

Sage ERP | White Paper

Managing Business Risk in Electronics and Computer Markets: For Sage



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Sage ERP

Cambashi Inc. – Managing Business Risk in Electronics & Computer Markets

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Vigilant and systematized risk management is as important for growing small and mid-sized companies that build or distribute electronics as it is for Fortune 500 corporations. Opportunities for mistakes abound as firms develop into one-stop solution providers and handle higher production volumes, possibly on a global scale.

Three serious areas of risk are:

- o Compliance with environmental regulations to eliminate hazardous substances and mandate recycling.
- o Obtaining balanced inventory to meet shifting market demand, maximize revenues, and minimize inventory write-offs.
- o Ensuring quality and reliability that builds customer loyalty and satisfaction in a highly competitive, fast-changing marketplace.

Companies can only manage risks if they understand them and put systems in place to minimize exposure. The latest integrated enterprise systems provide peace of mind by standardizing preventive processes that monitor for problems and provide consistent proactive response in the event of an exposure to risk.

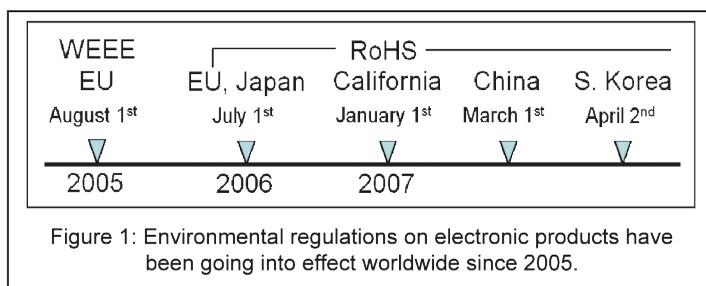
Unfortunately, some companies have come out of the recent recession with aging assets, rising losses, and increasing debt. They have not been able to make the investments necessary to take full advantage of opportunities for growth. For those companies, as for others, the time has come to review, streamline, and standardize business processes to be part of the next wave of electronics industry growth.

Multinational Compliance for Environmental Regulations

Electronics companies face stiff penalties and business losses if any supply chain trading partner doesn't comply with regulatory or customer mandates. The cost is more than recalls, warranty returns, rework, production disruptions, reengineering, litigation, or fines. Poor compliance disrupts customer and supply chain relationships and can lead to lawsuits and lost customers, market share, and value.

Manufacturers and distributors are subject to international, national, and, in the U.S., federal, state, and local environmental regulations. The swift pace of new regulations, global regulatory adoption and adaptation, and customer demands for compliance prior to regulatory deadlines make compliance challenging. Nearly every electronics company uses some of the millions of parts and components subject to laws on use, discharge, and disposal of hazardous substances or environmentally sensitive materials. The question is how best to comply with each country's or state's environmental regulations. It is not uncommon, for example, that material restrictions in one region do not apply in another.

RoHS and WEEE directives, initiated by the European Union (EU) in 2003 and which came into full force in 2005 and 2006, have had particular impact globally (see Figure 1). In 2010 these directives are set to be "recast."

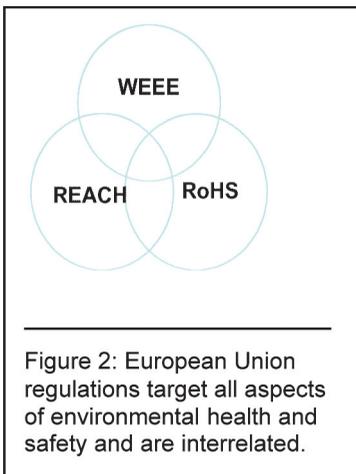


Restriction of Hazardous Substances directive (RoHS): took effect in 2006 across all EU member states, restricting use of products containing any of six hazardous materials. In 2007, China issued restrictions requiring most electronic products to be marked disclosing any prohibited substances. Since that time, South Korea and Japan have adopted their own regulations for reducing toxic substances that compare with RoHS. In the U.S., California passed a 2007 law that prohibits the sale of products using hazardous substances defined under the EU directive, called the Electronic Waste Recycling Act (EWRA).

