

Lean6sigma:
Accelerating
Performance
Improvement

*A Human Capital Associates
White Paper
January 2003*



HUMAN CAPITAL ASSOCIATES

Lean6sigma: Accelerating Performance Improvement

	Page
Meeting The Challenge To Improve Performance.....	1
Lean6sigma Process Overview	1
Lean6sigma: The Marriage of Lean and Six Sigma.....	2
Sigma Level.....	3
Lean6sigma Results	4
Implementing Lean6sigma	4
The Baseline Process	5
After Baseline: Enterprise Roll Out.....	7
Is Lean6sigma Right for Your Organization?.....	8
About Human Capital Associates.....	9

Lean6sigma: Accelerating Performance Improvement

MEETING THE CHALLENGE TO IMPROVE PERFORMANCE

Thank you for your interest in lean6sigma. A dynamic merger of Lean and Six Sigma methods, lean6sigma provides the next generation of leadership tools and techniques to deliver accelerated change and dramatic performance improvement. Lean6sigma principles work equally well in manufacturing and transactional environments and are not constrained by the type of business, product or service. Typical improvements our clients have experienced include 70%+ reductions in cycle time, inventory and costs, and 200%+ ROI within 18 months.

We are pleased to present the lean6sigma process – what it is and how it works – and hope you find this overview of lean6sigma interesting and informative. We look forward to sharing ideas with you and discussing how lean6sigma can help you achieve your business goals.

Lean6sigma Process Overview

What exactly is “lean6sigma?” A blend of two business methods, Lean and Six Sigma, lean6sigma is more than the sum of its parts. Lean6sigma integrates two of the most powerful improvement techniques available today and provides an implementation framework that ensures results and quick payback. Strategically deployed, lean6sigma has proven to be a powerful management system that focuses on your customers, improves enterprise performance and dramatically enhances financial results. First, some background about the origins of lean6sigma.

Lean is a business method first described by James Womack in *The Machine that Changed the World*, the 1990 best-seller that documented world-class automotive manufacturing techniques. In that book, and in his follow-up text, *Lean Thinking*, Womack coined the terms “Lean Manufacturing” and “Lean Enterprise” to describe businesses designed around the economic value streams that provide products and services to customers. The lean enterprise seeks to understand what the customer will pay for, and perfects those products and services while relentlessly eliminating any operation, process or step that does not contribute to the ultimate value proposition. As a point of reference, Womack’s research – and our own experience –

indicate that most businesses today are ill-equipped to define and deliver value and spend little time actually doing so. They are extraordinarily busy, but on what? Surprisingly, few companies spend more than 5% of their time in activities that actually deliver value to their customers. As much as 95% of time is engaged in non value-added activities. The goal of Lean is to reverse that dynamic.

The bottom line of Lean is simpler processes that deliver or support customer value. “Better, faster and lower cost” processes make products that are easier to design, control and deliver. Complexity in all its forms is undesirable in the Lean Enterprise, and Lean practitioners search doggedly for ways to simplify, simplify, simplify.

The bottom line of Lean is simpler processes that deliver or support customer value.

The bottom line of Six Sigma is that by identifying and controlling variation in your process or products, you can deliver more predictable and reliable products.

Six Sigma is an improvement methodology developed by Motorola, Texas Instruments, IBM and other manufacturing firms in the mid-1980s. They discovered that to survive globally in highly competitive markets, they needed to dramatically improve their product quality and lower costs. Motorola perfected the Six Sigma method to do exactly that.

The Six Sigma method describes how much a process or its outcome vary from specification. Variation is undesirable since it results in unpredictable quality, reliability and usefulness, all of which lead to rework, repair, scrap and failure in the hands of customers. The Six Sigma method measures and controls variation. We use “six” sigma because that is the level of variation control that ensures practically error-free products and services.

The bottom line of Six Sigma is that by identifying and controlling variation in your process or products, you can deliver more predictable and reliable products. If you identify and control or remove variation you can accelerate “better, faster and lower cost.”

Lean6sigma: The Marriage of Lean and Six Sigma

In our experience, from the inside as employees, and from the outside as consultants, neither Lean nor Six Sigma alone meet the full business challenge. Lean attacks complexity; Six Sigma attacks variation. You must do both. Deployed simultaneously, Lean focuses your value stream, while Six Sigma reduces its variation. Lean6sigma is the method that integrates and deploys that synergy.

Lean6sigma is based on five principles:

1. Look at your business through the eyes of your customer, and focus on value streams. Customers pay for value – as they define it. Focus your efforts there.
2. Reduce value stream waste (Lean) and variation (Six Sigma). This ensures reliable, consistent products and processes.
3. Make value flow at the pull of the customer. This keeps costs low and agility high.
4. Involve, align and empower employees. Use powerful problem-solving and decision-making tools and leadership techniques to tap into your employees’ skills and knowledge.

- Continuously improve knowledge and capability in pursuit of perfection.

Table 1 depicts the interaction of Lean and Six Sigma. If you reduce the number of parts in a product or steps in a process and increase the sigma level, yield (getting things right the first time) increases dramatically.

Complexity and variability – whether in manufacturing or transactions – make for poor first-pass yield. In other words, these two culprits result in mistakes and rework. Table 1 illustrates that a business process with only 20 steps operating at three sigma (3σ) will result in error-free results only 25% of the time! No wonder there is so much rework.

Operating at a high level of quality, with few steps, however, delivers error-free performance practically all the time. In fact, processes operating at six sigma (6σ) produce error-free results 99.99996% of the time - only 3.4 defects per million!

