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# EXPLORES...

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## PROCESS ASSESSMENT IN THE SUPPLY CHAIN: THE EMBARQ™ LOGISTICS STORY

Wouldn't it be wonderful if we could connect a diagnostic computer to our companies, and instantly understand where we needed to focus our efforts to improve the company's performance? Unfortunately, no such program is currently available in the marketplace. However, there are tools that can be leveraged to gain a level of understanding of where improvements to a company's processes will likely provide the most benefit to customers and shareholders. This issue of CSCMP Explores... will discuss one of those tools, CSCMP's *Supply Chain Management Process Standards*, and how it was applied in a real world situation.

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# PROCESS ASSESSMENT IN THE SUPPLY CHAIN: THE EMBARQ™ LOGISTICS STORY

## EXECUTIVE SUMMARY

When your car just doesn't seem to have the zip it used to have, you take it to your local garage. A mechanic connects the diagnostic computer to your engine, and instantly receives real-time information on the critical functions taking place within the engine. Through comparison to known standards, he/she can tell you what you need to improve the function of the vehicle, and will quickly provide an estimate of what those improvements will cost.

Wouldn't it be wonderful if we could connect a diagnostic computer to our companies, and instantly understand where we needed to focus our efforts to improve the company's performance? Unfortunately, no such program is currently available in the marketplace. However, there are tools that can be leveraged to gain a level of understanding of where improvements to a company's processes will likely provide the most benefit to customers and shareholders. This issue of *CSCMP Explores...* will discuss one of those tools, CSCMP's *Supply Chain Management Process Standards*, and how it was applied in a real world situation.

The analysis of this case study will help illustrate methods that were successful, methods that were less than successful, lessons learned, and results attained in assessing process performance, identifying areas of opportunity for improvement, and measuring the progress of improvement initiatives. An understanding of these areas should increase the ability of supply chain professionals to successfully conduct self-assessments. The case study is based on EMBARQ™ Logistics' two different assessments conducted three years apart, providing the opportunity to measure process improvements, refine the assessment methodology, and contrast the results from the first implementation to the next. The assessments enabled the company to make detailed decisions regarding specific requirements for process changes. Within two years of the completion of the first assessment, EMBARQ™ Logistics had achieved distribution productivity gains of 23.6% driving \$1.7 million in annualized savings.

This introduction is an edited version of the introduction in the *CSCMP Supply Chain Management Process Standards (Standards)*, and is reproduced with the permission of CSCMP and Supply Chain Visions®.

## INTRODUCTION<sup>1</sup>

Many corporate leaders now recognize what logistics professionals have always known—logistics performance can have a significant financial impact on an organization's market share and profitability. According to Lisa Higgins, chief operating officer of APQC: "Top-performing companies spend 56% less on total supply chain management than median performers. Top performing companies' cash to cash cycle is 39% more efficient than the median performers and top-performing companies' perfect order performance is 5% better than the median performers."

Due to this recognition, logistics performance management has become a very popular topic. Kaplan and Norton<sup>2</sup> have popularized the use of a "Balanced Scorecard," many information technology (IT) departments are applying the concept of a "dashboard" to measure end-to-end process improvement, and industry associations and universities are offering seminars and workshops on performance metrics. The Council of Supply Chain Management Professionals (CSCMP) recognized the importance of this topic by publishing *Keeping Score: Measuring the Business Value of Logistics in the Supply Chain*.

However, too many people still fail to understand a fundamental point: improvement in performance measurements is driven in large part by implementing improved processes. Too often, companies view the implementation of performance metrics as a panacea. Six months later, many of these same organizations find that after expending time and money to implement "scorecards," "dashboards," or some other popular metric system of the moment, the end result is not the expected performance gains. Performance metrics alone are no guarantee of improved business results. While it is true that performance metrics are a necessary and irreplaceable element in performance management, it is essential to combine your business measurement efforts with qualitative process analysis and viable improvement efforts on core processes. Managers must also consider the cost of service—simply spending less does not translate into excellence.

To help managers assess their processes, CSCMP created the *Supply Chain Management Process Standards*. The *Standards* are an assessment tool that offers general guidelines on what is considered to be minimum standard and best practices. The document is organized as follows:

- There are six Main Process Sections (Plan, Source, Make, Deliver, Return, and Enable).<sup>3</sup>
- Each Main Process section is organized by Process Subcategories.
- Process Attributes are listed for each area and provide descriptions of the suggested minimum process standards and typical best-practice process.

By comparing the descriptions of the processes in the *Standards* to the practices found in their own companies, managers can determine their performance level and identify opportunities for process improvements in their supply chain.

<sup>1</sup> *Supply Chain Management Process Standards*, CSCMP and Supply Chain Visions, Oak Brook, IL, 2004

<sup>2</sup> Robert S. Kaplan and David P. Norton, "The Balanced Scorecard—Measures that Drive Performance," *Harvard Business Review*, Jan/Feb 1992

<sup>3</sup> Supply-Chain Council's SCOR® Level 1 Framework was used as the general framework for the *CSCMP Supply Chain Management Process Standards*. 3

# PURPOSE OF THE STANDARDS

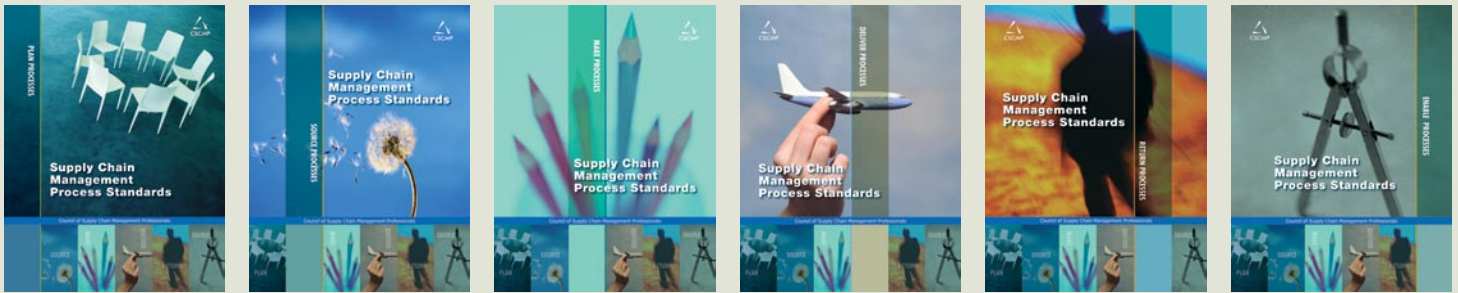
Popular trade magazines, consulting companies, and industry associations share best practices and case studies, but there is no comprehensive reference guide for comparing a considered “minimum standard” guideline for logistics and supply chain processes. These *Standards* are intended to address this need.