Waste Electrical and Electronic Equipment (WEEE): places responsibility for equipment disposal on the manufacturer. It came fully into effect across all 25 EU member states in 2005. Recycling is also highly encouraged by the U.S. Environmental Protection Agency (EPA). EPA's Plug-In To eCycling is a partnership with consumer electronics manufacturers and retailers to encourage consumers to donate or recycle used electronics.

Companies need to be aware of possible new requirements. While currently scheduled for an October 2010 vote, some people believe that the proposed RoHS recast will be debated even longer. Three main organizations need to agree on a final draft: the European Commission that made the original proposals; the Council of Ministers, supported by the Environment Council Working Group; and the European Parliament, led by the Environmental Committee.

The recast is likely to remove exclusions and possibly add new substances to the current list of six. So far the Environmental Committee has agreed that RoHS should be expanded in scope to include all electrical and electronic equipment, with a few exceptions, such as renewable-energy generation and certain large-scale installation and military equipment. The Environmental Committee did not include polyvinyl chloride (PVC) and brominated flame retardants (BFRs) in with the original six banned substances. Instead it asked for further study. The electronics industry, however, expects these substances will eventually be added.



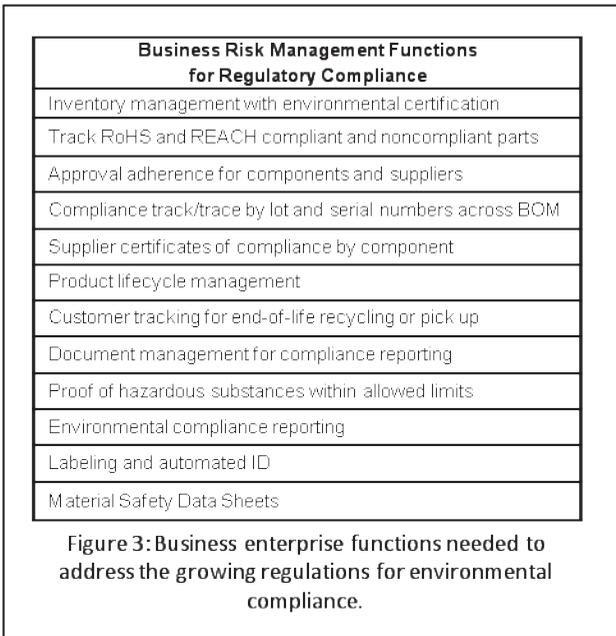
The focus of WEEE is to ensure efficient collection and recycling of equipment at end-of-life. Moving forward, experts expect that there will be greater emphasis within the regulatory framework on the design stage of a product with the aim of easier, safer recycling at end-of-life.

In addition to the directives above, in 2007 the European Union passed legislation for **Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH)**, to authorize or ban more than 30,000 chemical substances that impact the environment or human health. The law requires registration by manufacturers and importers of these chemicals over the next 11 years (see Figure 2). In the U.S., the EPA enforces laws for chemical safety, clean air, clean water, hazardous material transit, and toxic substance control.

As a result of these and other regulations, electronics and electrical component manufacturers and distributors must ensure components and products are designed, built, and disposed of

according to a regulatory regime shaded with differences in different global regions, and one that changes over time. Compliance impacts product marking, labeling, and detailed material content disclosure—which is getting easier as the industry develops standards. It also requires stringent oversight of bills of materials (BOMs) used to source and manufacture electronics products.

Now is a good time for companies to look at their regulatory-related business processes for possible streamlining with IT-based automation. Integrated enterprise systems have compliance-related capabilities (see Figure 3), including multisite inventory management, strategic sourcing, document management, labeling and automatic ID, and track-and-trace. More specific functionality includes segmenting inventory by certification or suspicion of counterfeit items, complete lot and serial tracking, BOM filters for components, and documentation of proof for all regulatory compliance .



