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Edition 20

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Sony Ericsson Finds Lean Six Sigma Success with NC State University

by Christina O'Neill

Sony Ericsson Mobile Communications (USA) Inc., the North American subsidiary of Sony Ericsson Mobile Communications AB, located in Research Triangle Park, NC, decided to embrace Lean Six Sigma in order to employ a focused methodology to quality improvement and cost savings. The company began using it in May 2008, and by end of 2009, nine projects were completed with an estimated cost savings of $3.9 million! The return on investment has been clear, and the excitement resulting from the gains has been motivating.

Among the most successful and exciting projects tackled, was a reverse logistics challenge: reduce the cosmetic parts used to refurbish returned units.

Articles

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Opposites Attract: A Happy Marriage of Forward and Reverse Supply Chain

by Dr. ir. Harold Krikke, Open University

Part 3

Over the past decade supply chain parties have redefined their core business. Supplier development, mass customization, globalization and outsourcing are amongst the major developments. Countless supply chain collaboration concepts were developed, such as demand planning, tracking and tracing, 4PL, Efficient Consumer Response, Vendor Managed Inventory, Activity Based Costing, etc. New services were developed. The above concepts have led to a different allocation of supply chain tasks as they give a blueprint for collaboration.

So far, few supply chain collaboration concepts have been developed from a closed-loop perspective. Lean repair concepts may add value both economically and environmentally.

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Simplicity for Consumers Shepherds in Electronics Recycling Success

by Kevin Brown, Newgistics

Consumers and businesses are increasingly conscious about e-waste recycling initiatives. While technological advancements have made everyone's lives faster, easier and more efficient, there is a downside to this growth, with an increasing proliferation of electronic waste, commonly known as e-waste. The management of obsolete, unwanted and nonfunctional laptops, cell phones, monitors, hard drives and even batteries, is rapidly reaching a critical point.

Finding a way to deal with all this relies on several key participants. They include OEMs, consumers, businesses, e-waste management companies and governments. Even though new programs and solutions are implemented every day, the movement is still in its beginning stages.

Page 39

Avoiding the Pitfalls of International Returns

by Tom Stanton, AFMS

In Edition 18 of Reverse Logistics Magazine, we discussed US Customs, Customs brokers and bonds. This edition, we will be discussing country of origin and classification as they impact international returns.

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RL Magazine will publish 12 issues in 2010 — 6 printed editions and now with 6 new digital editions!

Special Report

Page 12

Despite the Pressures and Challenges of a Poor Economy, Businesses Are Still Planning to Speed Global Expansion

by Bill Pollock, Aberdeen Group

Aberdeen research published in December 2008 revealed that more than one-quarter (28%) of service organizations cited "global support capabilities of outsourced service supply chain" as a top challenge for establishing or managing their global service operations. This finding was further supported in subsequent research in April 2009 where 29% of respondents cited "desire for national or global market expansion" as a top criterion in the selection of an outsourced service provider. The conclusion that can be drawn from these two individual findings is that while managing service operations in an organization's home geography may be difficult enough, expanding globally into new geographies poses even greater challenges for most businesses.

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To Our Readers

A Letter from the Editor

As we usher in a new year and a new decade, Reverse Logistics Magazine is entering its fifth year of publication. RL Magazine was launched in January 2006 with a circulation of 23,000 copies distributed. We now mail to nearly 100,000 plus we understand that there is a pass along rate of 2-3 times. That means RL Magazine is getting into the hands of ~250,000 readers per issue! I'd like to thank our contributors, advertisers, the many staff members who have come and gone and you, our readers for the success of this publication.

Changes are a happenin' here at RL Magazine. We are very excited to announce that RLA has partnered with ZMags to bring our readers a new digital format of the hardcopy edition. As we have offered the PDF version in the past, this is a greatly improved and user friendly representation of the hardcopy. format.

Another change is that we will be producing 12 digital issues a year with 6 printed editions being distributed and 6 digital only.

And the last change is that I'm hanging up my reading glasses, setting aside my red pencil and bidding a fond farewell to those that I've worked with and all the wonderful people I've come to know throughout these last 5 years.

Farewell 再見 Auf Wiedersehen tot ziens 안녕히 가세요 au revoir
до свидания さようなら adieu! ARRIVEDERCI la revedere Adeus

It has been a pleasure,

Christine Morrow

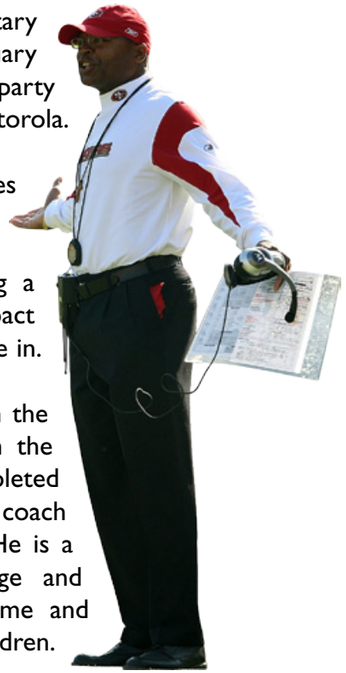
OUR MISSION

Our mission is to educate and inform Reverse Logistics professionals around the world. RLA focuses on the reverse logistics processes across all industries. No matter the industry — High Tech, Consumer Electronics, Automotive, Medical/ Pharmaceutical, Food and Beverage, Apparel, or other — our goal is to provide RL process knowledge to all industries. We want to educate everyone about the Reverse Logistics processes that are common to all industries and to be a catalyst for innovation in developing and implementing new RL processes. We have been and will continue to provide our services to the industry at a moderate price.

Managing the latest information in services such as repair, customer service, parts management, end-of-life manufacturing, service logistics, field service, returns processing and order fulfillment (just to name a few) can be a little intimidating, to say the least. Yet that is exactly what the Reverse Logistics Association provides through our membership services. We serve manufacturers and retailers in a variety of settings while offering ongoing updates on market trends, research, mergers and acquisitions and potential outsourcing opportunities to 3PSPs. We have gained the attention of 3PLs like FedEx, DHL, USPS and UPS. 3PSPs like Teleplan, Foxconn, Flextronics, Canon, Sony and Jabil, along with small- and medium-sized service providers have found that RLA resources help advertise their services to a regional and global audience. OEMs like Microsoft, HP, RIM, and Sony, along with Retailers like Wal-Mart, Canadian Tire, Tesco and Best Buy all participate at our events. Through RLA Events, RLA Connect services and our publications – RL Magazine and the Weekly News Clippings email – we help OEMs, ODMs, Branded and Retail companies find service partners and solutions providers that were previously unknown to them.

Football Legend Tackles Reverse Logistics

Former NFL football player and current NFL head coach Mike Singletary joined the 7th Annual RLA Conference and Expo in Las Vegas on February 8-10. Singletary attended the conference and Sunday's football party hosted by the Reverse Logistics Association and sponsored by Motorola.



Singletary, known for his determination and discipline, joined the attendees who gathered at the party prior to the conference to watch Super Bowl XLIV. There he signed autographs, joined in the networking and talked about the challenges of being a leader who can positively impact whichever organization they are in.

Singletary played 12 seasons in the National Football League with the Chicago Bears and just completed his first full season as head coach of the San Francisco 49ers. He is a member of both the College and the Pro Football Halls of Fame and is married with seven children.

Message from the Publisher

Most industries work together to improve customer satisfaction and to search for production and design improvements while sharing research with governmental representatives so legislation will benefit all.

One area that is sometimes overlooked at the corporate level is developing policies that save company assets which, in turn, lead to protecting the environment. Asset management is one of the many sections of the Reverse Logistics process and there is money to recover for the bottom line when managing it! Our findings place these savings at between 1-8 percent. Cisco repeatedly saves approximately $25,000,000 a year by having a small, elite group of RL professionals that monitor a virtual P&L to prevent assets from being mishandled or thrown away.

Since Reverse Logistics is a process in all industries, it is very hard to unite the attention of industry leaders to focus on asset management in addition to the many other demands placed on today's CEO.

So I'm asking you, our readers, to forward a copy of RL Magazine to your executive staff. Let them look at what Cisco and others have done to improve their bottom line. If you have the time, take a look at "YouTube," search under reverse logistics and click on Colin Angle, Co-founder and CEO of iRobot Corporation (www.youtube.com/watch?v=PM0Hqco0flQ). Mr. Angle tells us that his team had to learn about the term Reverse Logistics in order to survive the demands placed on their new Roomba vacuum cleaner.

It has been 8 years since the Reverse Logistics Association was started and in that time so many senior executives have learned the importance of Reverse Logistics and asset management. But we have only begun to inform leaders of the advantages of learning and implementing solid reverse logistics processes.

Our editor, Christine Morrow, will be leaving RLA after 4 years of managing every process of the magazine. I, along with the entire RLA staff, will miss her as she retires to spend more time with her husband Harry now that they are empty nesters. We thank her for all she has done to help serve you, our members, by bringing to light so many interesting stories about RL best practices.

Gailen Vick
RLA President
ReverseLogisticsAssociation.org

Board of Advisors

A Board of Advisors comprised of industry experts has been set up to monitor and assist the Reverse Logistics Association management team in making informed decisions. Advisors include:

John Benardino – Hewlett-Packard Company

John Benardino is currently a Director of Reverse Logistics for HP's Imaging and Printing Group. In his position, John is responsible for credit issuance, engineering, remanufacturing, and all return related costs. His product responsibilities cover printing, digital imaging, supplies, scanners, and shared printing.

Dan Gilbert – Cisco Systems

Dan Gilbert is VP of Worldwide RL at Cisco Systems, Inc. His charter when joining Cisco in 2005 was to define and create a world-class reverse logistics organization. Dan's global team is responsible for driving excellence in product recovery, receiving, inventory, and recycling operations, and for transforming returned product into value for Cisco shareholders.

Christopher Gant – FedEx

Chris Gant is Director for FedEx Supply Chain Sales. He is responsible for all business development strategy and execution for both the FedEx SupplyChain Systems and FedEx Emerging Products Sales teams.

A 20-year veteran of transportation, logistics and electronic commerce, Chris has extensive expertise in the development and delivery of complex supply chain solutions for some of the world's largest corporations inclusive of both Forward and Reverse Logistics. He began his career with FedEx Ground (formerly RPS) in 1989 as an operations coordinator before joining the company's sales team in 1991. He quickly rose through the sales leadership ranks, holding the posts of area sales manager, district sales manager and senior national account manager for FedEx Ground.

Edwin Heslinga – Microsoft

Edwin is currently the Director of Global Services of Microsoft Devices – Zune and Xbox. In his position, Edwin is responsible for development and enforcement of policies surrounding returns, all related costs to the returns and is also involved in the Customer Satisfaction Continuous Improvement Council. Working with Microsoft Call Center and the Microsoft Manufacturing Operations, Edwin is driving the improvement of consumer satisfaction through agent assisted support and on-line support while managing the costs.

Charles Johnston – WAL-MART Stores, Inc.

Charles Johnston is General Manager at the Bentonville Return Center, WAL-MART Stores, Inc. Chuck has been with WAL-MART for the past 14 years and his responsibilities include Returns, Imports, Exports, Tires and Printing and Mailing Distribution.

Hartmut Liebel – Jabil Global Services

Hartmut Liebel was named President, Jabil Global Services (JGS), in October 2004. He joined Jabil as Executive Vice President in July 2002 and was named Chief Operating Officer in October 2003.

Dr. Dale Rogers – Univ. of Nevada, Reno

Dale Rogers is the Director of the Center for Logistics Management and a Professor of Supply Chain Management at the University of Nevada. Dr. Rogers is a frequent speaker, a consultant to several leading firms, has been published in several logistics journals and has published several books on logistics and reverse logistics. His current research interests are focused on the following: reverse logistics and returns, supply chain technologies, e-business supply chain management, and supply chain management.