The *Standards* are meant to be used as a tool to help companies identify potential gaps in their processes. Practitioners can use this tool to identify process strengths and weaknesses, and then focus their efforts on those areas where improvement efforts will drive the most benefit. Results can be shared and compared (with discretion) with other organizations in your supply chain to improve overall effectiveness.

CSCMP recognizes that not all industries are the same and has attempted to compile the *Standards* for general use by as many industries as possible. The *Standards* are intended to be used “out of the box” and apply to most industries. Different industries, companies within the same industry, and even different locations of the same company may have practices which are best for them but different from those used by others. The *Standards* are meant to be general guidelines to help companies self assess their current processes.

It’s also important for a company to not try to achieve best practice across all processes. This would be cost prohibitive. Companies must instead determine which processes and attributes are essential to their industry and competitive strategy, and then focus their energies on achieving best practice goals in these areas, while maintaining minimum standards in all other applicable areas.

**Figure 1: CSCMP Process Standards**



## QUANTITATIVE VERSUS QUALITATIVE BENCHMARKING

The terms “quantitative” and “qualitative” will be used frequently in this issue of *CSCMP Explores...*, so a brief explanation is in order. Quantitative benchmarking refers to the practice of taking measurements of lead times, compliance levels, inventory levels, etc., and comparing them to similar measurements reported by other companies. The reported benchmarks are an aggregate of the performance of several companies, and are usually divided into four or five groupings, with the top-performing group called “best practice” or “best-in-class,” and the center group identified as the median or mid-point. The best sources for competitive benchmarks will only publish statistically significant results and may offer certain demographic breakdowns to allow comparisons with available peer groupings.

Qualitative or process benchmarking uses descriptions of work practices and methods to make similar comparisons. Companies collect descriptions of the manner in which the work is performed, and compare these against descriptions of minimum standards and best practices. By understanding the specific work practices that are performed and those not performed, the manager can determine how to improve the process, and with it, the quantitative measure of the results of the process. As the quantitative measure of a process will only tell the manager where the company’s performance ranks against other companies, a comparison of work practices will tell the manager how to improve the process. The *CSCMP Standards* are the only known published compilation of qualitative process standards.

Since their publication in 2004, many companies have used the *Standards* to assess their

processes and find the areas ripe for improvement. Some companies focus their assessments in one particular area of their business, most often within the span of control of the immediate sponsor. Other companies conduct broad assessments to determine the best place to focus limited resources to improve their business. This issue of *CSCMP Explores...* features a case study of the application of the *Standards* at EMBARQ™ Logistics, illustrating lessons learned in doing two assessments, and providing many tips and traps for conducting assessments in your own company.

Two different assessments were conducted at EMBARQ™ Logistics, with the last one taking place three years after the first. The impacts of actions taken as a result of the first, narrow-scoped assessment were obvious in the second assessment. Significant changes took place in the business in the intervening years, and the second assessment is being used to develop strategies for business improvements in the coming years.

EMBARQ™ Logistics is a wholly-owned subsidiary of EMBARQ™ Corporation (NYSE: EQ), the fifth largest local communications company in the country. EMBARQ™ provides a suite of communications services to customers in its service territories. EMBARQ™, which was previously the Local Telephone Division of Sprint Nextel, focuses on offering its customers practical, innovative products, and competitive pricing. The company has approximately 20,000 employees and operates in 18 states, offering local and long distance voice, data, high-speed Internet, wireless, and entertainment services.<sup>3</sup>

EMBARQ™ Logistics was formerly known as Sprint North Supply, a wholly-owned subsidiary of Sprint Nextel Corporation, prior to Sprint's divestiture of EMBARQ™. Its services include materials management; customized logistics; assemble, wire, and test services; engineering, furnish, and install services; and project management. These services are supplied both to affiliate customers (regional telephone companies operating as divisions of EMBARQ™) as well as nonaffiliated telephone companies that have outsourced these service requirements to EMBARQ™ Logistics. EMBARQ™ Logistics leverages 96 years of experience with best-in-class software applications to deliver end-to-end solutions and value to customers.

After a quantitative benchmarking project in 2004, the Distribution Operations Group within Sprint North Supply decided to assess its processes as part of its ongoing initiative to improve operations. Its expectations for the benchmarking initiative were as follows:

- Improve supply chain performance by the end of 2004 and yield significant benefits during 2005
- Drive alignment on what is most important to the business, and focus on “root cause” problems versus symptoms
- Standardize metrics to be used on an ongoing basis and obtain more comprehensive information to drive improvements and priorities
- Understand what is possible and use that information to set goals and prioritize investments—with a clear focus on what is best for the customer

The first step was a quantitative benchmarking project conducted by the Performance Management Group. The metrics focused on top-level process measures such as on-time delivery, inventory days of supply, and cash-to-cash cycle time. This study helped the Distribution Operations Group identify key areas where it lagged the industry; however, it did not give it specific insights on what needed to be changed in order to impact those measures.

In addition to the process assessment, the group wanted to introduce shop floor measures to its distribution centers. These measures could be tied to a distribution operations departmental scorecard to show progress against the quantitative measures mentioned earlier. The scope of the qualitative process assessment was kept narrow, and the team members were selected from within the Distribution Operations Group. Additional interviews were conducted with members of interfacing groups in order to be as thorough as possible.

In 2007, the focus of the second benchmarking review was much wider, and was driven as an overall corporate initiative by the finance group. EMBARQ™ had been spun off as a stand-alone business in May of 2006. An operational benchmarking program was being undertaken to identify opportunities for improvement at the process and task level by benchmarking operations across all areas against companies in a diverse set of industries.

The findings and resulting gap analysis were used to iteratively work toward the goal of becoming a top quartile performer across the entire enterprise. The corporate initiative was a quantitative benchmarking program, but EMBARQ™ Logistics decided to add the qualitative process assessment in order to have a complete picture, and to help guide improvement initiatives. Quantitative benchmarking is very useful, especially as it links to financial performance, and serves to determine how a company compares against its competition and top performers in all industries. However, to determine how to improve performance on quantitative measures, companies need to benchmark their processes and prioritize improvements based on their strategies while effectively allocating limited resources.



To this end, EMBARQ™ Logistics formed a team of 12 to 15 subject matter experts (SMEs) from across all functions of the group. This team was the steering committee for the initiative, and was composed primarily of mid-level managers. From this team, a core team of three was selected to represent the SMEs and have day-to-day involvement in the assessment. The SMEs team selected Supply Chain Visions® to assist in the assessment.

## BENEFITS OF THE ASSESSMENT

Walk down the hall in any company and ask, “What does the company need to do to improve?” Most people will gladly tell you what they think the company needs to do. But bring together a cross-functional team of “X” number of people to ask the same question...and you will likely get X+1 different responses. “Everyone knows where our problems lie” is the usual opinion, but interdepartmental disagreements are actually the norm when it comes to the severity, priority, and interdependence. The single greatest benefit of a process assessment against published standards can be the elimination of departmental agendas and blind spots.