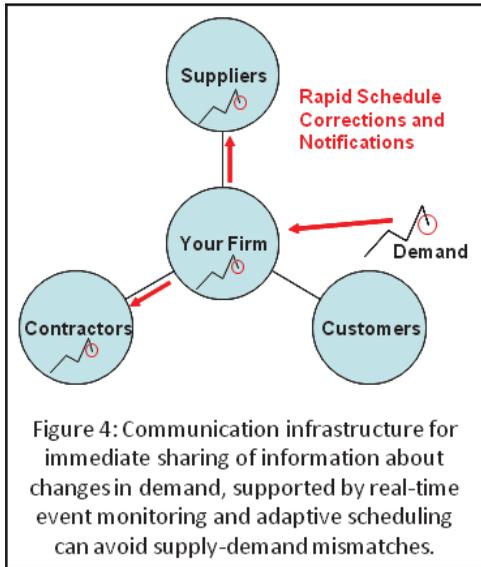
Global Inventory Optimization for Matching Demand Variability

The massive inventory write-offs of 2001 and 2002 are forever etched in the minds of electronics-industry executives. The more recent recession in 2008 and 2009 has caused somewhat less severe electronics industry contraction, exposing poorly run companies while providing opportunities for their better run counterparts. Today, as markets return to normal, policy makers and economists are looking to the high-tech industry to be one of the engines of growth for the entire economy, and the industry is happy to oblige, believing it can control costs through sound demand and inventory management.

Yet many companies are at risk of being caught off-guard again. The industry remains vulnerable to inventory shortfall and overage extremes as it seeks to maximize revenues for short-lifecycle, multichannel distribution products. Supply-demand balancing is further complicated by rapid expansion in capacity and warehousing for full-service assemblers, contractors, and wholesalers that stock increasing numbers of product lines and components.

To manage exposure to the extremes, companies need a multienterprise infrastructure for supply chain visibility, collaboration, and event management. The faster companies are able

to recognize the kinds of supply and demand changes that can put them at risk, the faster they can notify supply chain partners. In fact, today an event and its response can be nearly simultaneous, as shown in Figure 4.



Gaining visibility is half the battle. Making quick decisions about changing schedules and managing resources is the other. Areas such as collaborative information exchange, adaptive supply chain planning, and demand-driven execution allow for a nimble response that is too often lacking. As companies return to growth, adaptive, event-driven supply chain infrastructures and functions are needed to tightly link suppliers and customers for dynamic market responsiveness. Figure 5 identifies some functionality that reduces the threat of missed revenue opportunities and inventory devaluations.

| Business Risk Management Functions for Global Inventory Optimization |
|---|
| Global supply chain visibility and event management |
| Supplier and customer connectivity via Internet hosting |
| Collaborative forecast and replenishment planning |
| Supply chain automated replenishment |
| Support for EDI, RosettaNet, and UCCnet |
| Automated workflow processes and alerts |
| Centralized distributed order management |
| Multisourced STP fulfillment |
| Lean mixed model production scheduling |
| Constraint based distribution requirements planning |
| Multisite distribution inventory optimization |
| Intersite transfers and consolidation |

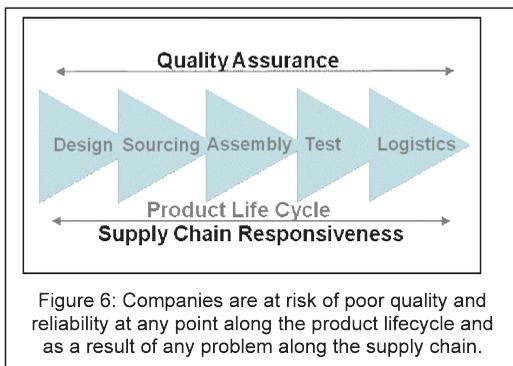
Figure 5: A range of supply chain functionality plus communications and collaboration infrastructure are needed to minimize the risk of write-offs and shortages.

Product Quality and Reliability for Customer Satisfaction

Product quality is just as important as innovation to the financial performance of an electronics manufacturer or distributor. Consumers expect their products to work reliably for the life of the item, regardless of how new the technology or how old the device becomes. In the past products were more expensive, and it was both possible and economic to repair them. Now, consumers tend to discard defective products and buy new ones. They expect and demand products to be free of problems for a few years, at least.

Supply chain partners also expect zero defects and rely on each other to guarantee reliability of shipped items. As product lifecycles shorten and both product proliferation and complexity increases, electronics companies are exposed to a higher incidence of lawsuits for alleged defects in their products or for safety incidents related to the use of their products.