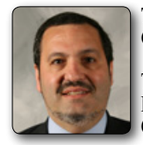
Bernie Schaeffer – Motorola

Bernie Schaeffer is corporate VP of Global Repair for Motorola's Integrated Supply Chain, which encompasses the global operations associated with procurement, new product introduction, manufacturing, customer fulfillment and repair. He is responsible for repair and reverse logistics operations across all Motorola businesses worldwide. His team provides both in- and out-of-warranty repairs, is the fulfillment engine for maintenance agreements and other value-added services, manages asset recovery on equipment returns and is the source of information on product field reliability.

Doug Schmitt – Dell

Doug Schmitt serves as VP of Dell's Global Field Delivery organization with international responsibility for global break/fix field engineers, same day service delivery, spare parts depots, parts planning, service logistics, repair, reverse logistics and Dell's global command centers. In addition to Doug's role as VP Global Field Delivery he has responsibility for Americas Support Services. Previously, Doug held executive and senior management positions in service and finance at Dell, Inc.

Doug came to Dell in 1997 from Sequent Computer Systems where he held various senior level finance positions. Before Sequent, Doug worked in the banking sector.



Tony Sciarrotta – Philips Consumer Electronics

Tony is Director of Returns Management at Philips ConsumerElectronicsNorth America. In this position, Tony leads returns reduction and entitlement initiatives for mainstream consumer electronics, and is also currently concerned with further driving the implementation of electronic registration for Philips products at leading retailers. Working with Philips Sales, Service, Marketing, and the Philips BusinessExcellenceGroup,Tonyishelping driveseveralteamstoimprovetheconsumer experience and subsequently reduce the high rates of products returned with no defect found.

Complete biographies of Advisory Board Members are available from the RLA site at www.ReverseLogisticsAssociation.org/company_advisory.php

Reverse Logistics Association Industry Committees

REVERSE LOGISTICS ASSOCIATION™

Focus Sub-Committees are set up to provide a standing forum for Reverse Logistics Professionals to meet on a regional and global basis and discuss common Reverse Logistics issues at the RLA Conferences & Expos. Focus Sub-Committees educate the industry on reverse logistics:

- "Best Practices"
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SPECIAL REPORT

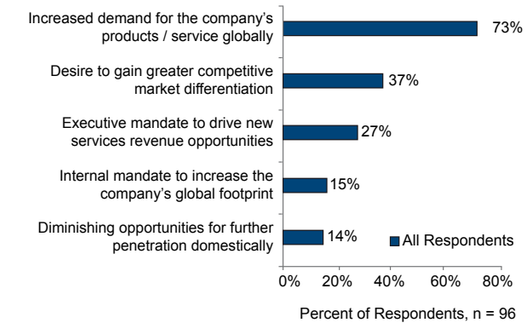
Despite the Pressures and Challenges of a Poor Economy, Businesses Are Still Planning to Speed Global Expansion

by Bill Pollock

Aberdeen research published in December 2008 revealed that more than one-quarter (28%) of service organizations cited "global support capabilities of outsourced service supply chain" as a top challenge for establishing or managing their global service operations. This finding was further supported in subsequent research in April 2009 where 29% of respondents cited "desire for national or global market expansion" as a top criterion in the selection of an outsourced service provider. The conclusion that can be drawn from these two individual findings is that while managing service operations in an organization's home geography may be difficult enough, expanding globally into new geographies poses even greater challenges for most businesses. This may be especially true with respect to providing coverage in some of the emerging global service markets, such as the BRIC countries (i.e., Brazil, Russia, India and China) and other "new" markets. Differing cultures, customs, costs and language considerations all lead to a near-impossible challenge without the proper guidance, direction, resources and channel support available from outsource providers – both domestically and in-country. While some service organizations may already know how to get started in going global, others may not be quite as prepared. However, in either case, the common thread is that they are both likely to require significant outside support and assistance in order to make the global leap successfully.

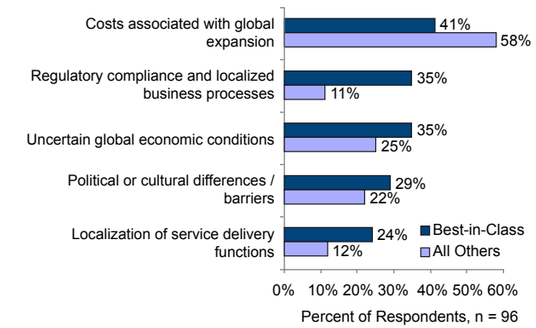
Recent Aberdeen research has also shown that service organizations of all types (i.e., Manufacturer/OEMs and ISO/Service Providers) continue to feel the pressures of an increasing push toward national and/or global expansion coupled with the oftentimes severe constraints of a complex and uncertain global economy. All of these pressures are being especially hard-felt as field service labor and related costs continue to increase, and customers are constantly raising their demands for faster, better service and parts availability. However, in a November 2009 Aberdeen survey of 100 service organizations, Best-in-Class firms reported 25% profit margins derived from service, compared with only 6% for Industry Average, and 3% for Laggards. This finding, in and of itself, indicates why it is so important to make the right decisions with respect to leveraging the proper mix of in-sourcing/outsourcing support, choosing the right logistics solutions providers, and adopting a strong strategic approach to global expansion. Further, the historical path of, first, going from local to regional coverage; then, regional to national coverage; and, finally, national to international coverage has long been put to rest. In today's fast-evolving global business environment, even small, local firms can find themselves going global without the "benefit" of having been able to evolve "naturally" from a local to an international business over a prescribed period of time. All it takes today for a small, local business to go global is one "hot" product or service available on-line, and one good offshore buyer to transform them into an international shipper, virtually overnight. However, while they may have both the product and the customer nicely under wrap, what they typically do not have is either the infrastructure or the expertise to easily move their products and services from Point A to a "new" Point B – and, in the matter of reverse logistics – from Point B back to Point A (or Point C).

Figure 1
Increased Demand for Products / Services is the Number One Pressure Speeding Global Expansion



Source Aberdeen Group, November 2009

Figure 2
Top Global Challenges are Related to Cost, Compliance, Economics, Political / Cultural Barriers and Localization



Source Aberdeen Group, November 2009

PRESSURES AND CHALLENGES FACING GLOBAL SERVICE ORGANIZATIONS

The challenges that face new shippers to the world-at-large (or, conversely, existing global shippers to the "new" world of emerging markets) can be extreme – and almost insurmountable – without the help of the right facilitators and enablers. In fact, a majority of firms will find out fairly quickly that they cannot do it all themselves. Even though there is significant interest in the utilization of global partners, there are still considerable challenges associated with leveraging a third-party logistics network – challenges that can become even more formidable on a global basis. Nonetheless, the increased demand for global product and/or service coverage is quite strong, representing the number one pressure facing global organizations today (Figure 1).

While nearly three-quarters (73%) of respondents cite increased demand for their company's products / services globally as the number one pressure speeding global expansion, other pressures, such as the desire to gain greater competitive market differentiation (37%), also play an important role. In addition, internal mandates to drive new service revenue opportunities (27%) and increase the company's global footprint (15%) also go hand-in-hand in steering service organizations into new and emerging global markets. Diminishing opportunities in the traditional domestic markets (14%) are also responsible for forcing some organizations to think global – many for the first time.

Whether for positive reasons, such as increased demand; internal reasons, such as mandates to differentiate and expand into new markets; or negative reasons, such as decreasing domestic opportunities, the opportunities associated with global expansion far outweigh the negatives for a majority of service organizations. The key stumbling block for many companies, however, is exactly how to get started, and how to accomplish their goals ef-

Juniper tackles service expansion in emerging markets

Juniper's innovative technologies deliver solutions supporting customer growth and operational efficiency worldwide.

In 2007, service business opportunities and growth market potential in Mexico precipitated expansion to increase regional service coverage. Infrastructure investment would allow customers broader service access and leverage of Juniper's supply chain as competitive advantage.

Juniper needed to accommodate new customers in Mexico and create the logistics infrastructure: 45 depots in one month. Provider requirements: Knowledge of Mexico, IT operations skills/experience, XML knowledge/experience, High level customer service & support operations.

Juniper engaged Flash Global Logistics to support the Mexico marketplace and this resulted in full logistics support in under 30 days, NBD return to factory time upgrade to 2-4 hour support, 75% distribution time reductions, 60% US replenishment reduction, 25% inventory pipeline needs reduction, 10% logistics charges reduction and improved customer satisfaction.

Rod Berryhill, Senior Manager Global Supply Chain, Customer Services, stated, "As we continue to expand and extend Juniper's business opportunities in Brazil, Juniper seeks creative ways to improve service and reduce overall forward and reverse logistics costs. This partnershipallowed the logistics organization within Juniper to achieve some of these initiatives. There is a good working relationship between both companies, with clear understanding of the objectives."

- contributed by Flash Global Logistics

fectively without breaking the bank in attempting to do so.

Overall, the top challenges cited by service organizations with respect to global expansion are related to cost; compliance; economics; and political, cultural and language barriers (Figure 2). For leading organizations (i.e., Best-in-Class firms) the top challenges are cost (41%), regulatory compliance (35%) and an uncertain global economy (35%). Other key challenges also include political and cultural barriers (29%) and concerns about the localization of service delivery functions (24%). However, for all other organizations, the costs associated with global expansion are clearly the greatest challenge (58%), sometimes representing a kick-out factor with respect to their even considering movement in this area.

PLANS FOR SPEEDING GLOBAL EXPANSION

Despite the pressures and challenges of a poor economy, global expansion reflects a great opportunity for many organizations. In fact, more than one-quarter (29%) of Best-in-Class firms report they will be speeding up their global intentions over the next 12 months, compared to only 14% among all other firms – an advantage of more than two-to-one (Figure 3). By a similar ratio, 24% of Best-in-Class firms also plan to accelerate their global expansion deployment, compared with only 12% for all other firms – again, a two-to-one margin advantage.

Still, the overall picture is not one hundred percent rosy, as between 16%-18% of all firms claim they will be delaying global expansion deployment to some degree. Further, between 12%-16% of all firms will either be delaying global expansion in the short term, or looking for other revenue-generating activities to bolster their respective bottom lines. Still, for Best-in-Class firms, a majority (53%) will either be speeding up their global expansion intentions or accelerating deployment, while only 42% will be either delaying global expansion or looking for alternative revenue-generating activities. For all others, this pattern is flip-flopped, where nearly half (48%) will be either delaying or considering alternative activities, compared to only 26% which will be speeding up expansion or accelerating deployment (i.e., the remainder essentially being undecided at present).

DEVELOPING THE RIGHT GLOBAL SERVICE DELIVERY STRATEGY / OPERATIONAL MODEL

Planning to speed global expansion, and having the tools, resources, and capabilities to do so, may be two entirely different things to some organizations – and once again, the differences between Best-in-Class and all other firms is striking (Figure 4). For example, while both Best-in-Class firms (59%) and all others (64%) plan to focus primarily on actions relating to the development of a global service delivery strategy and operational model, the leading firms also plan to focus on appointing a senior-level service executive with accountability for global expansion (24%) and establishing a geography-specific global service portfolio (24%), while all others will be focusing more on the latter (38%), but with only half as many citing senior executive-level accountability as a major consideration.

Beyond these key strategic actions, Best-in-Class firms are also roughly twice as likely as all others to consider developing a planning function for estimating service demand resources (i.e., 18% for Best-in-Class, compared with only 9% for all others). Additionally, between 16%-18% of all firms plan to outsource at least some of their global service chain functions to third parties.

