Creating Lean And Effective Rail Organizations

*MOTL* spoke with Allan Kaulbach and Gilles Roucolle, partners in Mercer Management Consulting’s Lean Organization and Transportation practices, about the organizational impacts of capacity constraints currently plaguing the North American rail freight industry.

**MOTL:** With the railroad industry rebounding strongly over the last couple of years, why should organizational change be on management’s agenda now?

**Allan:** Without doubt, the industry had a very strong 2004—reporting increased traffic levels and higher revenues (Exhibit 1). In fact, several railroads had what could be described as a “spectacular” year—yields up significantly for the first time in memory and profit margins that many thought unachievable five years ago. Clearly, the standout performers deserve a lot of credit for their planning and execution. But I believe most railroad executives would agree that these results were boosted by external factors, including rebounding traffic, high fuel prices that impacted competitors far more than railroads, and motor carrier capacity constraints.

It is this situation that makes a review of organizational effectiveness options so timely. With traffic strong, railroads have the flexibility to assess options that management may not choose to review when traffic is light. Additionally, “good times” present the ideal opportunity to put organizational structures and processes in place that will retain key customers during slower times.

**Exhibit 1  US Class I Railroad Performance**

(percent change 2003-2004)

![Bar chart showing US Class I Railroad Performance](image)

**MOTL:** Aren’t railroads already “lean”? Hasn’t there already been a great deal of cost-cutting in this sector?

**Gilles:** North American railroads have downsized, de-layered, and increased spans of control; they’ve built “skinnier” organizations. But this hasn’t necessarily resulted in improved effectiveness—with a few exceptions, railroads are struggling to meet current traffic demands, as evidenced by slower train speeds (Exhibit 2), increased dwell time at terminals, and increased operating...
expenses. The potential of further growth raises a range of questions. Should they add heads? Invest more capital?

**MOTL:** What do you mean when you say railroads are not necessarily effective?

**Gilles:** Let me give you some data. In a recent meeting, a senior executive of a major rail shipper told us that “we used to expect 95 percent service reliability [from one major railroad]. Recently, reliability is only a small fraction of that. We don’t have any choice but to explore alternatives.” This is only one anecdote, but the railroad’s own statistics show that service performance has deteriorated across the board.

Furthermore, while 2004 was a very good year financially for most Class I railroads, the operating margins of the three largest North American railroads ranged between 10 percent and just over 15 percent, with an average return on equity (ROE) of only 7 percent. The three next-largest railroads had operating margins of between 18 and 33 percent, but even these companies had an average ROE of just 12 percent. If in a good year you can’t serve your customers well and earn your cost of capital, how do you expect to survive over time? To me, these results describe organizations that while lean simply aren’t effective yet.

**MOTL:** So why aren’t these organizations effective?

**Allan:** There are two main reasons, and both have to do with the complexity of running “network-based” businesses, such as airlines, rail, and telecommunications services, all of which are extremely hard to optimize.

The first reason has to do with how most network businesses are run day-to-day. Many companies in these industries create very strong functional silos—operations, engineering, marketing, sales, finance, and so on. Starting top-down, they develop plans and set targets for each department. Within each function, they then define tactics to achieve these targets. When problems occur, issues and solutions are presented up the chain and solved in senior executive committees rather than closer to the customer.

**Exhibit 2 “Big Four” Indexed Average Train Speeds**

(1Q04 = 100)

Source: NITL Notice, February 4, 2005; Mercer analysis.
Note: Average train speeds for BNSF, CSX, UP, and NS weighted by 2003 train-miles.
In a low-growth environment, this top-down approach can work fine. However, in high-growth periods, when lots of changes happen every day, such tactics are unable to respond rapidly and flexibly enough to the market. Tradeoffs to meet the most important customer needs and decisions about how and where to reallocate capacity must be made in real time. This requires a group of decision-makers at the working level; that is, people from multiple departments who cut across functional silos to work together every day. In short, effectiveness requires operating key processes day-to-day across the various functions of the organization.