For example, based on benchmarks and customer feedback, the distribution operations area expected poor ratings in the core distribution processes of pick, pack, and ship in the 2004 assessment. The quantitative benchmark for on-time delivery was below the median, and customer feedback reflected the need to improve.

<sup>3</sup> Information available on the EMBARQ™ web site <<http://www.embarq.com>>

# ASSESSMENT METHODOLOGY

This section will serve as a guide to companies that want to conduct assessments, and as an explanation of the methodology used in the EMBARQ™ Logistics assessment.

## STEP 1: SELECT THE TEAM

In order to understand the current processes, it's important to talk to the people who are actually doing the work. The person collecting the information should ideally know enough about the process to understand the terminology and descriptions offered, but not enough to describe the process or “put words in the mouth” of the interviewee. The first step then is to form the assessment team. A larger “steering committee” is useful for reviews and consensus decision-making, but the core team that is collecting the information should be small with no more than three to four people.

## STEP 2: INTERVIEW FRONT-LINE EMPLOYEES

The next step is to seek out the “lead workers”—experienced individuals who actually perform the work in each process subcategory. It's important to avoid interviewing only the manager of the group. In some cases, a manager and lead worker were interviewed at the same time, and asked “how is this work completed?” The manager would give a detailed description, but the lead worker would often roll their eyes and state: “I wish it worked like that!” Essentially, the way the process is designed can be completely different from how the work gets done on a day-to-day basis. A detailed assessment should not only uncover that, but also drill down on why the process does not work as designed.

## STEP 3: DOCUMENT CURRENT PERFORMANCE

After completing the interviews, the core team should then meet to discuss the company's current performance for each attribute selected in the *Standards*. Between them, they should reach a consensus rating and record the ratings on the checklist. The methodology for determining a rating is described in detail in the “How to Use” section in each of the *Standards*. If the company fulfills all of the criteria listed under “Typical Best-Practice Process,” the rating is five. If it meets all of the minimum standards and some best-practice criteria, the rating is a four. If the company fulfills all of the criteria listed under “Suggested Minimum Process Standard,” the rating is a three. If the company does meet some but not all of the minimum standards, the rating is two, and if it doesn't meet any of the minimum standards, the rating is a one. When the core team has reached consensus based on the criteria in the *Standards*, it presents the findings to the steering committee by discussing each rating in detail. The steering committee should ask questions, and add its experiences to the findings where applicable. When this review is done properly, very few ratings will change. The primary objective of this exercise is for the steering committee to validate the findings, and achieve the detailed understanding necessary for the next steps.

## STEP 4: RANK PROCESS IMPORTANCE

It is also the steering committee's responsibility to determine the priorities for improvement. Identification and recognition of weakness is a necessary first step, but it is useless unless improvement follows. For each process subcategory, the team must determine the level of process excellence at which the company should perform to compete in the marketplace, and to achieve its strategic goals. Stated simply, how important is this process to the corporate strategy? How much does it impact costs and/or the ability to meet the needs of customers? As stated earlier, not all processes need to be “best practice”—the cost in time and dollars cannot justify the benefit for the company.

## STEP 5: PRIORITIZE IMPROVEMENTS

After prioritizing the process subcategories by strategic and cost/performance importance, the consensus process ratings can be compared. High importance and mid-to-low performance highlight potential areas for improvement. This discussion should

The assessment showed good core distribution processes, but weaknesses in planning and supply support processes. Specifically, the bottleneck was in the receiving process: inbound material was often not labeled with either the Sprint North Supply purchase order (SNS PO) number or the part number, causing delays in receiving it into stock. The *Standards* describe best practice in this area as:

- Barcode scan verification of product receipt against the advance ship notice (ASN), with system-directed assignment of put-away locations

The suggested minimum process standard stipulates that:

- Products received which are destined for immediate shipment must be properly identified

The current process was not meeting the minimum standard, let alone best practice. Fill rates and on-time shipments suffered, even though the material was actually in-house. Stuck in receiving, the material did not show as available in inventory, and the number of people involved in resolving discrepancies was also a burden on the financials. The assessment helped provide needed focus on the root cause of the problem. As a result, changes were made to inbound labeling requirements to assure that material was properly identified at receipt. The implementation of these changes was clearly linked to significant improvements during the 2007 assessment.

The assessment process for weighing initiatives based on importance and financial benefit allows teams to achieve consensus on priority rankings, and can form the basis for business cases in support of change initiatives. In addition, this process often highlights the interdependence of process improvements. For example, B is dependent on A; therefore, one must do A first before B can be successful.

## A Matter of Perspective

During the 2007 assessment, an interview was conducted with a customer service representative (CSR). During the interview, a call came in from a customer requesting delivery status on three different orders. The CSR did a very nice job of engaging in conversation with the customer while accessing different applications, cutting and pasting fields from one application to another, and jumping from screen to screen to ascertain the current status. Within a period of four to six minutes, the CSR had provided the status for all three jobs, and completed the call with a happy customer since everything was on schedule.