LEVERAGING THE CAPABILITIES OF SOLUTION PARTNERS TO FACILITATE GLOBAL EXPANSION

Being able to identify the key pressures and challenges and developing effective strategic actions to address them, represents only half the battle – leveraging the capabilities of the right mix of solution partners is ultimately the key to facilitating global expansion. Over the next 12 months, a majority of service organizations will be leveraging the capabilities of the following types of outsourced solution providers:

- Locally-based third party service organizations 76%
- Repair depots 70%
- Authorized service agents 69%
- Systems integrators 58%
- 3PLs 54%

However, a near-majority also plan to leverage the following:

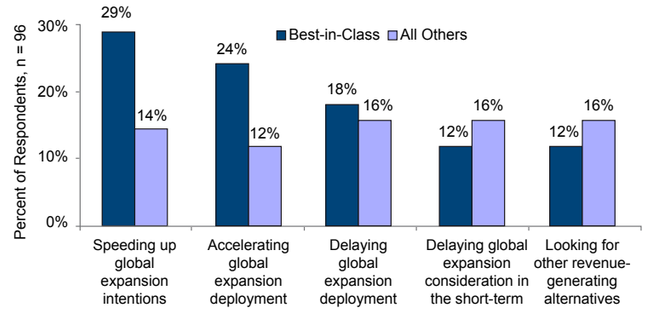
- Service parts mng specialists 48%
- Third party call centers 47%
- Distribution specialists 46%
- Logistics mng specialists 44%
- Warehouse mng specialists 40%

In summary, for many organizations especially the Best-in-Class firms the pressures and challenges have already been identified, the drive to grow globally has been recognized and strategized accordingly, and the necessary outsourced solutions are in the process of being implemented. What remains, of course, is to leverage the proper mix of internal and external capabilities, organize internally to support a global service and support operation, and make sure that the partners that are selected are in sync with the organization's overall global goals and objectives. The global demand is there – and so are the global partners. If managed properly, it should all be full speed ahead.

RLM

Figure 3

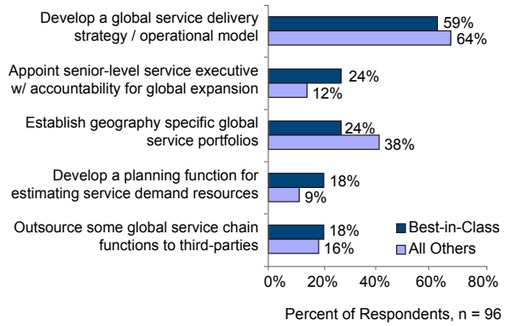
Despite a Poor Global Economy, More than One-Quarter of Best-in-Class Firms are Speeding Expansion



Source Aberdeen Group, Nonmember 2009

Figure 4

Developing a Global Service Delivery Strategy / Operational Model is Key Among a Majority of Service Organizations



Source Aberdeen Group, November 2009

Bill Pollock is Vice President - Principal Analyst heading up the Strategic Service Management practice at Aberdeen Group. He is a frequent speaker, presenter and keynoter on service-related topics for a variety of venues including Aberdeen's Chief Service Officer (CSO) Summit and RLA's North American Conference & Expo, and has published more than 150 articles and features in services journals including Reverse Logistics Magazine and others. Bill can be reached at (610) 399-9717, or via e-mail at bill.pollock@aberdeen.com. To download free copies of related Aberdeen research reports, please visit the company's Strategic Service Management home page at www.aberdeen.com/channel/svc.asp.

Sony Ericsson Finds Lean Six Sigma Success with North Carolina State University

by Christina O'Neill

Eric Hemming, Sony Ericsson (l) and Dr. Blanton Godfrey, NC State (r)

Sony Ericsson Mobile Communications (USA) Inc., the North American subsidiary of Sony Ericsson Mobile Communications AB, located in Research Triangle Park, NC, decided to embrace Lean Six Sigma in order to employ a focused methodology to quality improvement and cost savings. The company began using it in May 2008, and by the end of 2009, nine projects were completed with an estimated cost savings of $3.9 million! The return on investment has been clear, and the excitement resulting from the gains has been motivating. An additional five projects are on track to complete this quarter, with many more in progress.

Among the most successful and exciting projects tackled was a reverse logistics challenge: reduce the cosmetic parts used to refurbish returned units. By reusing perfectly good cosmetic parts, the company saved money and at the same time fulfilled a goal of GreenHeart, Sony Ericsson's environmental and sustainable program. Using fewer plastic parts reduces waste and is clearly an environmentally friendly action.

The inspiration for this reverse logistics project actually came from a pile of scruffy golf balls – but more about that later!

GETTING STARTED

Early in 2008, the leadership team at Sony Ericsson wanted to initiate a systematic approach to continuous improvement and Eric Hemming, Director of Customer Service and Operations Development for Region North America, was asked to look into it. Eric recalled how the company was struggling with some product returns issues and mentioned how they wanted to learn how to eliminate variation in new product launches. Also, some customers' targets were not being met.

After assessing the qualifications of personnel in operations and development, Eric found a handful of employees who had experience with Six Sigma. Realizing the need for outside expertise for a truly effective implementation, he turned to nearby North Carolina State University. The neighboring university housed one of the most prominent leaders in Lean Six Sigma and quality improvement academia.

Dr. A. Blanton Godfrey, Dean of the College of Textiles at NC State, previously served for 13 years as Chairman and Chief Executive Officer of the Juran Institute Inc. This institute is the leading international management consulting, research, and training organization focused on quality management and business excellence. Sony Ericsson questioned him regarding what could be expected if Lean Six Sigma was adopted.

As Dr. Godfrey told the Sony Ericsson leadership team that May morning in 2008, Lean Six Sigma isn't new. Motorola trademarked the Six Sigma name in the 1980s and lean concepts are older still; but they still work! In one example after another, Dr. Godfrey illustrated how systematically using these tools brought about dramatic results in one company example after another. The team was convinced a Lean Six Sigma culture would work at Sony Ericsson.

The vision statement created from the executive overview said it best: "To build a culture of continuous improvement by utilizing Lean Six Sigma as the methodology to drive and track improvement and cost savings projects site-wide, so that we may serve our customers with improved quality and efficiency."

The benefits of Lean Six Sigma would quickly become apparent:

- A common vocabulary for continuous improvement
- Data-driven, objective analysis of problems
- Cross-functional teams and an improvement focused skill set in the workforce

THE GOLF BALLS

After the executive overview with Dr. Godfrey, the leadership team decided to go with Lean Six Sigma as taught by the continuous improvement instructors at NC State University. NC State University is a land-grant university, which means that it was founded to serve the community, as demonstrated in extension service, along with the traditional university mission of education and research.

At NC State, Sony Ericsson employees have been taught by experts from textiles extension and from the Industrial Extension Service. Selected personnel attended Lean Six Sigma classes for two weeks separated by a month. They would learn the tools and then use the intervening weeks to see how those tools could be used in the workplace. Their final assignment would be a project that could objectively demonstrate savings.

Jason Berger, Reverse Logistics Manager, and Danny Burk, Logistics Program Manager, met a pile of mismatched, scruffy golf balls during class. Their assignment was to sort them according to some wordy specs in 60 seconds. The two men exchanged looks with the same thought: this is almost exactly what their repair center vendor dealt with daily. The light bulb went off and Jason and Danny proposed reducing cosmetic parts usage as their project. Jennifer Norris, business analyst, soon joined their Customer Service team to provide financial expertise.

The team began collecting data and met weekly via teleconference with the vendor. Jason says they knew intuitively that it was a problem, but by measuring, they soon realized it was a problem costing Sony Ericsson more than $1 million annually. Millions of perfectly good cosmetic parts were being discarded because it was easier for the worker to do that than to make the judgment that the part was fine. "Any time you have subjectivity, times lots of money, equals a big opportunity," Berger said.

Whenever a cell phone is returned, Sony Ericsson's agreement with their customers is to replace it with a phone as good as new, including cosmetically. Yet, not every cosmetic part needs replacing.

FINDING THE ANSWER

The team reached into the Lean Six Sigma toolbox to define the scope of the problem, which is the first step in the DMAIC process of Define, Measure, Analyze, Improve and Control. One measure consisted of an attribute agreement analysis, where Lean Six Sigma software was used to track how well repair operators conform to the standard and how well they consistently perform their inspection task.

At first, a pattern refused to emerge. One week would show improvement,

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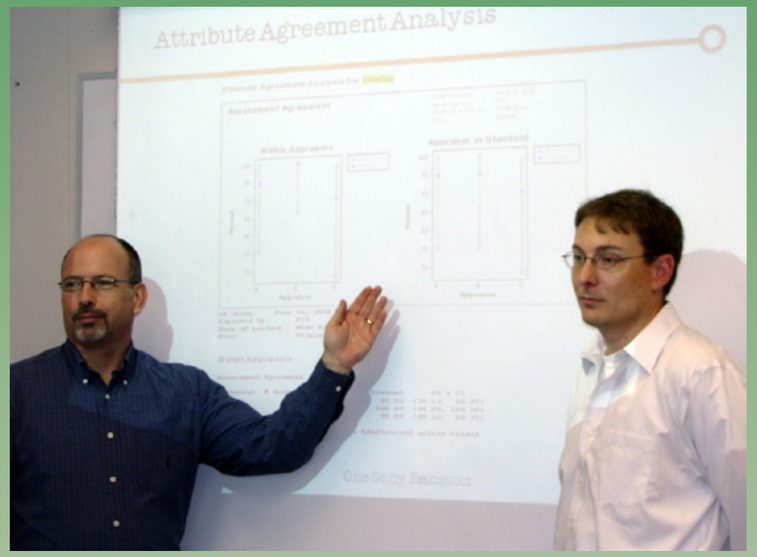

Danny Burk and Jason Berger presenting data from their Lean Six Sigma Project

while the next week wouldn't. The clue to a solution came when the team coded each worker. Then, it quickly became apparent that some workers were good at judging parts, while some didn't bother to judge at all. To repair a unit quickly, they simply replaced all cosmetic parts, whether it was needed or not.

Consistent improvement came with a rearrangement. Those workers who showed good judgment became inspectors, where they judged what parts needed to be changed. Matters improved more by providing consistent lighting for the inspectors.

This project of reducing cosmetic parts usage is now in the Control phase, under the purview of Customer Service to maintain gains.

GOVERNANCE: KEEPING THE CONTINUOUS IN IMPROVEMENT

Sony Ericsson embraced Lean Six Sigma with a great deal of enthusiasm. The pursuit of this initiative by the leadership team and the results from employees like Jason, Danny and Jennifer are a source of pride for the site. Sony Ericsson realized that Lean Six Sigma, while very useful in the world of reverse logistics and customer service, is also applicable to development functions, supply chain, sourcing and more. The main hallway has a "wall of fame" for their successful Lean Six Sigma projects. New initiatives require time and commitment to take off, and sustaining these efforts is the key. Even though the poor economic climate has sometimes drawn attention toward other critical business deliverables, the company is still pushing ahead with Lean Six Sigma efforts. In fact, an NC State instructor was on site for several weeks at the end of 2009 to teach Lean Six Sigma to even more staff.

More of the employees are now using the common vocabulary. They know every project follows the DMAIC process of Define, Measure, Analyze, Improve and Control. As the team discovered when reducing cosmetic parts usage, that first Define stage is often regarded as the most challenging for employees. They understand Y=FX and SIPOC and voice of the customer. Lean Six Sigma tools such as value stream mapping and cause-and-effect diagrams guide process improvement and standardization. Eric Hemming said, "The best measure of success comes from the feedback or voice of our external and internal stakeholders. At the end of the day, that is

what counts. So far, we've received positive feedback on this program from both."