**MOTL:** Can you give us some specifics on how decisions would be different and how they would impact customers while improving railroad economics?

**Gilles:** Take for example the railroad capacity management process in a capacity-constrained environment. The goal is to maximize the economic value of each departing train based on the demand pattern and market characteristics. A “siloed” railroad would use a sequential process to determine a largely static operating plan, relying on a traffic forecast prepared by marketing, a train operating plan developed by operations based on the traffic forecast, and freight allocation to trains made on a first in-first out basis, based on sales and car orders received by the customer center. There is no reason to expect that this “take it as it comes” approach will maximize margins—low-yield traffic bumps higher-yield traffic, while network imbalances in traffic flows create congestion-related costs and suboptimal asset use.

In a cross-functionally capable railroad, a joint marketing and operations team would prepare a multi-week plan based on the car orders received and the standard train plan; the team would develop capacity usage and economic models to understand the relative attractiveness of each carload and train; finally, they would prioritize moves and trains based on the relative economic value of each option, including investments made by customers as partners in the business. By operating in a more integrated, near real-time way—in some ways comparable to the airlines’ yield management process—resulting operating margins would be higher.

**MOTL:** So a day-to-day focus on key operating processes across functions is important. You said there were two reasons why organizations aren’t effective. What is the second?

**Allan:** The second also has to do with cross-functional integration—not day-to-day, but in terms of getting the right people and information together across key functions in the organization, to determine how to simplify the business in order to make the most money. Simplifying the business is imperative to building an effective organization because, to put it bluntly, a simple business requires fewer people.

Let’s start with planning. What most network businesses don’t do is “simultaneous planning” involving all the key functions. Typically, the marketing people decide whom they want to serve. They do profitability analyses using average cost information on what it takes to serve customers. They give demand and volume estimates to the operations function so that they can decide what assets are needed. The operations people argue with the finance people about
what they can afford and so on. The result is a sub-optimal plan that will keep a large complex organization in place—and far from effective.

**MOTL:** Can you give us an example of this kind of planning, maybe from another industry?

**Allan:** Mercer has done a lot of work with telecommunications service providers, which like many capital-intensive businesses have struggled with capacity issues. They created sophisticated 10-year demand models to help them forecast likely call volumes between locations and capital planning models to help them decide how much capacity to build and when. But what they didn’t do was de-average demand for different customers to understand the operational requirements and costs of serving each of those customers across all the functions of the business. While their forecasts were correct overall, some of their customers were highly profitable and had high volumes, while some were incredibly unprofitable—largely because they created a lot of extra operational complexity and were expensive to serve. In one project we did, just over 20 percent of the customers drove 140 percent of the profit—an extreme variation of the “80/20” rule.

In the airline industry, Southwest has shown how getting the right business model means understanding what it costs to serve customers across all the functions of the business to create both a lean AND effectively sized organization. By serving customers who will fly out of low-cost, second-tier airports where it can turn aircraft quickly, Southwest has avoided creating operationally complex and expensive hub operations that require a lot of employees. If you are a legacy carrier with hubs serving certain customers, you can’t cut enough employees to match Southwest’s model. Complexity means both more employees as well as more assets, making it harder to earn a solid return on capital.

Simplification has another striking benefit—one directly linked to the first issue of running the business day to day. I am not aware of any network business that doesn’t have daily “disturbances” that fall outside of the plan—weather delays, equipment malfunctions. But a miraculous thing can happen when frontline employees work within a simplified plan environment. When the entire team understands exactly what needs to be done when, and by whom, they can make the adjustments in the local operation necessary to get back on plan. It’s impressive that Southwest plans to turn its planes in 30 minutes. It’s even more impressive that their frontline employees are empowered to make the customer-transparent work revisions that can maintain that turn time even when confronted with delay-creating conditions.

**MOTL:** If you had the opportunity to create a railroad organization on a blank sheet of paper, what would you do to address operational complexity and excess cost?