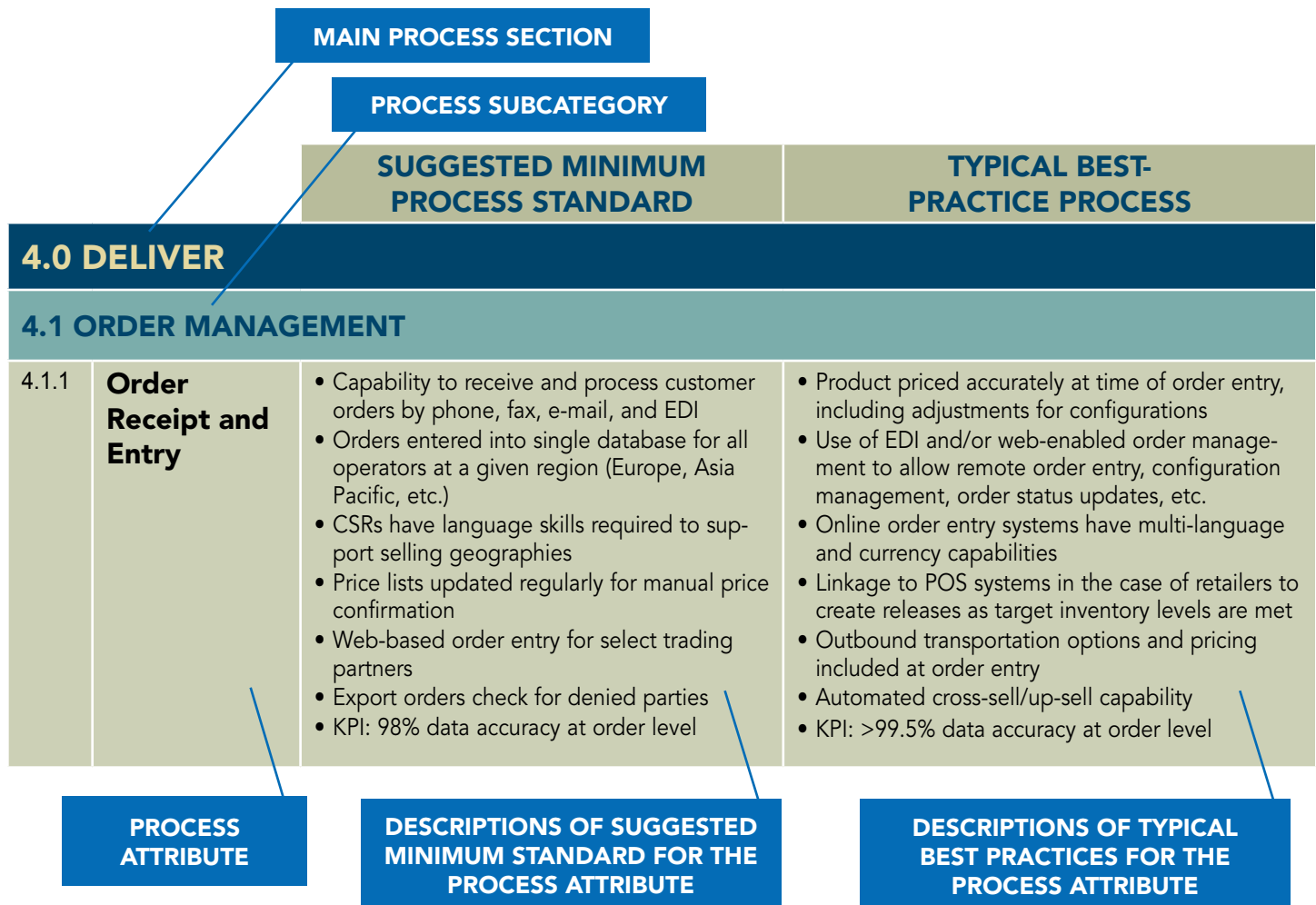
The number of screens accessed exceeded five for each order. At the end of the interview, the CSR was asked what the company should change to make the process better—there was no response. In this person's view, everything worked as it was intended to work. The multiple screens were part of the training received to do the job. When the lead workers are unaware that there is a "better way," they are not in a position to identify improvement opportunities. It is up to the interviewer, working with the *Standards*, to understand the shortcomings and highlight them for possible improvement.

As an update, the applications the CSR accessed to gain the status report information are now on a high priority list for replacement.

also identify the areas in which current performance levels are satisfactory, and those in which increased efforts will not bring competitive advantage.

Remember to determine the required level of process performance for each subcategory identified for improvement (see the diagram in Figure 2, taken from the *Standards*, for an explanation of these terms). Should it approach or be at best-practice level in order to achieve company goals? Is something between minimum standard and best practice good enough? Specifically, determine which elements of the descriptions of best practice are required. Wherever possible, quantify the cost (direct and indirect) of the process as it currently exists, and then estimate the potential cost savings that would result from improved performance. Priorities should focus on the areas that will have the most positive impact on customers, the areas that will deliver the most benefit for resources and time invested, and/or where poor performance will generate the most risk if not addressed quickly. Based on these assessment results, the team should then propose action plans, resource requirements, financial impact, and key performance metrics to measure the success of the changes. The final presentation to management should include all of these areas.

**Figure 2: Process Performance Diagram from CSCMP's Supply Chain Management Process Standards**



# EMBARQ™ LOGISTICS' 2004 ASSESSMENT

The assessment at EMBARQ™ in 2004 took place when the distribution operations area was facing internal pressures and growing external customer demand for improved service. Not only that, but a quantitative benchmarking project had shown specific metrics that were below average. The objective of the qualitative process assessment was to identify initiatives that would drive significant service improvements and cost savings in distribution operations. The process assessment project was sponsored and staffed by the distribution operations group, and two individuals were assigned full time for the short duration of the project. The scope was focused on distribution processes, with some limited visibility to the planning, sourcing, and enabling processes that directly touched distribution. The steering committee selected 16 process subcategories and 77 process attributes to assess. The core team identified process leaders for each Process Subcategory, located at both headquarters and in the distribution centers (DCs). A facility tour of one representative distribution center in Warsaw, Indiana was included with a corresponding discussion on the differences between what was seen in Warsaw and what would be seen in other DCs. Most of the interviews were held in a conference room, with the exception of some brief staff interviews conducted on the floor at the DC. A total of 45 individuals were interviewed and the total project duration was two and a half weeks.

## ASSESSMENT FINDINGS

As mentioned previously, the distribution operations group was forewarned that it would find weaknesses in the core distribution processes of pick, pack, and ship as a result of the quantitative benchmarking. What it found were good core distribution processes, but weak planning and supply support processes. When the group presented these findings in its steering committee workshop, the team validated them, though not without extended discussions and questions. After validation, the team divided into two groups for an impact assessment breakout session. When the team reassembled, it found that the impact ratings, assigned separately by the two groups, were actually in close alignment. Subsequent discussions on the rationale behind some ratings that differed resulted in even closer consensus. The results of those discussions are shown in the impact rating columns in the example below.

**Figure 3: Process Opportunity Workshop**

	STRATEGIC IMPACT	SAVINGS/PERF IMPACT	CURRENT PERFORMANCE	COMMENTS
<b>PLAN</b>	<b>GROUP A / B</b>	<b>A / B</b>		
Supply Chain Planning	● ●	● ●	●	
Supply Demand Alignment	● ●	● ●	●	
Inventory Management	● ●	● ●	●	
<b>SOURCE</b>				
Strategic Sourcing	● ●	● ●	●	
Supplier Management	● ●	● ●	●	
Purchasing	● ●	● ●	●	
Inbound Materials Management	● ●	● ●	●	Difference in definition – low impact
<b>DELIVER</b>				
Order Management	● ●	● ●	●	
Warehousing/Fulfillment	● ●	● ●	●	
Deliver Infrastructure	● ●	● ●	●	
Transport	● ●	● ●	●	
<b>ENABLE</b>				
Product/Service Data Management	● ●	● ●	●	
Measurement	● ●	● ●	●	
Technology	● ●	● ●	●	Close open initiatives!!!
Business Management	● ●	● ●	●	Execute on current plans
Quality Management	● ●	● ●	●	

High Impact
  Medium Impact
  Low Impact

Based on this impact assessment, and the consensus previously achieved on the Process Subcategory ratings, the steering committee identified the following areas for improvement:

- Supply-Demand Alignment/Inventory Management
- Technology
- Measurement
- Supplier Management

The team brainstormed for potential corrective actions. When all ideas had been written down on flip charts, each team member was given three colored dots to “vote” for the action items they felt were most important. This further narrowed the list of ideas to the critical few, and focused attention for the next round of discussions. The team then discussed these alternatives until it understood the complexities and potential difficulties of each alternative. Clarifications and edits were made to the proposed solutions.