Sony Ericsson has built a Lean Six Sigma infrastructure. In the New Year, the company will continue with its efforts, with management more involved in selecting projects, in lieu of the ground up approach employees had taken in the past. There are problems and processes that need attention during this economic crisis. Hemming and the rest of the leadership team are committed to continuing to focus on these improvements in North America. At the same time, Sony Ericsson is utilizing this methodology across the company—in fact, the sites in Sweden and China have many ongoing projects as well.

In addition, while Sony Ericsson continues working with Lean Six Sigma, they expect to not be seeing much of their friends and colleagues from NC State in the future. That was the point from the beginning. They learned "how to fish," so gradually they can grow Lean Six Sigma throughout the company by themselves, and they won't need NC State any more – at least for Lean Six Sigma.

RLM

Christina O'Neill is a Senior Program Manager of Operations Development at Sony Ericsson Mobile Communications (USA) Inc. in Research Triangle Park, NC. She has led the Lean Six Sigma quality initiative at the company's site in RTP, NC since October 2008.

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ARTICLE

Opposites Attract: A Happy Marriage of Forward and Reverse Supply Chain

by Dr. ir. Harold Krikke

Part 3

In the first two parts of this article, we defined reverse logistics and the broader area of closed loop supply chains (CLSC), i.e., the combined forward and reverse supply chain.

We argued that for too long, companies have focused on the cost effectiveness of reverse logistics and, in some cases, on compliance. Instead, value should be created. Most value in reverse logistics lies in benefit to the forward channel, either in terms of economic value (using returns as a "supplier" of materials and components for the forward chain), environmental value (read footprint reduction) and last, but not least, customer satisfaction, and ultimately, loyalty through fast and reliable returns and repair/recycling.

3PSPs must consider which reverse logistics services add the most value in the full CLSC management. Our research agenda is based on that.

RESEARCH AGENDA AND EXPECTED RESULTS

Over the past decade supply chain parties have redefined their core business. Supplier development, mass customization, globalization and outsourcing are amongst the major developments. Countless supply chain collaboration concepts were developed, such as demand planning, tracking and tracing, 4PL, Efficient Consumer Response, Vendor Managed Inventory, Activity Based Costing, etc. New services were developed. For example, tracking and tracing is offered to the customer via the web to monitor the delivery of parcels.

The above concepts have led to a different allocation of supply chain tasks as they give a blueprint for collaboration. Redefining the tasks also leads to different relationships management, e.g., regarding directorship. Demand-driven chains are orchestrated by supply chain directors. The contribution of third party service providers (3PSPs) in this respect has become far more reaching and value added than ever before. So far, few supply chain collaboration concepts have been developed from a closed-loop perspective. We are still waiting for concepts named "efficient collection response" and "vendor managed repair." The crux will be to develop a "closed-loop" concept in the wider context of supply chain management, complementary to existing ones. For example, routing concepts are extended into pick-up and delivery, but also have adapted or additional objectives, such as minimize empty kilometers or minimize emissions by avoiding congestion. Lean repair concepts may add value both economically and environmentally (RLA workshop 2009).

In developing these "closed-loop" concepts, we have to question what makes our field so special and how this translates into closed-loop supply chain collaboration models. It has often been claimed in the literature that "returns" are more difficult to manage than regular products. Lumpy return volumes, high uncertainty, poor return quality, contamination, unwillingness of customers to buy recycled product, lack of proper information systems, push driven, and so on, are all characteristics attributed to closed-loop supply chains. However, some of these characteristics also apply to "forward" supply chains or are the result of the immaturity of the field. Others are fundamentally new. After more than a decade of research, we are able to say that the closed-loop supply chain does distinguish itself from forward chain because it:

- Follows the life cycle of the product and/or its components and materials.
- Monitors the life cycle for environmental reporting and management decision-making.
- Monitors and anticipates customer needs with a service focus.
- Exploits modularity of products as well as homogeneous materials to increase economic viability.
- Minimizes the use of hazardous materials and if unavoidable, makes sure that these materials can be easily identified, isolated and removed.
- Minimizes the (net) use of scarce materials by source reduction, substitution of materials, and recovery.
- Minimizes (net) energy use by reduction of energy need, substitution of forward processes by reverse logistics processes, use of renewable energy sources, and energy recovery.
- Applies the cleanest technologies with low emissions to water, soil and air, and efficient use of land.
- Complies with (local) legislation in all its forms.

Today, closed-loop issues are still relatively unimportant. The emancipation of the reverse chain strongly depends on our ability to design closed-loop concepts that create added value in the supply chain. Based on that, we can redefine tasks and relationships and the way they are managed. Once that is achieved, we can pay particular attention to the 3rd-party perspective and the services they need to develop from a closed-loop perspective.

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SENSE OF URGENCY AND RESEARCH QUESTIONS

The traditional business focus of returns management is cost (reduction). On the return side the volumes are rising. For example, UK return rates for consumer electronics are estimated 3%-20% of sales. Non-food as a whole, processes 25-30 million return items per year, of which 60% is resold. Total annual costs for retailers add up to £450 million UK-wide. Still, returns are seen as an inevitable costly calamity, producing 165.000 tons of waste annually and adding to the carbon footprint because of collection and disposal activities (MGH Consulting, UK, 2009).

What is failing is the strategic vision of how to transform the reverse channel into a strategic supply partner of the forward supply chain, not only in the UK, but worldwide. Instead, liberal returns policies are being questioned and customer service is reduced.

On the other hand, there is the green angle. Because interest for the environment has been revitalized recently, many companies seek for expertise to develop and implement solutions in this area. However, it appears to be difficult to make actual changes. For instance, increasing quantities of electronic waste (WEEE) are exported from the USA, the EU and Japan to China and India. Dumping is reduced in favor of export of WEEE to the least demanding regions such as Western Africa increases strongly, (Zoeteman et al 2009).

Environmental pressures have and will lead to treaties and government directives. Amongst the most unpopular is the so-called WEEE directive. Next to waste issues, the carbon footprint plays a role. An important contributor to global warming is the global supply chain. Cars, buses, trains, planes — we all use different types of transportation to get around and move goods.

Transport activities are a major contributor to environmental pollution

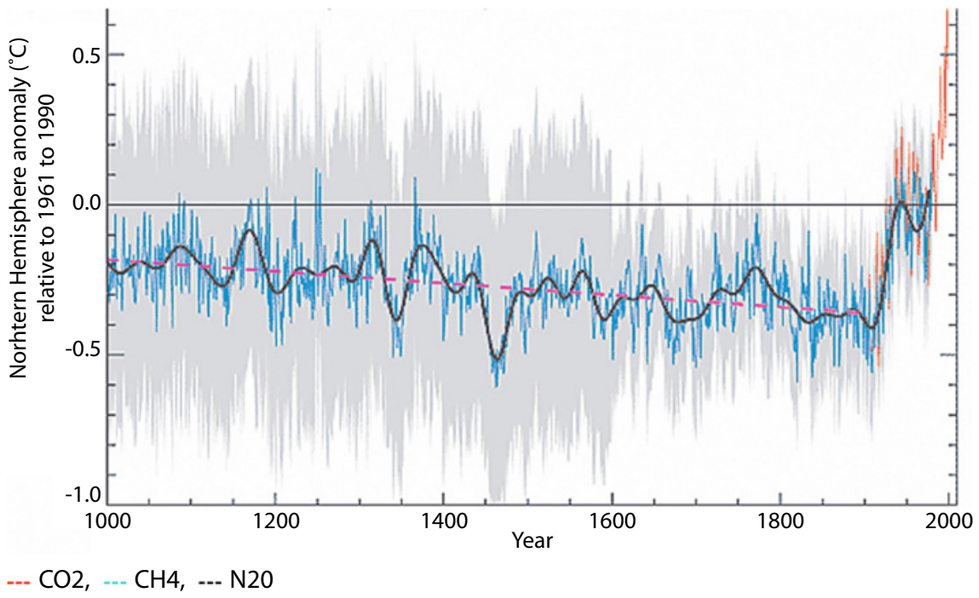
and have an important impact on climate change, accounting for more than 25% of all CO2 emissions (see TERM 2002 02 EU — Transport emissions of greenhouse gases). As Figure 3 shows, climate change is progressing rapidly. More eco-efficient forward and reverse chains must be part of a broader solution. In this, the earlier mentioned substitution effect, replacing new production by recovery, may well compensate the eco-impact of additional collection and recovery processes. Applying recovery in WEEE-business can reduce CO2 emissions by about 11% of total supply chain energy (Krikke and Zuidwijk, 2008). German-based Fraunhofer Institute has started to promote reuse and recycling as a management tool to reduce CO2 emissions.

Ultimately, environmental and economical forces will converge. We are nearing the end of an era of almost unlimited availability of resources. Major oilfields are currently at the peak of their production, and vital materials, such as copper, are becoming scarce. Once the global economy regains momentum, oil prices will soar again, and so will commodity prices. One thing we learned from the credit crunch is that crises happen quickly and suddenly after a long period of slow decline. The good news is that demand for secondary materials and energy will rise and hence prices paid for recovered items.

Taking the "partner perspective" in closed-loops adds value, maintains customer service, and improves the eco-footprint. Consequently companies will have to adopt new supply chain models. This chair will focus on relationships in closed-loop supply chains, in particular from a 3PSP perspective. Surprisingly, little work has been done in the academic field from this angle.

The mainstream of research in closed-loop supply chains can be found in operations management. Most influential papers are in the area of Operations Research, focusing on economic optimization, eco-efficiency, life cycle management, returns valuation and coordination issues (Guide and Van Wassenhove, 2006). One of the few references regarding relationship is

Figure 1: Rising emissions and global warming (source: TheClimateGroup.org)



Daugherty (2002), however based on a very specific IT-focus and not dealing with, for example, various roles and services in reverse chains, or matters involving trust and collaboration. As these issues are of crucial importance in forward chains, there are good grounds to believe that are also in reverse — and closed-loop supply chains. Therefore, we will deal with the following four research questions (RQs).

RQ1. Which specific value adding tasks can be distinguished in CLSC?

Typical CLSC issues include uptime security and service level agreements, testing and classifications, product acquisition, last time buy with repair, dual sourcing and asset recovery, integration of manufacturing, testing, disassembly and remanufacturing. The question is, which tasks have added value in what part of the closed-loop supply chain, who benefits from this value and who should carry out the task? Moreover, two types of customers can be distinguished, namely the disposer and the reuser. A more specific question is which tasks should be carried out by 3PSPs?

TAKING THE "PARTNER PERSPECTIVE" IN CLOSED-LOOPS ADDS VALUE, MAINTAINS CUSTOMER SERVICE, AND IMPROVES THE ECO-FOOTPRINT.

RQ2. Which concepts in closed-loop supply chains can be offered by 3PSPs to their customers?

This, for the moment, is an unexplored area, but one can think of balanced score cards with key performance indicators based on eco-efficiency, dual bills of material for enterprise requirements planning in reuse manufacturing, kits exchange in service logistics, remote monitoring, multi-loop management, empty container repositioning, accounting principles and activity based costing for reverse channels, lean repair and so on. The focus lies on collaboration concepts where the division of tasks in CLSCs is key, and in particular, the services offered by 3PSPs.

RQ3. How are relationships managed by 3PSPs in closed-loop supply chains?

Relationships are developed with of course OEMs and retailers, often being the main customer. First- and second-tier suppliers of the OEM might do repair work, but also need to be involved in co-development of recycling-friendly products. Repair and recycling firms need to feed back defects or any other quality problem which can be distilled from returns as valuable engineering information. CLSC will shed a new light on issues like trust, directorship, power and collaboration. Depending on the type of return and the business at hand, directorship in the closed-loop supply chain may lie in the hands of the retailer, the OEM or the service provider.

RQ4. What is the economical and ecological potential for the industry and how to realize it?