**Allan:** I would take five key steps:

1. Better understand customer demand and the operational requirements of different customers. Marketing would work jointly with finance, operations, customer service, and other functions to develop a true picture of firm economics.
2. Decide whom to serve, how to serve them, and what capacity is required. The customer understanding developed in the first step is the foundation for developing the combined commercial, operating, and asset strategy of the firm.

3. Establish cross-functional teams to translate strategy into tactical actions and to manage key processes in the business. Effective organizations know how to cut across organizational silos to manage key processes on an ongoing basis. For railroads, capacity management is just one example of a process that needs to be managed across functions on a regular basis.

4. Right-size each function to serve profitable customers. You wouldn’t need as many operations people or customer service reps to serve only your targeted customers.

5. Establish clear accountabilities, roles, and authorities from top to bottom and across the organization. When employees understand the company’s direction, objectives, and plan, they are far more effective at setting priorities and making appropriate decisions. And by being clear on accountabilities across functions, they can work effectively on key processes.

MOTL: What suggestions do you have for how railroads and other transportation companies should begin the process of becoming organizationally effective?

Gilles: Obviously, this depends on each company’s starting point. Most have downsized and de-layered. But few are likely to be willing or able to fully embark on the “blank sheet of paper” process we just discussed. If they haven’t done so already, the next step we would suggest is for senior executives to identify those three to five key operational processes that cut across the organization, and to place a lot of focus on managing these process teams. Executives need to make sure that the right managers are working effectively together to make real-time decisions that improve customer service while solving operations problems. I’d even suggest that executives think about creating “virtual organizations” out of these teams—maybe focused around critical customers—with commercial, operations, customer service, and finance people working together to optimize the service and economics for key customers.

Putting these teams in place can as a first step provide a more integrated picture of customers and the operational complexity they create. These teams can help with planning to determine whom to serve, which customers to work with to reduce complexity, and which customers are probably not worth keeping. These teams are likely to need some analytical support, but they can play a critical role in planning and then implementation.

MOTL: Anything else?

Allan: If railroads were able to simultaneously plan across functions, actively identify their most profitable customers, and provide those customers with responsive operations and service requirements, they could begin to shift their overall business model over time. This could influence day-to-day decisions—choosing which customers get priority, whether to raise prices for certain customers, or how to work with customers to provide service levels commensurate with the price they are willing to pay.
Now is the time for companies to explore how a more effective, cross-functional organization can improve financial performance. It is easier and less risky to change from a position of strength—when demand exceeds supply. With the North American transport industry at capacity, near-term pricing will remain firm enough to allow for considerable organizational change without a major revenue impact. Waiting for the next cyclical downturn makes no sense. Then, even railroads with clarity of vision about what to do will be unable to move forward, because they won’t have the resources to make significant changes.

**Six Sigma as a “Lean” Tool: Does It Work?**

By Philip Toy

Six Sigma can be considered a component of “lean” thinking in that it seeks to reduce waste and complexity. The vision of Six Sigma is to develop process discipline and capabilities to continually push toward the ultimate goal of “zero defects.” Drivers of Six Sigma include delivering on the quality of attributes most important to the customer, designing to meet customer needs and process capability, and ensuring consistent, predictable processes to improve customer satisfaction.

Six Sigma officially started with GE and Motorola in North America, and has been adopted by Bombardier, CSX, Ford and many other large corporations. Black Belt process experts are now common in the work environment, bringing with them the promise of process excellence, compliance with customer requirements, reduced costs, and ultimately greater profits.

But in the end, does it work? An informal survey of firms that have launched Six Sigma and other process-oriented “lean” programs suggest that the results are decidedly mixed. There have been some successes, but an equal or greater number of firms have not achieved leadership performance as an outcome. For example, Ford introduced Six Sigma in 2000, but has since seen its overall product quality performance ranking actually slip relative to competitors, from the top half of the industry in 1998 to the bottom third in 2004 (according to the J.D. Power Initial Quality Survey).

