of supply to demand upsides. They’re speaking in “ranges of outcomes” rather than “point forecasts” to hedge their risks. Some electronics manufacturers, however, do not understand that there are costs associated with such risk management. If they want

## Using Scenarios to Plan for Risks



## ON Semiconductor Snapshot

### 2006 Revenue:

\$1.5 billion

### Industry Segments:

Computing, Consumer, Wireless, Automotive, Industrial, Networking

### Products:

Power analog and power discrete components (more than 2 billion products shipped monthly)

### Market Segments:

Asia-Pacific (33%); China (32%); North America (19%); Europe (16%)

to share the risks with the suppliers, they need to share the costs—that is, develop collaborative models across the supply chain.

In addition to more complicated supply/demand cycles and needs, the inventory dynamics in the high-tech industry have also changed. In 2000, semiconductor companies held 13 percent of the total high-tech supply chain's inventory. By 2006, that figure grew to more than 30 percent.

Additional players have also joined in the fray. In the past, the semiconductor company might have allocated supply to original equipment manufacturers (OEMs), distributors and EMSIs. The OEM would send information back to the semiconductor company to direct the material supply. Today we have many more players inside the supply chain—such as design companies, third-party logistics companies and original design manufacturers—in addition to the OEMs, distributors and EMSIs. As such, it is critical and necessary to triangulate the demand information to limit the natural bullwhip effect.

### Supply chain complexity

How do supply chain managers handle all of this complexity? At ON Semiconductor we've found that technology is key, but has to follow process. Process leads organization—or reorganization. We've defined the complexity challenge as one that requires optimization of three critical variables—revenue (on-time delivery and lead times), inventory (internal and channel) and factory utilization (with attendant supplier relations). We've learned that inventory and capacity flexibility can reduce mistakes

in forecasting. We look at it this way: capacity is the risk shock absorber between tactical and strategic planning, and inventory is the shock absorber between execution and tactical planning.

At ON Semiconductor, we've learned to let the customer-order lead-time patterns drive the safety-stock requirements across the different stages of the supply chain, allowing us to exercise the power of postponement based on the demand visibility from the customer.

We also have found that instead of developing point forecasts, we develop range forecasts based on the relative risk of the opportunity. By doing so, we ensure that our sales and marketing teams can let us know their relative confidence in the different opportunities. Using this method, we can make better decisions on capacity investments by sizing the opportunities more realistically. The lower the level of confidence, the less likely the company will be to invest in the risk.

Meeting this promise has never been more important. As ON Semiconductor's senior vice president and chief technology officer, Peter Zdebel, has said, "Delivering the product on time to the customer's requirements is absolutely critical—even more important than fully meeting initial specifications. There is flexibility for refinements at later stages, but failing to make volume by the first deadline jeopardizes the entire project."

### New-generation tools

New-generation software tools built on the i2 Agile Business Process Platform have given us the visibility and agility we need, enabling us to make faster decisions and create better workflows and protocols for speeding the decision-making process and executing decisions based on the risk of demand fluctuations. The platform allows for sharing of information across silos and even enterprises. It also allows managers from all levels in the organization to see the information they need, drawn from a "single source of the truth" at that moment.

**The opportunity to win a customer comes up every day, so the risk to revenue is constant.**

The biggest impact of the software is the ability to visualize and manage bottlenecks across the supply chain holistically, rather than by manufacturing silo or stage, or even business unit. We realized early that our flexibility levers are inventory and capacity, and without automation and modeling algorithms in place we would not be able to stage either inventory or capacity in the right places at the right times. There's nothing like driving the production

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mix for 24,000 devices to motivate a company.

As a result, our supply chain managers collaborate regularly with sales, marketing and finance managers, as well as with information technology managers, to get the upfront intelligence on trends and market data in time to make the decisions that will advance our top line. We've been working hard to have intra- and extra-enterprise integration with our IT systems, and to make them agile enough to help the company respond quickly to all sorts of trends—from industry trends and customer demands to end-market functionality and product packaging and regulations.

### The business challenge

Seeing the trends early is new for supply chain managers, especially in our industry. But it's essential, because it takes a long time for the total semiconductor supply chain to react to a trend. The cycle time to make the product is 7–13 weeks. And the EMS cycle time is another 3 weeks. So, it's really a question of optimizing between cost and cycle time. The tricky thing with cycle time is understanding how the demand is moving through the network right now and how it is going to change over the next 2–3 years. Yes, manufacturing is moving to Asia. And yes, we're serving demand in Asia, so we have to look at having more visibility in Asia. But, how do you have an Asia-focused network and still serve the customer needs in the Americas and Europe? These questions are part of a forward-thinking strategy.

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Another thorny issue is staging the network so that if an uptick in demand occurs, you can move it through quickly. And, if it doesn't happen, you can postpone decisions so your inventory liability is not high. Can you get out of a decision you made today tomorrow? And if your decisions cost more today—but you gain flexibility—was it worth it?

We are in our seventh year of focusing on improving the agility and speed of our supply chain processes and organization. With the help of i2, we've moved from tactical planning optimization through scenario management to our present focus, collaborative risk management. Throughout, we've focused on supporting processes that evaluate risks to revenue and cost containment.

Before implementing the advanced planning systems from i2, we had to manage more than 3,000 orders a day manually. We had 150 planners in high-cost regions of the world. We also had large inventories. Our available-to-

## Top 10 Supply Chain Risk Factors

1. Customer Fulfillment Preferences
2. Production Capacity-Demand Mismatches
3. Global Sourcing Reliance
4. Competitor Disruption
5. Mode Capacity Shortages
6. Organizational Restructuring
7. Fuel Cost Volatility
8. Market Growth Strategy
9. Inventory Ownership Liability
10. 3PL Service Capacity

Source: Supply Chain Executive Board, February 2005

promise model was inaccurate. And our supply chain components were disconnected. With advanced planning and scheduling, we manage by exception, conduct multi-echelon inventory planning, operate with defined business rules and have more flexible allocations for demand fulfillment.

We've also realized a \$20 million value within two years—in productivity, increased inventory turns, and reduced obsolescence. Our number of planners is down to 30, and 98 percent of our orders are scheduled automatically in real time.

Instead of local wins and global confusion, we have achieved our global objectives—followed up with local actions—and a synchronized supply chain. For now!

[See also “New Technologies Help Identify and Mitigate Risks,” on next page.]

**Ravi Vancheeswaran** is director for strategy and continuous improvement for the global supply chain organization at ON Semiconductor. He is also the chairman of the i2 User Group.