Closed-loop supply chains will feed today's and tomorrow's industry as the cost of virgin materials and energy is increasing. Moreover, in view of globalization, availability of resources is becoming a more strategic issue. Asia's growth for instance, can be endangered by environmental constraints. Moreover, the so-called carbon footprint benefits from recovery activities. We will have to develop tools that can optimize and will help implement the business potential of closed-loop supply chains. One option would be certification protocols for eco-efficiency.

Yet, many companies remain unconvinced. More data must be collected on failure and return rates, environmental impact and reuse markets. Collecting accurate data and applying models is tedious, with no easy answers, but worthwhile as it gives totally new insights. We need to fact find, alarm, educate and convince businesses to adopt closed-loop supply chain concepts.

According to an old Dutch saying, "Marriage is a verb, not a noun."

EDUCATION AND COLLABORATION

Being a new and essential area in supply chain management, CLSCs need to be strongly positioned in the school of Management Studies of the Open Uni-

versity. As the chair, I will focus on collaboration concepts and relations in CLSCs, it seamlessly compliments to existing research and teaching in the SCM group. Moreover, the subject of sustainability provides many connections to other disciplines and hence other groups in the School of Management.

This chair aims to contribute to the development and application of scientific know-how. This will be done in collaboration with RLA via empirical research, as well as by presenting successful business cases, round tables, seminars, white papers, benchmarks and so on.

When promoting relationships in CLSCs, one should of course manage its own relationships well. The annual RLA conferences in Las Vegas, Singapore and Amsterdam provide an excellent opportunity to network and disseminate know-how via the workshops. Academic collaboration partners are University of Liege, Erasmus University and Beijing University. Academic networks exist via REVLOG, POMS, INFORMS, Academy of Management and the CLSC workshops.

In addition, we collaborate closely with pioneering companies such as Oce and partners. Contacts in business further exist via Transumo business cases and so on.

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The past year we have developed new courses both for executives and Master Students Supply Chain Management. Together with RLA staff, we also work on a global survey on reverse logistics that will be conducted in three parts in 2010. *www.ou.nl*

RLM

Harold Krikke is a member of the Department of Organization and Strategy at the Tilburg University since 2004. He first studied Industrial Engineering and Management at Twente University of Technology in Enschede. At the same university he completed his Ph.D. in 1998 in the field of reverse logistics. Since then, he works as an assistant professor at Erasmus University Rotterdam and also as a business consultant at Tebodin consultants. As of 2002, he is a project manager of CentER Applied Research and later became Associate Professor at the faculty Economics and B.A. of Tilburg University.

As of April 2008, he is the RLA Professor of Closed Loop Supply Chain at the Open University Netherlands.

TECHNOLOGY SPOTLIGHT

MIT unveils new 'smart' bike wheel
The clever folks at MIT have developed a smart wheel that could give bicycle riders a 21st century boost.

Unveiled recently at the Copenhagen Conference on Climate Change, MIT's new Copenhagen wheel is trying to do its part to help the environment by making bike riding easier and more enjoyable.

The wheel's battery can store energy as you step on the brakes and then return that power back to help you climb a hill or boost your speed. A sensor inside the hub measures your effort when you ride. As you pedal forward, the sensor tells the wheel's electric motor to give you a boost. When you hit the brakes, the motor regenerates, slowing you down and recharging the batteries. The goal behind this design is to encourage people to bike farther distances, relying less on gas-guzzling transportation.

What Technology Will Bring to the Next Decade
Look back at how far computers and other personal technologies have come in the last 10 years, and it's easy to see why it's so difficult to predict where they'll go over the next decade. Best guess: Look for more data to be available at any time, more information accessible through speedier devices, a greater reliance on the cloud, and technologies that work away quietly in the background.

Ten years ago, we would have been blown away by a cellphone with far more computing power and memory than the average PC had in 1999, along with a built-in camera and programs to manage every aspect of our lives. Ten years from now, the iPhone and its ilk will be antiques.

Device mimics human muscle size and strength
Hydrogen could soon power a new economy, but in the meantime the lightest element is already powering new artificial muscles. According to new research published in the journal Smart Materials and Structures, scientists have created a strong and silent hydrogen-powered artificial muscle, modeled on human skeletal muscle.

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Industry Events

RLA Conference & Expo – Brazil
April 13-15, 2010
www.rlashows.com/brazil.php

Paper Recycling Conference – Chicago
June 13-15, 2010
www.paperrecyclingconference.com

RLA Conference & Expo – Amsterdam
June 15-17, 2010
www.rlashows.com/amsterdam.php

RLA Conference & Expo – Singapore
September 27-29, 2010
www.rlashows.com/singapore.php

E-Scrap 2010: The North American Electronics Recycling Conference – New Orleans
September 29-30, 2010
www.e-scrapconference.com.

CSR, Corporate Giving & Brand Protection Summit – Boston
November 3-5, 2010
www.rlashows.com/boston.php

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Need more information about how the U.S. Postal Service® can benefit your business? Stop by **Booth #F16** during the Reverse Logistics Conference & Expo and speak to one of our Sales Specialists. While there, attend the speakers panels listed below.

New Solutions for Recycling
USPS Speaker: Jim Cochrane
Vice President, Ground Shipping
When: **Tuesday, February 9th @ 1:30 p.m.**

Bringing Expedited Shipping to New Levels
USPS Speaker: Gary Reblin
Vice President, Expedited Shipping
When: **Wednesday, February 10th @ 10:30 a.m.**

Best Practices for Recycling and Product Recovery Through the Mail
USPS Speaker: Dan Barrett
Manager of Sales and Market Development
When: **Wednesday, February 10th @ 11:30 a.m.**

Annual
RLA Conference & Expo
São Paulo, Brazil April 13th - 15th 2010

We are pleased to announce the RLA Conference & Expo Brazil in April 2010! Companies from all over the world and especially South America & Central America along with many other international delegates will be in attendance.

ODMs, OEMs, Branded Companies and Retailers will be looking for 3PSPs that can manage Reverse Logistics in South & Central America.

Temos o prazer de anunciar a Conferência e Exposição RLA Brasil em Abril 2010! Empresas do mundo inteiro e principalmente da América do Sul e Central junto com muitos outros delegados internacionais, estarão presentes.

ODMs, OEMs, Companhias de Marca e Varejistas da América do Norte e Sul, Europa e o Extremo Oriente estarão procurando Empresas Tercerizadas que lidam com a Logística Reversa

Nos complace anunciar la Conferencia y Exposición RLA Brasil en abril de 2010! Empresas de todo el mundo y especialmente América del Sur y Centroamérica, junto con muchos otros delegados internacionales estarán presentes.

Fabricantes ODM e OEM, minoristas y empresas de marca de la América del Norte y del Sur, Europa, y del Extremo Oriente estarán buscando terceros que puedan gestionar la logística inversa.

Caesar Park International Airport Hotel

An excellent location next to the São Paulo International Airport with courtesy hotel/ airport/hotel transfer.

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CONFERENCE & EXPO

REVERSE LOGISTICS ASSOCIATION CONFERENCE & EXPO

4/13
- **PRE-CONFERENCE WORKSHOPS -** 9:00am - 3:00pm
- **EXHIBIT HALL OPENS -** 1:00pm
- **RLA INDUSTRY COMMITTEES -** 1:00pm - 4:30pm
- **RLA ACADEMIC ACADEMY -** 1:00pm - 4:30pm

4/14
- **EXHIBIT HALL OPENS -** 8:30am
- **WORLD WIDE ASSOCIATION REPORT -** President, RLA - 10:00am
- **KEYNOTE ADDRESS -** 10:30am
- **BUFFET LUNCH - EXHIBIT HALL -** 12:00pm - 1:30pm

	Track A	Track B	Track C
1:30pm	Think Forward! Challenges of a Forward Logistics Problem with a Fitting RL Solution	Closing the Product Lifecycle - the Reverse Logistics for post-consumption products	Current Trends in Customer Service Returns Processes
2:30pm	Managing the Global Impact of Electronic Waste Legislation	Global Warranty Support	Leveraging our Assets

- **INTERMISSION - REFRESHMENTS - EXHIBIT HALL -** 3:30pm - 4:30pm

4:30pm	Panel Discussion Understanding RL at a Higher Level	Using Your RL Operations to Drive Profitability & Achieve a Competitive Edge	Using Your RL Operations to Drive Profitability & Achieve a Competitive Edge

4/15
- **EXHIBIT HALL OPENS -** 8:30am

	Track A	Track B	Track C
9:00am	RL Insourcing: Should RL Operations be Kept Internal?	Major Challenges Facing RL	Electronics Recycling

- **INTERMISSION - REFRESHMENTS - EXHIBIT HALL -** 10:00am - 11:00am

11:00am	Panel Discussion Creating Value from Returns - The Design of Service Networks	Unlocking Value in RL	Environmental Compliance Scene

- **BUFFET LUNCH - EXHIBIT HALL -** 12:00pm - 1:30pm

1:30pm	RL Model to Deliver Expanded Shareholder Value	Cradle to Cradle; Product Re-birth, The True Goal of Recycling	Building Revenue Opportunities
2:30pm	Panel Discussion Increasing Customer Loyalty & Managing Environmental Challenges	How Repeat-Use Packaging Solutions Can Reduce Costs and Enhance RL Practices	Design and Operation of Recycling Facilities

- **Closing Remarks -** 3:30pm
- **Lucky Draw -** 4:00pm - MP3 Players, DVD RW, Portable DVD Players, External Hard Drives, Digital Cameras (you must be present during the drawing to win)

Event Participants

PANDISC, DHL, FLASH GLOBAL LOGISTICS, hp invent, RIM, CellBras, Teleplan Excellence in Service, FLEXTRONICS Global Services, JABIL, Walmart Save money. Live better., Pão de Açúcar, PHILIPS, MOTOROLA

Money Talks

DecisionOne Acquires Anacomp MVS
DecisionOne, a Devon-based premier partner to IT solutions providers, today announced the closing of its acquisition of the MVS division of Anacomp, a San Diego-based diversified IT and business services company. Terms of the agreement were not disclosed.

Consistent with DecisionOne's organic growth strategy of acquiring businesses in its core areas of operation, this transaction adds more than 10 percent growth to DecisionOne's top line and brings 750 Anacomp customers and approximately 200 employees, including field technicians and other staff, to the company.

Electronics Led Jump in Online Holiday Shopping
Online shopping rose five percent this Christmas season compared to last year, according to comScore. Electronics led the online boost with a 20 percent jump, and overall an estimated $27 billion was spent online. Another study by ForeSee found online shoppers were most satisfied with purchases from Amazon.com.

Celestica Acquires Invec Solutions
Celestica Inc., a global leader in the delivery of end-to-end product lifecycle solutions, today announced it has acquired Invec Solutions, a leading provider of warranty management, repair, and parts management services to companies in the information technology and consumer electronics markets.

The acquisition of Scotland-based Invec will enhance Celestica's after-market services offering through its proprietary reverse logistics software, which allows customers to view their repair status and inventory information from anywhere in the world using a web browser. This system can be tailored to meet unique customer requirements and Celestica will integrate Invec's reverse logistics software throughout all of its after-market services locations.

What Types of Companies Might Invest in the Electronics Recycling Industry?
The universe of potential acquirers for an electronics recycling business spans multiple sectors, with varying degrees of strategic fit. For example, a competency in electronic product collection is attractive to a firm seeking to expand or acquire capabilities in reverse logistics—broadly defined as the reuse of products or materials.

However, in instances where the e-cycler is reselling parts or remanufactured products, they must also understand important forward logistics capabilities such as customer service, merchandising and even retail elements relating to the target's customer base.

Syncreon Acquires NAL Worldwide Holdings Inc.
SYNCREON, the Irish transport and Logistics Company formerly known as Walsh Western International, has bought US firm NAL Worldwide Holdings for an estimated $35 million (€24 million).