**What Can Go Wrong**

Mercer believes that Six Sigma is a useful approach for process improvement and waste elimination. When it fails, the root causes are not usually a matter of the underlying concepts and methodologies, but a combination of the wrong focus and a lack of management sponsorship.

1. Focus on the wrong customer value drivers: By definition, Six Sigma focuses on delivering value to the customer. But many companies target customers and market segments without a full understanding of what their customers truly value most, or what it will take to deliver that value to them. A better approach, as discussed in the accompanying article, is to develop a detailed understanding of operational requirements by type of customer, and the true economics of serving each customer segment. Then, customer value drivers become clear, and choices can be made to develop “lean” processes focused on key customer segments.

2. Lack of executive ownership: Often, companies latch onto the concept of Six Sigma or other “lean” programs as a panacea for performance woes. The CEO hears about Six Sigma and it sounds like something that a leading company ought to do. The program is launched with much fanfare, but in six months, when the business results are no different, the program is quietly dropped or replaced by the next “flavor of the month.”

   The CEO who takes this approach has missed the point. “Lean” should be a corporate philosophy and a transformational program. When properly rolled out, lean techniques should infuse every business process in the enterprise. Lean transformation is a continual process, which is why it is essential to align
performance measures, rewards, and communication strategies to the objectives of a Six Sigma or similar “lean” program.

3. Lean tools versus lean transformation: Another common misconception about Six Sigma is that once employees are trained in the tools and processes (i.e., “Black Belts”), they will simply apply them in their daily work. Our experience is that trained resources need to be assigned to work on the biggest issues of the business, and managed through an overall transformation program. For example, if you are Motorola and you are losing out to the more innovative Nokia, Six Sigma should focus on improving the new product development process and not just on achieving operational efficiency.

4. Too much focus on process, not enough focus on results: Six Sigma and “lean” are approaches which should generate substantial results and measurable return on investment. Yet, too often, the Six Sigma methodology itself can become the primary goal, and this focus is frequently reflected in a bias to measure activity (e.g., number of Six Sigma events) over business results.

How to Make it Right

Six Sigma and lean techniques are valuable as part of an overall lean transformation, but the recipe involves more than just deploying process improvement techniques. Transformation involves changing behaviors and culture as well, which by definition is challenging. Mercer has identified five key success factors that can be applied to help a company succeed in its lean transformation journey, as shown in Exhibit 3.

Exhibit 3  Six Sigma/Lean Transformation Success Factors

<table>
<thead>
<tr>
<th>Success Factor</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Focus on Key Customer Value Drivers</strong></td>
<td>• Develop detailed understanding of requirements by type of customer</td>
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<td></td>
<td>• Lean initiatives focused on key value drivers for priority customers</td>
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<td></td>
<td>• Impact on customer value quantified and measured</td>
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<tr>
<td><strong>Top-Down Commitment</strong></td>
<td>• Transformation program, versus tools/techniques program</td>
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<td></td>
<td>• CEO sponsorship of the lean transformation</td>
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<td></td>
<td>• Executive-driven communication strategy</td>
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<td><strong>Stakeholder Involvement</strong></td>
<td>• Training throughout the organization, from executives to working staff</td>
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<td></td>
<td>• Trained experts reside within business units and assigned to priority projects</td>
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<td></td>
<td>• Line management accountability for results</td>
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<tr>
<td><strong>Deploy the Right Enablers</strong></td>
<td>• Right tools applied to the right issues</td>
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<td></td>
<td>• Not a blind application of every lean or Six Sigma technique in the toolkit</td>
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<td></td>
<td>• Align performance measures, rewards with desired behaviors</td>
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<tr>
<td><strong>Monitor and Drive Results</strong></td>
<td>• Regular monitoring and reporting of lean initiatives and business impact</td>
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<tr>
<td></td>
<td>• Individual incentives for performance...and consequences for non-performance</td>
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<tr>
<td></td>
<td>• Publicly recognize and celebrate success to sustain momentum</td>
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