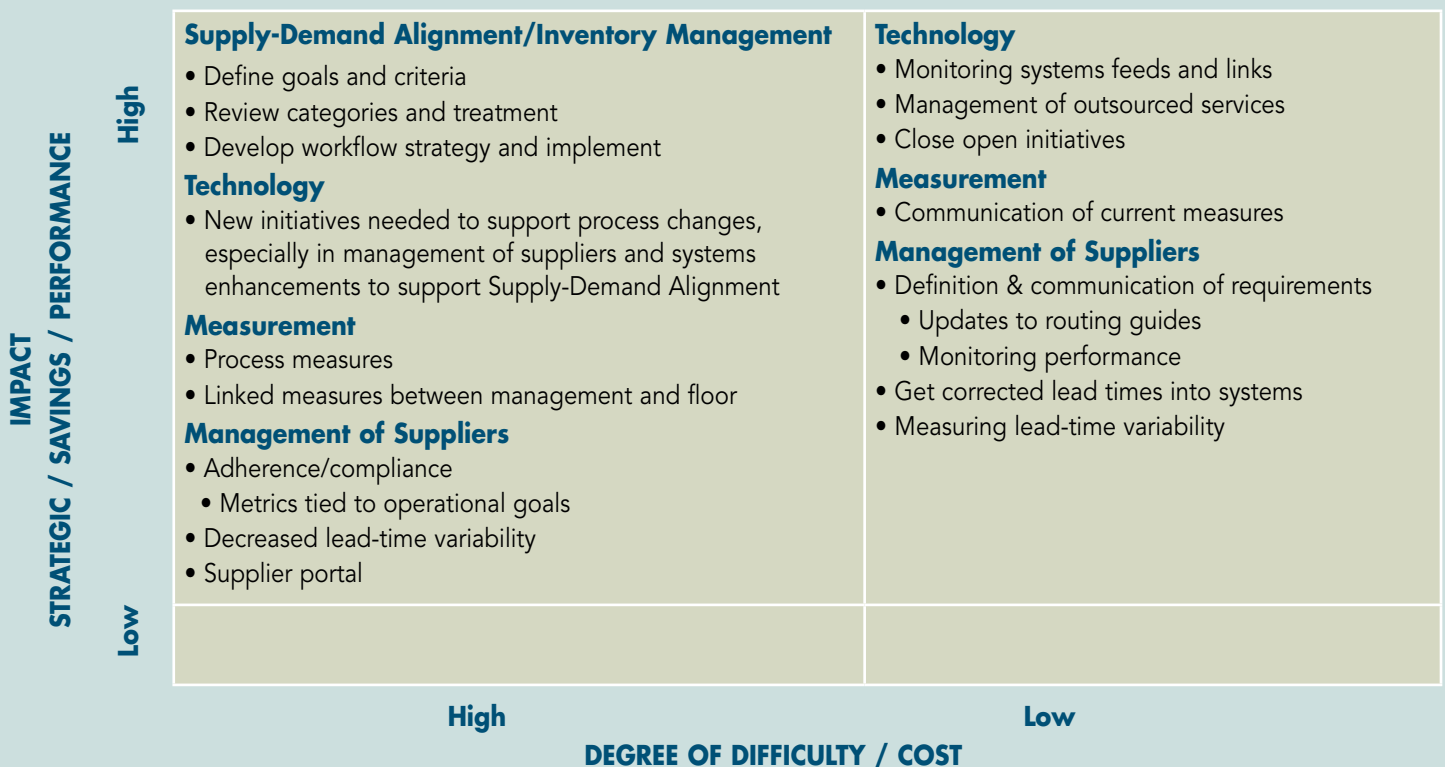
Another round of voting prioritized the alternatives to arrive at a list of action items that specifically addressed the weaknesses found in the high impact areas of the assessment. The following list of action items was presented to management:

- Supply-demand alignment/inventory management
  - Define goals and criteria
  - Review categories and treatment
  - Develop workflow strategy and implement
- New technology initiatives needed to support process changes
  - Manage suppliers and systems enhancements to support Supply-Demand alignment

- Monitor systems feeds and links
- Manage outsourced services
- Close open initiatives
- Measurement
  - Communicate current measures
  - Develop process measures
  - Link measures between management and floor
- Management of Suppliers
  - Define and communicate labeling requirements to all suppliers
  - Correct lead times in systems
  - Measure lead-time variability
  - Measure adherence/compliance to requirements
  - Tie metrics to operational goals
  - Decrease lead-time variability
  - Develop a supplier portal to enhance communication

Each initiative was rated by the consensus of the team according to the possible gains based on support for corporate strategy, and potential gains in cost savings and/or performance improvements. Each initiative was also rated by consensus on the degree of difficulty to implement it, and also by the potential cost and resource consumption of implementation. Based on the consensus, these initiatives were then prioritized according to impact and degree of difficulty, as shown in the exhibit below, and presented to management.

**Figure 4: Prioritizing the Improvement Initiatives**



## EMBARQ™ LOGISTICS' 2007 ASSESSMENT

Shortly after completion of the assessment planning sessions and presentation to management, the Sprint-Nextel merger began and all significant investments in technology were delayed or postponed while those negotiations took place. After the merger was completed, events started to occur that ultimately led to the spin-off of EMBARQ™ from Sprint Nextel. As a consequence, efforts were confined to those areas that could be improved without significant investment in technology and corporate resources. This was an unfortunate turn of events, as the distribution operations management team was ready to make substantial changes to implement many of the recommendations. However, the team was still able to effect some significant improvements in the following two areas:

*Supplier Management:* the emphasis was on labeling requirements for receiving. Options were discussed with key suppliers to gain an understanding of what could reasonably be accomplished given current systems and technologies. Standards were then established and communicated with suppliers. Compliance was tracked, and nonconformity was gradually reduced or eliminated on a supplier-by-supplier basis. When the 2007 assessment of the receiving area was completed, the racks of incoming shipments that used to be on hold had been reduced to a handful of items. A defined process was in place to quickly determine the status of those items and either release them into inventory or return them to the supplier.

*Measurement:* the emphasis was placed on creating departmental scorecards that could be linked from management level to the shop floor. A world class pay-for-performance program was also established in one of the distribution centers, and then rolled out across the entire network (described below).

The distribution operations group focused on the need to improve productivity and achieve same-day shipping of all orders from the distribution centers without negatively impacting order and inventory accuracy. EMBARQ™ Logistics management worked collaboratively with DC staff to formulate techniques for making improvements, identifying tools, setting targets for improvement, and developing action plans. Employees received communications on the challenges, and training sessions were held on how distribution center employees could impact each of the areas that needed improvement.