The acquisition of NAL will give Syncreon combined yearly revenues of $725 million, according to the company's president and chief executive Brian Enright. NAL, which is based in Illinois, had revenues of $75 million in 2010.

ModusLink pays $30M for consumer tech reseller
Waltham-based ModusLink Global Solutions Inc. has acquired Tech for Less LLC, a Colorado-based company that buys and re-sells surplus consumer technology products, for $30 million in cash.

ModusLink, formerly CMGI Inc., expects to pay an additional performance-based consideration of up to $10 million if Tech for Less meets milestones in 2010.

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WEEE changes to wait until late 2010

The Department of Business, Innovation and Skills (BIS) has said that anticipated alterations to the Waste Electrical and Electronic Equipment (WEEE) Directive will not come into force until the end of next year.

WEEE schemes have expressed concern over proposed changes to the ECs regulations, which would triple the amount of equipment the UK will need to steer away from landfills each year. According to letsrecycle.com, the draft recast of the WEEE Directive is currently making its way through European Union members involved in the decision process.

Dell finds gold in parts returns

When companies significantly alter their sales strategy, it's clear they also have to rethink how they deliver their products to market. What may not be as obvious is that the shift in strategy could affect their reverse logistics operations as well.

Consider Dell Inc., the country's second-largest PC maker and the company that made supply chain management an art form in the personal computing world. In the mid-1990s, Dell abandoned retail stores as a sales channel and focused exclusively on selling its products direct to customers. The remarkable results that ensued are the stuff of business legend.

Motorola Establishes U.S. Take-Back Recycling Program for Enterprise Mobility Solutions Customers

Motorola, Inc. announced that it has established a take-back recycling program for its U.S. Enterprise Mobility Solutions (EMS) customers to help them responsibly dispose of used equipment.

The products covered in the program include all Motorola-branded enterprise mobility equipment, such as mobile and portable two-way radios; handheld mobile computers; barcode scanners; imagers; in-vehicle mobile workstations; accessories; network infrastructure equipment; and computers, laptops and monitors. Batteries are also included but must be removed from the equipment before they are shipped for recycling. There is generally no cost incurred by the customer; however, freight charges may be applied in some cases.

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7th Annual RLA Conference & Expo

AMSTERDAM

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Location:
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Date:
Workshops - June 15, 2010
Conference & Expo - June 15-17, 2010

Three Full Days of RL Thought Leadership, Innovation and Networking!

The Reverse Logistics Association Conference & Expo kicks off on Tuesday with Workshops and Committee Meetings, followed by the opening of the Exhibit Hall. Wednesday and Thursday are two full days with the Keynote address followed by sessions presented by RL professionals, leading academics and interactive panel discussions. Session topics include "Customers Give the Best Insights into After- Sales Effectiveness," "Using Technology to Enable Collaborative Independence" and "Designing an Integrated Reverse Logistics and Service Support Network." A wide range of Reverse Logistics companies will be in attendance from repair/refurbishing to recycling/e-waste and transportation logistics.

Be sure to visit the Exhibition Hall where OEMs, ODMs and Retailers will be looking for Third Party Service Providers (3PSPs) that can manage Reverse Logistics in Europe and around the world. This is a rich opportunity for OEMs and Branded companies to identify future service partners among the many exhibitors showcasing their Reverse Logistics solutions.

For more information, visit: www.RLAShows.com

REVERSE LOGISTICS ASSOCIATION™
CONFERENCE & EXPO

ARTICLE

Simplicity for Consumers Shepherds in Electronics Recycling Success

by Kevin Brown

Consumers and businesses are increasingly conscious about e-waste recycling initiatives. While technological advancements have made everyone's lives faster, easier and more efficient, there is a downside to this growth, with an increasing proliferation of electronic waste, commonly known as e-waste. The management of obsolete, unwanted and nonfunctional laptops, cell phones, monitors, hard drives and even batteries, is rapidly reaching a critical point. This is driven by improving technology and the availability of new and recycled devices along with the fear of toxic materials, resource conservation, logistics and handling and disposal issues.

Finding a way to deal with all this relies on several key participants. They include OEMs, consumers, businesses, e-waste management companies and governments. Even though new programs and solutions are implemented every day, the movement is still in its beginning stages.

As individuals and businesses gain a better understanding of recycling programs and the environmental impact of simply throwing away electronic waste and move beyond simple "feel good" measures, there is a strong learning curve to fully understanding how committed federal, state and local governments must be to ensure compliance with properly managed e-waste disposal programs. To date, 19 states and New York City have enacted legislation to stem the flow of these materials into disposal locations that pose an environmental threat. Additionally, many states are considering legislation.

The growth of the green movement has moved the pendulum of consumer satisfaction from strictly product durability and technology to the environmental impact of product disposal.

While there is eagerness to do right by the environment, there remains one essential question. How do businesses maximize the recovery of these materials by making it easier for their consumer while controlling costs?

THE IMPACT OF E-WASTE ON DISTRIBUTION

As manufacturers embrace electronics recovery programs, there is a growing need for programs to handle the collection and disposal of used electronic products. While there have been several early adopters of e-cycling programs who have figured out what works best for their respective organizations, many other companies are just beginning to explore their options.

The fact is e-waste can be an ugly business, plain and simple. Companies are being asked—or required—to manage a process that is a logistics nightmare. These companies must put a process in place so that consumers can easily return used items that essentially have little to no value. As a result, these companies must ask themselves questions they may not have had to consider in the past:

- What is the impact of this process on real estate and facilities requirements?
- What hazards are there for employees from these returned items?
- What are the additional processes that go into making sure that these items are properly disposed of?
- How much is this going to add on to an already tight operations budget?
- How much of a cost increase will be passed to the consumer, and will it impact market share?

The questions all point to product stewardship, which is emerging as a viable and cost-efficient strategy for manufacturers. This places the responsibility for a product's proper disposal squarely on the shoulders of the company that makes, sells or even purchases the product. That is why it is essential for both consumers and government agencies to understand the complexities of how products are distributed.

Companies incorporate distribution models to get their products to an endpoint such as a brick and mortar retailer, or a warehouse for an Internet retailer. At their core, distribution models are designed, engineered and assembled to support the delivery of parts or finished goods, period. However, they are complex, oftentimes relying not only on company-owned assets, but will also involve multiple third parties who distribute some or all of those goods on their behalf. With e-waste programs, distribution models can be turned upside down because the recovery value for goods may be severely diminished. In a classic distribution model, there are specific processes in place for receiving returned goods. They are returned to stock, remanufactured or liquidated through a third-party in order to realize a recovery value for a usable asset. It makes sense. With e-waste, since there may be little to no value to the products being returned, manufacturers have to create an entirely new process with that in mind. Many of the new laws may also require that manufacturers keep close tabs on the e-waste they receive and dispose of, so the companies may have the need to track large items such as wide screen televisions and monitors, to those as small as a battery or a hard drive.

It is also important to acknowledge that no one person or individual within an organization can be expected to know all of the answers or even all of the questions leading to those answers. There are simply too many areas of exposure and subsequent liability for the entire burden of managing this complex evaluation to fall on a single person or group.

How well a company manages its e-waste program may have much larger implications on how consumers perceive them. Unfortunately, consumers do not understand the challenges in this ever-changing business and political climate. In a program that is managed properly, the consumer will not be aware of its existence. Their interest is in the total benefit realized as a part of the ownership experience. Cell phones, digital music players and other electronic items that are no longer of value to the consumer will only hang

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around in a drawer so long before someone makes it a child's toy, moves, or just gets tired of looking at the ever-expanding collection of e-waste.

> In order for the electronics industry to be successful in working through a program that is meaningful and cost-effective, it will take the efforts of the industry as a whole.

THE IMPACT OF E-WASTE ON CONSUMERS

While addressing the challenges that supply chain professionals face, it is critical to spend a little time putting ourselves in the shoes of a consumer. As supply chain professionals, it is easy to forget that what seems perfectly logical to us makes no sense to the everyday consumer.

Consumers want to do their part in making sure the environment is safe and healthy. However, the average consumer is going to only embrace initiatives and programs if they meet two very specific criteria:

1. The program must be inexpensive or free.
2. To be worth the time and effort, the program must be no hassle to participate in.

Despite consumers' best intentions, if a program fails to meet these key criteria, it will likely fall flat and fail to achieve both the results desired by the company managing the program and consumer expectations. A program that is too difficult to follow, or forces people to drive all over town to drop items off at a collection point, or has any added out-of-pocket compliance cost, is not a viable option. When consumers are faced with additional duties, they may be less willing to shop from a company if they do not think their best interests are being met. The risk of damaging the sponsoring company's "brand" can have a negative impact on long-term revenues.

WORKING WITHIN PUBLIC POLICY

Manufacturers are reviewing the growing number of e-waste laws and regulations, the best intentions of consumers, and the attitudes of lawmakers willing to enact strict controls. This is not to say that solutions cannot be developed, but they may happen at a cost to manufacturers, who will have to ultimately pass it down to consumers. The industry has embraced the fact that measures need to be taken, and many companies have been leaders in the development of solutions designed to significantly reduce the amount of e-waste that is improperly disposed of; however, a more effective roadmap, based on solid fundamentals, must be pursued.

Many wonder, what is the role of the federal government in developing a uniform code that is applicable across all states and municipalities? While the last thing needed is more legislation for the sake of legislation, there could be potential benefits in establishing national standards if they are reasonable in their requirements and allow manufacturers to comply with a uniform process that is more easily managed and less costly. To succeed, this would require industry feedback and direct participation throughout the discussion and drafting process.

WORKING TOGETHER

Regardless of the line of business or industry, there are times when competitors have to work together. This is called co-opetition. In order for the electronics industry to be successful in working through a program that is meaningful and cost-effective, it will take the efforts of the industry as a whole. Leaders - from vendors, suppliers, retailers, manufacturers and third-party logistics providers - all have a vested interest in making sure that policies impacting the industry are reasonable. It is from the expertise of these industry leaders that a solid foundation can be established. This will help everyone benefit, specifically the customer.

Whether the focus is in developing more cost-efficient supply chains, improving product placement to increase market exposure, or working as a vendor or supplier to support the manufacturing

Reverse Logistics Association Focus Committees

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- Kok Huan Tan, Dell Global
- Vibhore Arora, Infosys
- Sreevathsa, The Service Solutions

ON THE MOVE

DEX, a leading supply chain solutions provider for high-tech industries, recently announced that **Paul Gettings** has been promoted to President DEX Solutions and **Jerry Kohnke** has been promoted to President DEX Supply Chain Services.

Gettings will be responsible for driving the supply chain solutions design and consulting services business in addition to revenue growth globally for the corporation. Kohnke has responsibility for DEX facilities worldwide while leading the DEX Supply Chain Services business.

DEX also announced that **Mike Shelor** has joined the company as the VP and General Manager of DEX Supply Chain Services Northeast. In his new role at DEX, Shelor will have full responsibility for the ISO-certified facility and maintaining DEX's reputation for outstanding service.

Mark Doughton, president of Inmar Reverse Logistics, retired after being with the company for 25 years including 15 years as President of the Reverse Logistics division. Under Doughton's leadership, **Inmar Reverse Logistics** grew both organically and through acquisitions. During these periods of significant growth, he not only retained the client base, but also improved the business through developing and delivering additional innovative services.

National Parts Depot, an industry leading distributor of computer and printer parts, is proud to announce the promotion of **Jeanne Taylor** to National Account and Sales Manager and **Craig Hanson** to Marketing and Sales Operations Manager. Taylor will have the primary responsibility of managing both the Inbound and Outbound Sales Departments while maintaining an instrumental role as lead salesperson. Hanson will be responsible for advertising and marketing NPD's products to the computer and printer industries as well as revamping the company's web image.