Anywhere along the product lifecycle, from product definition and design to final assembly and logistics, exposure to quality and reliability problems can occur, as shown in Figure 6. Because so many organizations are involved, it can be challenging to rapidly isolate the cause, determine responsibility, and respond quickly enough to contain and minimize the impact.



Adding to the exposure of a quality problem is the heightened speed and complexity of new product introductions on a global scale, as well as the level of outsourcing common in the industry for design, procurement, testing, production, and logistics functions. Small problems can escalate quickly and impact multiple operations and parties.

To ensure highest quality and reliability, companies must tightly control the product life cycle, distribute engineering changes, leverage strategic sourcing, and standardize production and quality processes. The responsibility for these can fall to an OEM, a contractor, or across multiple members of the supply chain. At the end of the day, however, it is the manufacturer or assembler who must comply with the engineering specifications of the design team and ensure optimal yield outcomes to stay in business.

Risks associated with quality and reliability also occur in supply chain management, not just in product development and production. To minimize these business risks, companies require integrated collaborative processes for product lifecycle and supply chain management tightly linked to automated plant floor operations, as shown in Figure 7.

| Business Risk Management Functions for Product Quality and Reliability |
|---|
| Variant product configuration |
| Online document exchange of engineering documents |
| Multisite and supplier engineering change management |
| Product and part lifecycle management |
| Supplier performance analysis |
| Supplier component tracing (sourcing origin, serial #s) |
| Quarantine for suspect counterfeit or noncompliant parts |
| Tightly integrated MES and process control systems |
| Integrated maintenance management |
| Test result documentation |
| Lot and SKU tracking |

Figure 7: Functions that increase product quality and reliability address the risks found in engineering, procurement, production, and distribution processes.

Risk Avoidance in a Fast-Changing Industry

While risk is present for all business endeavors, and particularly so in the current volatile economic climate, the electronics and computer industry is more prone to being caught off guard. This is due to its short product lifecycles, virtual and extensive supplier and channel networks, and massive inventory levels built up to support the market at its peak. Dealing with these challenges in a more regulated environment adds to the difficulty of maximizing returns and avoiding losses.

The failure of any one supplier or contractor to meet quality performance levels, fully comply with environmental regulations, or have the flexibility to meet changes in demand jeopardizes the OEMs' ability to deliver quality products reliably and on time to the marketplace. Failure to deliver high-quality products in sufficient volumes, as promised, adversely affects retailer relationships, customer loyalty, revenue projections, and gross margins.

What the larger OEMs and top-tier companies know is that the more current the business systems used by its supply chain partners, the more tightly integrated business functions and the supply chain will be. That better enables everyone involved to have the visibility, process controls, and responsiveness to deal with unforeseen events, new regulations, and market dynamics.

About Sage North America

Sage North America is part of The Sage Group plc, a leading global supplier of business management software and services. At Sage, we live and breathe business every day. We are passionate about helping our customers achieve their ambitions. Our range of business software and services is continually evolving as we innovate to answer our customers' needs. Our solutions support accounting, operations, customer relationship management, human resources, time tracking, merchant services, and the specialized needs of the construction, distribution, healthcare, manufacturing, nonprofit, and real estate industries. Sage North America employs 4,000 people and supports nearly 3.1 million small and medium-size business customers. The Sage Group plc, formed in 1981, was floated on the London Stock Exchange in 1989 and now employs 13,100 people and supports 6.2 million customers worldwide. For more information, please visit the website at www.SageNorthAmerica.com or call 866-308-2378.

About Cambashi

Cambashi, based in Cambridge UK and Cummaquid MA, USA provides independent research and analysis of the business reasons to use of IT in industry world-wide. Its specialist fields include Engineering, Enterprise, Plant, and Supply Chain applications and the infrastructure to enable industrial firms to use IT effectively. Cambashi publishes market size estimates in the Engineering Applications Market Observatory and multi-client studies in Cambashi's Industry Directions. Its clients vary in size from small to large and include most of the leading software vendors and many pioneering IT users. Cambashi is a member of CATN, an international association of consultants. www.cambashi.com

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Sage
6561 Irvine Center Drive
Irvine, CA 92618
tel. 1-604-207-9480 | fax. 1-604-207-3620
www.SageERPSolutions.com



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