An incentive pay program for hourly DC associates was developed and named Pay-for-Performance. It attached a percentage of the incentive to each of the goals. Management and executive goals were also aligned with the targets, focusing the entire distribution operations group on the goals. Message boards were posted in all areas of the distribution centers to report monthly progress. Management performance reviews also required successful progress toward stretch goals, aligning the efforts of management and staff. After two years, EMBARQ™ Logistics achieved productivity gains of 23.6%, which directly translated into the \$1.7 million annualized savings. It also achieved best-in-class inventory accuracy while maintaining same-day shipping and a high degree of effort-free shipments. Corporate acceptance of supply chain initiatives is always easier when the benefits can be expressed in dollars, and measured.

During the second assessment in 2007, the corporate landscape had changed dramatically. As mentioned earlier, EMBARQ™ had been spun off as a separate corporate entity and the finance area was driving a corporate-wide initiative to gather quantitative benchmarks across all areas of the company. Specifically, the company wanted to identify opportunities for improvement at the process and task level by benchmarking operations against companies in a diverse set of industries. Based on previous experience from 2004, EMBARQ™ Logistics decided to add the qualitative process assessment in order to determine root causes for the quantitative benchmarks. The findings and resulting gap analysis were used to iteratively work toward the goal of becoming a top quartile performer across the entire enterprise. The areas selected for benchmarking and process assessment in EMBARQ™ Logistics included:

- Sourcing
- Procurement
- Supplier Management
- Warehousing and Distribution
- Traffic and Transportation
- Forecasting and Material Planning
- Reverse Logistics
- Customer Care (affiliate customers only)
- Product Management/Data Content
- Planning (logistics-specific only)

The SMEs team selected 27 process subcategories and 124 process attributes to evaluate for the Qualitative Process Assessment. This time, the core team identified lead workers for each process subcategory, and scheduled all interviews to be held in the individual's own work environment. This proved much more effective, as questions regarding "how do you..." could then be followed with "can you show me..."—eliminating any confusion over terminology, and often allowing the interviewee to print an example as a reference for the core team debrief. A tour of one DC facility in New Century, Kansas was also included, again, with discussion on the differences that would be found in other DCs. Over 90 people were interviewed, and the total project duration was eight weeks.

For the Quantitative Benchmarking phase, a total of 45 measures were selected. The initial consensus selection process by the subject matter expert team resulted in the selection of 20 measures. In general, measures should be constrained to the minimum number needed to manage the business on an ongoing basis. These 20 measures were focused not only on understanding the current situation, but also as key performance indicators (KPIs) for continued measurement and management. The augmentation was requested by the governance committee as a one-time check, resulting in the higher total. Companies should always be selective in determining their metrics to assure that the cost of measurement does not exceed the benefits gained from the measurement exercise. EMBARQ™ Logistics data was gathered by team members and the industry benchmark information was obtained from APQC and the Warehousing Education and Research Council

(WERC). In addition to the standard sampling, business profile and industry breakdowns were also acquired to make closer comparisons.

## ASSESSMENT FINDINGS

The 2007 ratings were presented side-by-side with 2004 ratings as a point of reference. This technique demonstrated the improvements in process that had occurred in the interval between the two assessments. For reference, the following details the overall impact.

- Approximately half of the process attributes rated in 2004 received the same score in 2007. In almost all cases, those areas were rated in an acceptable range and no initiatives had been undertaken to improve them. The visibility, however, ensured that they did not slip.
- 12% of the attributes were scored less than one point lower, and 9% more than one point lower
  - In most cases, this was the result of a more exhaustive examination in 2007, with the interviews conducted with the worker (rather than the managers) in their workplace, and following up initial questions with “can you show me” versus merely accepting general, affirmative answers such as “yes, we do that.”
- 6% of the attributes were scored less than one point higher, and 23% more than one point higher
  - In 50% of the cases, the increases were in the Deliver process, which includes the core processes of distribution operations.

Overall, significant improvements were found in the areas of purchasing function effectiveness, receiving, and inspection. In the interim, EMBARQ™ Logistics had also implemented a labor management system (LMS) across all distribution centers, and tied it into the warehouse management system (WMS). The “pay-for-performance” shop floor measures were tied into the LMS, and found to be best-in-class. Measures taken from those systems showed that these initiatives were already contributing to increased organizational alignment and focus.

**Figure 5: Example of Assessment Results**

		RATING	
		2007	2004
<b>4.0 DELIVER</b>			
<b>4.1 ORDER MANAGEMENT</b>			
4.1.1	Order Receipt and Entry	5.0	4.5
4.1.2	Order Validation	4.5	5.0
4.1.3	Order Confirmation	4.0	2.5
4.1.4	Order Processing	5.0	5.0
4.1.5	Transaction Monitoring	4.5	5.0
4.1.7	Implementation and Training of CSR's	5.0	5.0
<b>4.2 WAREHOUSING / FULFILLMENT</b>			
4.2.1	Receiving & Inspection	3.0	2.0
4.2.2	Material Handling	4.5	4.5
4.2.3	Slotting	4.0	3.0
4.2.4	Storage	4.0	3.0
4.2.5	Picking & Packing	4.5	4.5
4.2.6	Consolidation / Loading	4.5	4.5
4.2.7	Shipment Documentation	4.0	4.0
4.2.8	Warehouse Management System	4.5	4.5
<b>4.4 DELIVER INFRASTRUCTURE</b>			
4.4.1	Workload Scheduling and Balance	3.5	3.5
4.4.2	Physical Process Alignment	4.0	3.0
4.4.3	Operator Versatility	5.0	5.0
4.4.4	Workplace Design	4.0	4.0
4.4.5	Shop Floor Performance Measures	5.0	2.0
4.4.6	Organizational Alignment & Focus	5.0	1.5

A workshop with the core team helped review all assessment results in detail, and assured that the individual Process Attributes were rated correctly. Most ratings were accepted just as they were by the team, with only three to five ratings adjusted after additional clarification was obtained. For this assessment, the strategic and cost/performance impact ratings were discussed in detail by the core team, and then presented the next day to the subject matter expert (SME) steering committee.

The process attribute ratings and the impact ranking were validated in the workshop with the SME team. Using that information as a base, the team identified five key areas for improvement:

- Supplier Management
- Supply Chain Planning
- Technology
- Quality Management
- Measurement

For further clarification see Figure 7 on page 15.