Global logistics company, **Ozburn Hessey Logistics**, recently hired **Jeff Gosline** as senior director of business development for the 3PL's North America Transportation business unit. In this role, Gosline will be responsible for new sales of OHL's managed transportation service offering in the U.S., Canada and Mexico.

Gosline has nearly 20 years of logistics and supply chain experience, most recently serving as senior director of business development for ATC Logistics & Electronics. Prior to that, he served as vice president of business development at Ryder System, Inc.

DecisionOne Corporation recently announced that industry veteran **Kenneth G. Murray** joined the technology maintenance and support company as Senior Vice President, Sales and Marketing. In this role, Murray has responsibility for selling and marketing to IT hardware and solutions providers, including vertical markets such as healthcare.

Murray's past experience includes SGI, Rackable Systems, Network Appliance, Mockingbird Networks, Appiant Technologies and at Hewlett Packard.

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community, expertise is needed. As the logistics industry faces new challenges, there are choices. It can either allow others to dictate what will be done, or it can come together and engage in a meaningful discussion on how to solve these problems. A proactive approach will likely produce the best results for all parties involved.

For years, the Reverse Logistics Association has been a forum for companies to come together, sharing meaningful dialogue on topics meant to drive improvements throughout the industry. The future is not clear with e-waste because it is so early in the game. It is impossible to accurately assess what the best solution is. There certainly will not be an easy, single source solution to this situation. One thing is certain, without co-opetition or large scale industry involvement in working towards the development of a meaningful e-waste plan, businesses may be forced to adapt to negative solutions in the short term, that have long term implications. The better route is to be pro-active and strive for a positive plan that helps all the companies and their consumers, while creating a better environment. RLM

Kevin Brown is the Director of Marketing for Newgistics. In his current role, Kevin has direct responsibility for the company's public branding and communication initiatives, as well as supporting the company's strategic planning efforts in the development of new products and services for the small parcel industry. In more than six years with Newgistics, Kevin has held a variety of positions in the areas of sales, business development, and management of the company's business partner community.

ARTICLE

Avoiding the Pitfalls of International Returns

by Tom Stanton

PART 2

In Edition 18 of Reverse Logistics Magazine, we discussed US Customs, Customs brokers and bonds. This edition, we will be discussing country of origin and classification as they impact international returns.

COUNTRY OF ORIGIN:

In Customs and international trade terminology, the words "country of origin" indicate where a product was grown, produced or manufactured. If your products are being returned to the United States, an entry must be made through US Customs and Border Protection (CBP). As previously discussed, when the value of goods is less than $2,000, they can, in most cases, be released as an informal entry without a customs bond. However, items valued over $2,000 require a Customs bond and are cleared as a formal entry. (There is an exception for goods that remained in Customs custody and were returned to the US. Informal release can be made in that case.)

Customs entries today are made via electronic submission and are either released immediately as a paperless entry or documents are required and an intensive examination may also be required. If "documents are required" the CBP officer will review the shipment paperwork then make the determination to either release the shipment or hold it for examination.

The paperwork presented to CBP should include a commercial or proformance invoice and packing list providing the description, value and country of origin of the goods. US origin goods qualify for duty free return unless a manufacturing drawback (duty refund) was paid when the goods were exported. If manufacturing drawback was paid, the amount of the drawback paid on each unit returned, must also be repaid.

If the goods were made in the US, the shipper should declare on the invoice that these are American goods returned. If the value of the goods is over $2,000, a declaration by the foreign shipper that the goods were not advanced in value or improved in condition is also required.

The terms "Advanced in value or improved in condition" are important because value added to a product can change the country of origin of the goods. Here are two examples of products that were advanced in value or improved in condition.

1. US Components China origin: An integrated circuit is designed in the US and exported to China for assembly and test. Upon return to the US, the imported item is not considered US

Figure 1 US Customs and Border Protection Regulations of product entry

19 CFR Sec. 10.1 Domestic products; requirements on entry.

Articles Exported and Returned

(a) Except as otherwise provided for in paragraph (g), (h), (i) or (j) of this section or elsewhere in this part or in Sec. 145.35 of this chapter, the following documents shall be filed in connection with the entry of articles in a shipment valued over $2,000 and claimed to be Tariff Schedule of the United States (HTSUS) :

(1) A declaration by the foreign shipper in substantially the following form:

I, _____,

declare that to the best of my knowledge and belief the articles herein specified were exported from the United States, from the port of _____ on or about _____, 20___, and that they are returned without having been advanced in value or improved in condition by any process of manufacture or other means.

Marks	Number	Quantity	Description	Value, in U.S. coin
	(Date)			
	(Address)			(Signature)
				Capacity)

(2) A declaration by the owner, importer, consignee, or agent having knowledge of the facts regarding the claim for free entry. If the owner or ultimate consignee is a corporation, such declaration may be signed by the president, vice president, secretary, or treasurer of the corporation, or may be signed by any employee or agent of the corporation who holds a power of attorney executed under the conditions outlined in subpart C, part 141 of this chapter and a certification by the corporation that such employee or other agent has or will have knowledge of the pertinent facts. This declaration shall be in substantially the following form:

I, _____,

declare that the (above) (attached) declaration by the foreign shipper is true and correct to the best of my knowledge and belief, that the articles were manufactured by _____ (name of manufacturer) located in _____ (city and state), that the articles were not manufactured or produced in the United States under subheading 9813.00.05, HTSUS, and that the articles were exported from the United States without benefit of drawback.

_____
(Date)

_____
(Address)

_____
(Signature)

_____
(Capacity)

Origin but Chinese origin. Even though the value of the integrated circuit is much more than the package around the circuit, it is now installed in a package or casing that allows it to be inserted into a circuit board. It has a new use that could not occur before, so it is considered Chinese origin under the US rules of substantial transformation.

2. Chinese components US origin: A television test system is manufactured in the US from component parts made in China. You are assembling in the US, so the country of origin is US for the television test system. However, if the boards are returned separately for repair, they would be dutiable since their country of origin had not changed. The unit as a whole is US origin, but returned components retain their original origin because in themselves, no value change or tariff change occurred.

So there are two key elements about country of origin: where it was made and what value was added or changes took place. In the past, some importers would claim that fabric manufactured in China and stone washed in Hong Kong should qualify for Hong Kong origin and avoid some of the shipment limits or quotas imposed on imported apparel from China. They were ruled against and specific wording was added to the law excluding minor operations from making a change in origin. Today there is no quota for apparel shipping to the US, so this is not such a problem. Assuming the country of origin is correctly and clearly marked on the imported item, classification is the next issue.

CLASSIFICATION

The Harmonized Commodity Description and Coding System is a standardized classification system.

BACKGROUND

The classifications to be applied to goods imported or exported from the United States come from the Harmonized System. The Harmonized System (HS) of tariff numbers is an internationally standardized system of numbers for classifying products maintained by the World Customs Organization based in Brussels, Belgium. The US version is called the Harmonized Tariff System of the United States (HTSUS).

The HS is a six-digit number. The first four digits are referred to as the heading (e.g. 1905 = bread). The first six are known as a subheading (190510 = crisp bread). Countries that have adopted the HS are not permitted to alter the descriptions associated to a heading or a subheading or the numerical codes at the four or six digit level. This keeps the meanings of the classifications consistent for all users. More than 200 countries representing more than 98% of world trade use the HS as a basis for customs tariffs, collection of international trade statistics, rules of origin, collection of internal taxes, trade negotiations, etc.

Each tariff number is associated with a duty rate and is only exempt from duty if the classification is designated as duty free or the shipment is shipped directly from a foreign country to the United States that has a duty free entry agreement with the US. Circuit boards made in and shipped from Israel would be accorded duty free entry into the United States but the same boards of Israeli origin shipped from Brazil would be dutiable at the duty rate assigned to the applicable classification. (There are detailed rules on how a classification is to be arrived at in the harmonized tariff schedules of the United States - available on line at- http://www.usitc.gov/tata/hts/bychapter/index.htm.)

THE DUTY PROBLEM

So if you have goods being returned to the US for repair or replacement and they were not made in the United States, you may face enforcement of the following "rule one" from the General Notes of the HTSUS:

"1. Tariff Treatment of Imported Goods and of Vessel Equipments, Parts and Repairs- All goods provided for in this schedule and imported into the customs territory of the United States from outside thereof, and all vessel equipments, parts, materials and repairs covered by the provisions of subchapter XVIII to chapter 98 of this schedule, are subject to duty or exempt therefrom as prescribed in general notes 3 through 29, inclusive."

So in other words, your goods are dutiable upon return subject to the classification that applies. If your goods are US origin they are allowed duty free return. If they are foreign goods they are dutiable every time they return unless a duty free classification applies. For example, previously imported goods can be entered duty free under classification 9801.00.2500 if you can prove your company was the original importer and the goods are being returned because they did not meet sample or specification.

CONCLUSION

In this article we have discussed two critical elements that can lead to duties being applicable to returned shipments. The first was "country of origin" which is where a product was grown, produced or manufactured. Goods of US origin can be returned duty free, but goods of foreign origin are dutiable on every subsequent entry, unless the applicable classification is associated with a zero duty rate or a duty exemption. The second was "classification" or HS number which is applied to every imported item. Every item to be imported is classifiable using the HS and every tariff number has an applicable rate of duty, except those that are duty free or exempt.

RLM

Tom Stanton is a Certified Customs Specialist and licensed Customs broker with the National Customs Brokers and Forwarders Association. Tom keeps up-to-date each year with new regulations and compliance requirements, such as 10+2 import requirements, that go into effect January 2010. Tom is also an ex-international traffic manager and an international small package consultant with more than thirty years experience. He can be reached by email at tom.stanton@afms.com or by phone at 503-246-3521. In addition, Tom is known as the "Transportation Doctor" and has several videos available on YouTube.

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TECHNICAL TRENDS

L. Bryant Underwood

Reverse Logistics Opportunities: Reclaim or Repair?

For most Americans it's a sure bet that you have purchased at least one new TV in the last year. The driver for this fever of acquisition was the US Government and the FCC. They did this by changing broadcast standards for the US market to transition to a fully digital over the air modulation scheme. This mandate required broadcasters to change their transmissions to DTV (digital TV) in 2009. The effect of this mandate was much greater capability and resolution by using new large form factor products that displayed video in HD.

Typically these are flat panel, "hang on the wall" form factors (LCD, Plasma or OLED). All of these products have a very high built-in expense structure around the actual display. In fact the high cost structure of these new TVs has totally resurrected what was considered a dead occupation-TV repair man. The reason for this is:

- The products are way too expensive to just scrap and replace.
- The size and weight make shipping to a central repair center problematic.

Consider this real life example. A new LCD TV belonging to a family member of mine recently died. They called for warranty service and the manufacturer sent a bob-tail box truck out with two workers. They came to their house and boxed up and trucked the TV 55 miles to a privately owned service center, franchised by the manufacturer. They fixed the TV and the same two guys drove back, delivered and re-installed it.

A couple of points to consider here. First this is a very expensive process. Not just from the all the labor, but consider the cost of the supply chain. This includes all the materials for the repair and the holding of excess inventory to avoid the risk of parts obsolescence. These parts risks are very troubling. Brand manufacturers for the product or semiconductors can go out of business or just a business decision that support for model X no longer makes sense. This is an eventuality that is already happening spurred by the tough economic times, making large numbers of expensive TVs now un-repairable.

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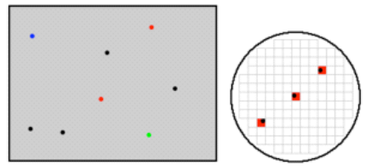
Like all change, my guess is that this too will be overcome. In fact, I believe that the whole structure of how current model TVs are made will change and cost reduction of RL will be a big part of the solution. One possible solution is with the development of repair kit that provides a standard chassis interface (SCI). Let's see how this can work.