**Figure 6: Examples of Excellent Performance and Opportunity.**

**EXAMPLES — EXCELLENT PERFORMANCE**

		EMBARQ LOGISTICS	SUGGESTED MINIMUM STANDARDS	TYPICAL BEST PRACTICES	RATING	
					2007	2004
<b>4.0 DELIVER</b>						
<b>4.1 ORDER MANAGEMENT</b>						
4.1.1	Order Receipt and Entry	<ul style="list-style-type: none"> <li>• Capability to receive and process Purchase Orders by phone, fax, e-mail and EDI</li> <li>• Orders entered into a single database for all operators at a given region and available in real time across the entire company</li> <li>• Use of EDI and/or web-enabled order management to allow remote order entry, order status updates, etc.</li> <li>• Product automatically priced accurately and/or verified at time of order entry including adjustments for customer and volume discounts</li> <li>• Linkage to POS systems for support of affiliate VMI programs</li> <li>• Outbound transportation options and pricing included at order shipment</li> </ul>	<ul style="list-style-type: none"> <li>• Capability to receive and process customer orders by phone, fax, e-mail and EDI</li> <li>• Orders entered into single database for all operators at a given region</li> <li>• Price list updated regularly for manual price confirmation</li> <li>• Web-based order entry for select trading partners</li> <li>• All pertinent dates and times include local zone or GMT flags for processing center, shipping and customer locations</li> </ul>	<ul style="list-style-type: none"> <li>• Product priced accurately at time of order entry, including adjustments for configurations</li> <li>• Use of EDI and/or web-enabled order management to allow remote order entry, configuration management, order status updates, etc.</li> <li>• Linkage to POS systems in the case of retailers to create releases as target inventory levels are met</li> <li>• Outbound transportation options and pricing included at order entry</li> </ul>	5.0	4.5
4.1.2	Order Validation	<ul style="list-style-type: none"> <li>• Automatic rules-based verification of price, unit of measure, multi-level credit checking (dollar limits, days sale outstanding) and customer/product restrictions</li> <li>• Ability to fulfill single orders from multiple locations as necessary to meet customer delivery requirements</li> <li>• Verification of customer eligibility to purchase specified SKU's, with customer/SKU lists maintained in common database</li> </ul>	<ul style="list-style-type: none"> <li>• Manual or automated verification of credit against predetermined levels, with credit levels maintained in common database</li> <li>• Manual or automated verification of orders against denied parties lists, export compliance</li> <li>• Verification of customer eligibility to purchase specified SKU's, with customer/SKU lists maintained in common database</li> <li>• Customer allocation based on predefined business rules</li> </ul>	<ul style="list-style-type: none"> <li>• Automatic rules-based verification of price, lead time, unit of measure, multi-level credit checking (dollar limits, days sales outstanding), customer/product restrictions and export compliance</li> <li>• Accurately quote a customer's request considering price breaks, multiple streams, surcharges and product availability</li> <li>• Ability to fulfill single orders from multiple locations as necessary to meet customer delivery requirement</li> </ul>	4.5	5.0
<b>4.4 DELIVER INFRASTRUCTURE</b>						
4.4.5	Shop Floor Performance Measures	<ul style="list-style-type: none"> <li>• Automation is implemented to record and track actual performance to standards</li> <li>• Visible performance measures published in the cell/shop floor</li> <li>• Shop floor employees use performance measures to identify and implement improvement opportunities on a proactive basis</li> </ul>	<ul style="list-style-type: none"> <li>• Visible performance measures published in the cell/shop floor with management triggering improvements</li> <li>• Some ownership of applicable measures</li> <li>• Action plans in place to correct deficiencies and improve performance with management triggering improvements</li> </ul>	<ul style="list-style-type: none"> <li>• Automation is implemented to record and track actual performance to standards</li> <li>• Shop floor employees use performance measures to identify and implement improvement opportunities on a proactive basis</li> </ul>	5.0	2.0

## EXAMPLES — OPPORTUNITY

		EMBARQ LOGISTICS	SUGGESTED MINIMUM STANDARDS	TYPICAL BEST PRACTICES	RATING	
					2007	2004
<b>1.0 PLAN</b>						
<b>1.1 SUPPLY CHAIN PLANNING</b>						
1.13	Sales & Operations Planning	<ul style="list-style-type: none"> <li>• Functions operate in isolation (“Silos”)</li> <li>• Informal cross functional interface to deal with problems as they arise</li> </ul>	<ul style="list-style-type: none"> <li>• Sales &amp; Operations Planning (S&amp;OP) cuts across discrete functions to bridge silos with representation from Marketing, Sales Operations and Finance</li> <li>• Formal monthly meetings are held to address business performance issues and link business strategy to operational capabilities</li> <li>• There is a coordinated functional approach to satisfying market requirements</li> <li>• A single number operational forecast agreed by consensus process drives all functional responses (financial forecast may be variation on operational forecast)</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly meetings link business strategy to detailed facilities and capabilities including review of sales forecast changes, pull ins and push outs, and effects on on-hand inventory and pipeline</li> <li>• Requirements are mapped against resources</li> <li>• New Product Introductions (NPI) are integral to the planning process</li> <li>• Product lifecycle is integral to the planning process with special attention to end-of-life (EOL)</li> <li>• Plans are compared and reconciled with goals and budgets (but not necessarily matched to them)</li> </ul>	1.5	N/A
<b>1.3 INVENTORY MANAGEMENT (physical aspect of managing inventory once it is planned)</b>						
1.3.1	Inventory Planning	<ul style="list-style-type: none"> <li>• Emergency orders, excess expediting and late deliveries</li> <li>• Stock levels are based on customer service requirements</li> <li>• Stock levels are set according to planned buffered analysis techniques and reviewed frequently against forecasts</li> <li>• Service levels are measured, and stock levels adjusted to compensate if necessary</li> <li>• Inventory performance is measured at the dollar (sales and profit) and unit levels</li> <li>• Excess and obsolete inventory is reviewed weekly at the part number level</li> <li>• Disposal and aftermarket techniques are implemented to deal with obsolescence, stale and damaged inventories</li> <li>• Inventory turns tracked for monthly review</li> </ul>	<ul style="list-style-type: none"> <li>• Stock levels are set according to planned buffered analysis techniques are reviewed frequently against forecasts</li> <li>• Stock levels are based on customer service requirements (e.g., ABC classifications and statistical safety stock setting rather than nominal weeks of supply)</li> <li>• Stock levels are reviewed frequently against forecasts</li> <li>• Service levels are measured, and stock levels adjusted to compensate if necessary</li> <li>• Service levels are set taking into account the costs and implications of stock outs</li> <li>• Inventory turns tracked for monthly review and adjustment</li> <li>• Obsolete inventory is reviewed regularly at the SKU level</li> <li>• All inventory decisions are made with full knowledge of relevant costs and associated risk</li> </ul>	<ul style="list-style-type: none"> <li>• Stock buffer management is part of integrated optimization of stock along the supply chain</li> <li>• Target stock levels are adjusted based on Pareto analysis of customers and products</li> <li>• 100% of total inventory is categorized (active, usable, excess, obsolete) for appropriate action</li> <li>• Inventory performance is measured at the dollar (sales and profit) and unit levels</li> <li>• Inventory targets/Days of Inventory goals are reviewed and adjusted weekly/monthly based on product lifecycle and ABC throughput</li> <li>• Excess &amp; obsolete inventory is reviewed regularly at the part number level</li> <li>• Disposal and aftermarket techniques are implemented to deal with obsolescence, stale and damaged inventories</li> </ul>	3.5	4.0

**Figure 7: Improvement and Focus Recommendations**

**WHERE SHOULD WE FOCUS?**

PROCESS	STRATEGIC IMPACT	COST/PERF IMPACT	PROCESS RATING	COMMENTS
<b>1.0 PLAN</b>				
1.1 Supply Chain Planning	●	●	3.0	Drives Inventory
1.2 Supply Demand Alignment	○	●	3.0	
1.3 Inventory Management	○	●	4.0	After Receipt
<b>2.0 SOURCE</b>				
2.1 Strategic Sourcing	●	●	4.0	
2.2 Supplier Management	●	●	2.5	Drives Inventory
2.3 Purchasing	◐	●	3.5	
2.4 Inbound Material Management	○	○	2.0	
<b>4.0 DELIVER</b>				
4.1 Order Management	●	●	4.5	
4.2 Warehousing/Fulfillment	◐	●	4.5	
4.4 Deliver Infrastructure	○	◐	4.5	
4.5 Transport	○	◐	4.5	
4.7 Managing Client/ Customer Partnerships	●	●	4.5	
4.8 Post Sales Technical Support	○	○	4.0	
4.9 Customer Data Management	○	●	4.5	
<b>5.0 RETURN</b>				
5.1 Receiving & Warehousing	○	○	4.5	
5.2 Transport	○	○	4.5	
5.3 Repair & Refurbishment	○	○	3.5	
5.4 Communicate	○	○	4.5	
5.5 Managing Customer Expectations	○	○	4.5	
<b>6.0 ENABLE</b>				
6.1 Strategy & Leadership	●	●	4.0	
6.3 Product/Service Innovation	◐	◐	3.0	
6.4 Product/Service Data Management	○	●	3.0	
6.5 Process Viability & Control	◐	◐	3.5	
6.6 Measurement	◐	●	3.0	Key Enabler
6.7 Technology	●	●	3.5	Key Enabler
6.6 Business Management	●	●	4.0	
6.6 Quality Management	●	●	3.0	Drives Process

● High Impact

● Best

◐ Medium Impact

● Common

○ Low Impact

● Poor

ful consideration, the SME team determined that the supply chain planning process needed to be as good as it could be, the quality management process could be between minimum standard and best practice, and the other three areas should be nearly best practice. The specific elements of best practice were considered, with certain elements targeted as desirable for the business. Based on that decision, the SME team then followed the same process described in the 2004 assessment regarding additional discussion, brainstorming, and evaluation of alternatives for each area tagged for improvement, resulting in the identification of action items for recommendation to the EMBARQ™ Logistics management team:

- Supplier Management
  - Have functional experts connect with their supplier counterparts—not through account managers
  - Formalize the supplier quality evaluation process
- Supply Chain Planning
  - Involve the business in the planning process
  - Develop and implement a formal sales and operations planning (S&OP) process
- Technology
  - Consolidate systems and eliminate the use of independent databases
  - Enable total visibility from customer demand through fulfillment (glass pipeline)
- Quality Management
  - Drive (top down) a single quality approach across the entire company
  - Designate process ownership versus current functional responsibilities
- Measurement
  - Standardize and define measures
  - Reduce the manual effort needed to produce the results (automated data gathering)

The presentation to management was well received because the management team recognized the rigor behind the process, and accepted the team’s findings after very little discussion. The initiatives that required significant resources were included in the budget process for the coming year. The improvement areas that primarily required only process and communication changes have been broken down by the team for follow up by individual departments. These actions have been incorporated into departmental objectives for next year, and will be cascaded down into individual objectives for the appropriate managers.

## TAKEAWAYS

Between 2004 and 2007 EMBARQ™ Logistics made significant improvements in several of the areas identified through the 2004 assessment. In most cases, these improvements took place without significant investment in technology because the focus was on process and on improving specific areas of specific

**Figure 8: Process Attribute and Impact Rankings**

**WHERE DO WE NEED TO BE?**

PROCESS AREA	INADEQUATE	POOR	COMMON	GOOD	BEST PRACTICE
1.1 Supply Chain Planning			●	→	★
1.2 Supply Demand Alignment			●		
1.3 Inventory Management				●	
2.1 Strategic Sourcing				●	
2.2 Supplier Management			●	→	★
2.3 Purchasing				●	
2.4 Inbound Material Management		●			
4.1 Order Management					●
4.2 Warehousing/Fulfillment					●
4.4 Deliver Infrastructure					●
4.5 Transport					●
4.7 Managing Client/Customer Partnerships					●
4.8 Post Sales Technical Support				●	
4.9 Customer Data Management					●
5.1 Receiving and Warehousing					●
5.2 Transport					●
5.3 Repair and Refurbishment				●	
5.4 Communicate					●
5.5 Manage Customer Expectations					●
6.1 Strategy and Leadership				●	
6.3 Product/Service Innovation			●		
6.4 Product/Service Data Management			●		
6.5 Process Viability and Control				●	
6.6 Measurement			●	→	★
6.7 Technology				●	→
6.8 Business Management				●	
6.9 Quality Management			●	→	★

processes. In some cases, this went down to the level of detail found in the bullet points in the *Standards*.

Improvements in some areas of planning and supplier management were limited by the enterprise resource planning (ERP) system, and by decisions to not invest in those systems until the merger (and later, the spin-off) was completed. The decision not to invest in systems can occur for many different reasons—the EMBARQ™ Logistics case has shown that companies can still make valuable improvements under the stringent conditions of a merger and spin-off. However, the team is looking forward to upgrades in the future to help address some of the areas in which it has not yet been able to invest. The assessments have enabled the company to make detailed decisions regarding specific requirements for upgrades and the process changes it wanted implemented—once the technology to support those changes is available. By doing the process work first, the team may be able to avoid many of the problems that typically plague ERP implementations.

The methodology for assessment is now well understood by individuals within the working groups, and repetition of the assessment on a regular basis will help keep EMBARQ™ Logistics on track toward its goals. It will also give those responsible for business development a series of progress reports to share with current and potential customers. EMBARQ™ Logistics plans to repeat the assessment approximately every three years to assure it is on the right path and continuing to make progress in its quest to become a top quartile performer across the entire enterprise.

**CONCLUSION**

A company-wide assessment is definitely not as simple as hooking up a diagnostic computer to your engine, but that's because your company is far more complicated than the finest racing engine on the Grand Prix circuit. In some ways, improving your processes is like tuning your engine by listening to the changes in the sound as fine adjustments are made to the fuel system. The added complication is that it's done while the engine is running at full speed...in the middle of the race.

This daunting task can only be made possible by gaining a complete understanding of the characteristics of success and having a clear, concise vision for where the company wants to be. The *Standards* provide the basis for that understanding, and familiarity with their content and the methodology of their use will help equip you to successfully guide your company to that next level.

**IMPROVEMENT IN PERFORMANCE MEASURES IS  
DRIVEN BY IMPLEMENTING IMPROVED PROCESSES**



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