The reason that there is so much of an opportunity for an SCI type solution to lower the repair cost of LCD TVs is the very high amount of value that is residing in the physical glass display. In an LCD display the physicality of the transistors being near to the pixel means that there will be 2M transistors on the LCD. Yields of the transistors and electronics become overly-critical with displays compared with other electronics. When you build semiconductors there is always a yield of the circuit components like transistors. In a typical IC, the issue of transistor yield is addressed during manufacturing by enabling surplus/extra transistors that are added to the mask for just that purpose. For an LCD, customers don't care that there are some extra pixels off in a corner somewhere. The result is that some manufactures will scrap a display that is perfect except for a few (1-4) missing/hot pixels. This yield issue drives huge costs into the displays and the manufacturers have very few ways to mitigate or scale the cost down. In fact, many times when production volumes grow, the production stress creates negative yield issues and costs get out of control. In an attempt to manage these issues, the industry has developed ISO standards addressing the pixel issues. The following Wikipedia excerpt helps unpack the complex nature of this issue.

Some LCD panels have defective transistors, causing permanently lit or unlit pixels which are commonly referred to as stuck pixels or dead pixels respectively. Unlike integrated circuits (ICs), LCD panels with a few defective pixels are usually still usable. It is also economically prohibitive to discard a panel with just a few defective pixels because LCD panels are much larger than ICs. Manufacturers have different standards for determining a maximum acceptable number of defective pixels. The maximum acceptable number of defective pixels for LCD varies greatly. At one point, Samsung held a zero-tolerance policy for LCD monitors sold in Korea. Currently, though, Samsung adheres to the less restrictive ISO 13406-2 standard. Other companies have been known to tolerate as many as 11 dead pixels in their policies. Dead pixel policies are often hotly debated between manufacturers and customers. To regulate the acceptability of defects and to protect the end user, ISO released the ISO 13406-2 standard. However, not every LCD manufacturer conforms to the ISO standard and the ISO standard is quite often interpreted in different ways. [1]



Examples of defects in LCDs vs. wafer yield

LCD panels are more likely to have defects than most ICs due to their larger size. In the example to the right, a 300 mm SVGA LCD has 8 defects and a 150 mm wafer has only 3 defects. However, 134 of the 137 dies on the wafer will be acceptable, whereas rejection of the LCD panel would be a 0% yield. The standard is much higher now due to fierce competition between manufacturers and improved quality control. An SVGA LCD panel with 4 defective pixels is usually considered defective and customers can request an exchange for a new one. Some manufacturers, notably in South Korea where some of the largest LCD panel manufacturers, such as LG, are located, now have "zero defective pixel guarantee," which is an extra screening process which can then determine "A" and "B" grade panels. Many manufacturers would replace a

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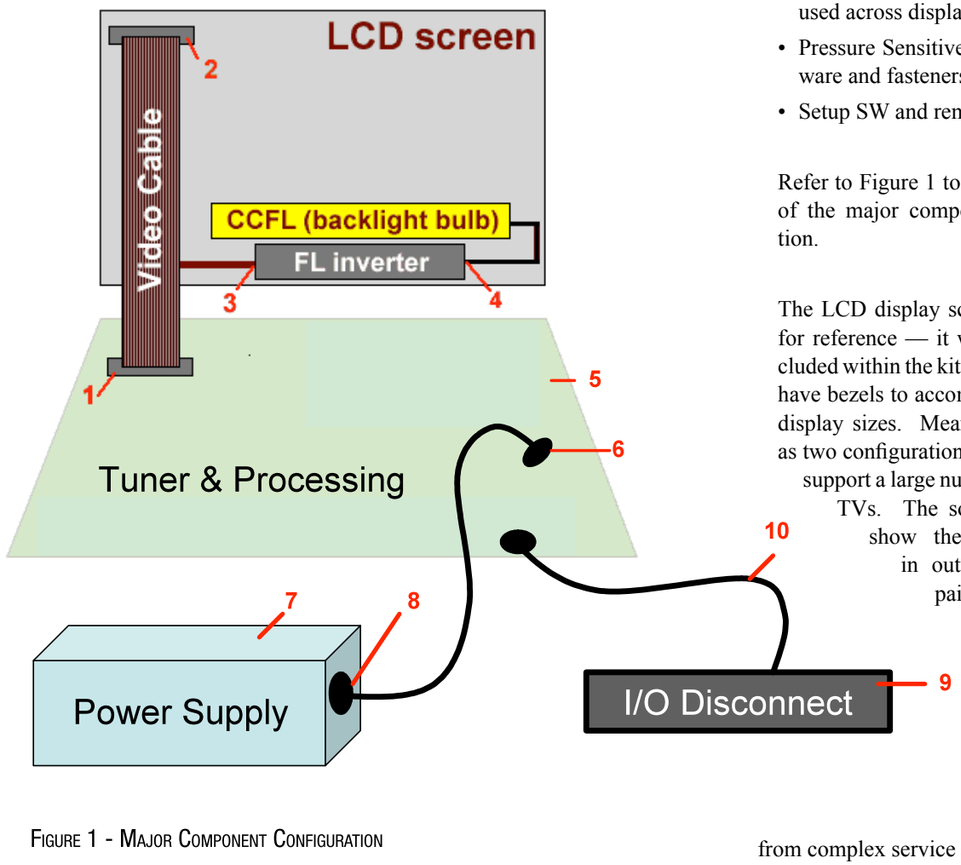

Figure 1 - Major Component Configuration

product even with one defective pixel. Even where such guarantees do not exist, the location of defective pixels is important. A display with only a few defective pixels may be unacceptable if the defective pixels are near each other. Manufacturers may also relax their replacement criteria when defective pixels are in the center of the viewing area. LCD panels also have defects known as mura, which look like a small-scale crack with very small changes in luminance or color.

Since typically ~60-70%+ of an LCD TV's value resides in the display and the majority of the failures originate in the power supply and processing electronics, this creates a huge service opportunity. Right now when a TV fails, the service options are all very expensive and have no way to address obsolete parts problems. The SCI solution addresses all of these repair issues by segmenting the LCD TV system very much like IBM segmented and standardized the PC. All LCD TVs are based on four basic subsystems

- RF Tuner and Input Switch
- Processing & Computing
- Power Supply
- Display

You can imagine the SCI solution as a standardized system of electronics with interface slots that can be enabled for connection to various standardized LCD display connectors. At a high level the system would be comprised of a kit that includes;

- A standardized case (~2 main case sizes) with bezels in popular screen sizes.
- Processing electronics (can be used across display sizes).
- Pressure Sensitive mounting hardware and fasteners.
- Setup SW and remote.

Refer to Figure 1 to get a better idea of the major component configuration.

The LCD display screen is depicted for reference — it would not be included within the kit. The case would have bezels to accommodate various display sizes. Meaning that as few as two configurations of cases would support a large number of standard TVs. The solution will first show the greatest gains in out-of-warranty repair and in-repair of commodity/house brands. For these brands there is very little to gain from complex service options and their cost structures will not support complex RL solutions. Also, commodity products tend to leverage standardization at a much greater degree overall to reduce costs. That leverage supports the use of standard SCIs. This means that standard SCI kits will become a viable solution for in-warranty and out-of-warranty products.

The other market driver and benefit is the reduction of waste. The key value of the TV resides in the display and by harvesting the lower failure mode of the display and replacing the support circuitry, the product is placed back into service quickly and at lower cost. So, not only can overall repair costs be reduced, but obsolete component issues won't make a very expensive TV just more landfill junk. In addition, this is an RL solution that has the potential to completely modularize the design of new TVs. Ultimately, the current costs are so high that there will need to be some change. Also most of the design aspects of the new HD TVs are much closer to computers than old analog TVs. These analog TVs were really more like appliances — embracing the modularity that has helped make computing so successful will go a long way towards lowering cost and improving the customer experience.

1 en.wikipedia.org/wiki/Liquid_crystal_display

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L. Bryant Underwood is Director, Supply Chain for Elbit Systems of America, a leading provider of high performance products and system solutions focusing on the defense, homeland security, commercial aviation and medical instrumentation markets.

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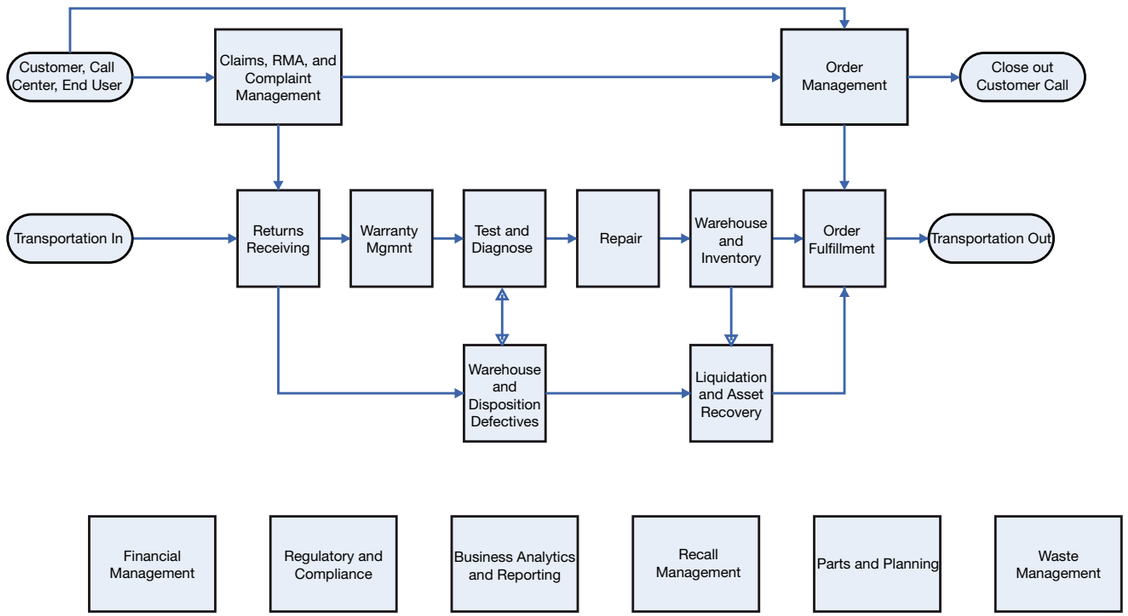
Returning Thoughts

A Universal Reverse Logistics Framework to Improve Your Operations

How well are your Reverse Logistics processes performing? How do you know where to identify changes that will improve your operations or your Reverse Logistics software? What Best Practices are others using that you should be incorporating into your returns processing?



In response to numerous member requests, the Reverse Logistics Association Information Technology Committee is assembling a resource to assist you to analyze your operations. This resource is a Universal Reverse Logistics Framework Model.

The First Reverse Logistics Framework Model

The committee members have drafted the first Reverse Logistics process baseline reference framework. The purpose of the framework is to provide you with a toolset to analyze your operations. The Framework includes:

1. A Reverse Logistics Model diagram
2. An analysis of each key process on the diagram including:
   a. Process Goals
   b. Process Functions
   c. Process Metrics
3. An analysis of each process by category such as: Data Management, Process Management, Operations Management, Financial Management and Customer Management

The Framework Tool in Action: Your Operational Review, Feedback and Updates

Currently the committee has completed Version 1 of the model which includes the Model diagram and as a starting point, an in depth analysis has been performed for the Receiving Process only. After feedback is received from members like you, the Receiving Process will be improved and the other processes in the framework will be added. The best feedback the committee hopes to receive is from members who actually use the framework tool to analyze their operations.

Details of the Reverse Logistics Framework and feedback contact information can be found in a wiki at www.ReverseLogisticsWiki.com

Good Luck!

Paul Rupnow

Editor of www.ReverseLogisticsProfessional.com

Also Co-Chairman of the RLA IT Committee

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