Table 1: Relationship Between Lean and Six Sigma Overall Yield vs. Sigma
(Distribution Shifted $+1.5\sigma$)

# Parts (Steps)	Sigma Level			
	$\pm 3\sigma$	$\pm 4\sigma$	$\pm 5\sigma$	$\pm 6\sigma$
1	93.32%	99.379%	99.9767%	99.99996%
7	61.63%	95.733%	99.839%	99.9976%
10	50.08%	93.96%	99.768%	99.9966%
20	25.08%	88.29%	99.536%	99.9932%
40	6.29%	77.94%	99.074%	99.9864%
60	1.58%	68.81%	98.614%	99.9796%
80	0.40%	60.75%	98.156%	99.9728%
100	0.10%	53.64%	97.70%	99.966%
150		39.38%	96.61%	99.949%
200		28.77%	95.45%	99.932%
300		15.43%	93.26%	99.898%
400		8.28%	91.11%	99.864%
500		4.44%	89.02%	99.830%
600		2.38%	86.97%	99.796%
700		1.28%	84.97%	99.762%
800		0.69%	83.02%	99.729%
900		0.37%	81.11%	99.695%
1000		0.29%	79.24%	99.661%
1200		0.06%	75.88%	99.593%
3000			50.15%	98.985%
17000			1.91%	94.384%
38000			0.01%	87.880%
70000				78.820%
150000				60.000%

To fully realize your improvement potential you need to simplify processes and reduce variation. Lean6sigma provides the structure, methods and measures to help you achieve “right first time” in your products, processes, paperwork, systems and structures.

Lean6sigma Results

Theory is nice, but results are the name of the game. What should you expect if you implement lean6sigma? Here are some examples from our experience that illustrate what you can expect:

- 200%+ return on investment within 12 months for an aerospace firm.
- 74% cycle time reduction in a pharmaceutical critical value stream.
- 75% inventory reduction for a chemical manufacturer.
- 230% increase in manufacturing inventory accuracy.
- 81% reduction in analytical lab test procedure times.

Theory is nice, but results are the name of the game.

How about 200%+ return on investment within 12 months? Or 74% cycle time reduction? What about 75% inventory reduction?

These are but a few examples of the success possible with lean6sigma. The method works, and people quickly embrace it. Lean6sigma is an exciting, effective and fast-paced change tool that delivers accelerated results. A significant factor for the success of lean6sigma is how it's implemented.

Implementing Lean6sigma

The theory of lean6sigma is compelling and rational, but what about the results? How can you implement lean6sigma and be certain to realize the promise? Leadership, education and focus are keys.

We educate your leadership team in an intensive workshop that culminates in a lean6sigma deployment plan. During the workshop, our instructors—all world-class experts—teach your leadership team the fundamentals of Customer Focus, lean6sigma and Leading Change. Then we help you select the direction, set the objectives and choose the starting target, the Economic Value Stream where you'll deploy the process. You'll also pick the Experts – future enterprise leaders who can implement lean6sigma.

We provide management-level training that mirrors the leadership session and aligns the organization for implementation support. In our experience, most improvement initiatives fail due to poor integration with management and organization systems, lack of alignment and inadequate accountability for results. By coordinating company-wide management systems and staff with the direction set by the leadership team, you can ensure lean6sigma success and buy in.

Implementation is a blend of training and project work. We train your Experts while making your value streams work better, faster and at lower cost. Think of the value stream as a product line, but expand your thinking to include all the inputs, actions and outputs required to design, make and deliver a product or service to customers. In other words, the value stream is more than just the operations. It's everything that goes into supporting and sustaining the value proposition from one end of the enterprise to the other. Implementation begins with the first two weeks of Expert training. The Experts – sometimes called “Black Belts” – learn the lean6sigma fundamentals and how to apply them on a baseline workout, an in-depth analysis of a value stream.

Expert training is done in six sessions completed over six months, and linked directly to your lean6sigma deployment plan. The basic curriculum contains six modules and can be customized to meet special needs.

Module 1:	Lean6sigma Fundamentals
Module 2:	Value Stream Baseline
Module 3:	Value Stream Design and Implementation
Module 4:	Achieving Value Stream Flow
Module 5:	Stabilizing Flow, Achieving Pull
Module 6:	Optimizing the Value Stream

We transfer our lean6sigma methodology to you, enabling your organization to sustain continual improvement after our assignment is over. When fully trained, your experts can lead lean6sigma projects and propagate skills throughout the company.

The Baseline Process

Following Week 2 training, the experts conduct the baseline. The baseline defines the “as-is” of a current value stream and develops the plan to design and implement the “should-be” design. It gives you the opportunity to dissect a typical value stream, understand what’s working and what’s not working, decide on a plan of action that will correct deficiencies and, ultimately, transfer those best practices to other value streams in the enterprise.

The value stream you select should be one that is most representative of your business, one that is key to your success or one that is particularly problematic. The baseline is a cross-functional look at the business from the beginning of the value stream (customer intent) to the end (customer consumes product or service). Because our objective is to improve value delivery, we look at the entire value delivery process and ask, “does this add value?” about each and every element of it. With “better, faster, lower cost” as the goal, the baseline is designed to identify and quantify waste, then decide the plan of attack to remove waste and eliminate variation.

We limit the baseline analysis to one targeted baseline, and no more. Experience teaches that analyzing one representative value stream is key to success for several reasons:

- Baselineing is an intensive process. It is difficult to concentrate effort on multiple value streams. Focusing on one value stream is more productive, instead of diluting resources and effort over two or more value streams.
- Lessons learned from one value stream apply to most, if not all other value streams. Organizational policies, procedures, systems and structures tend to affect all value streams similarly. Findings apply broadly.
- We train experts while they conduct a baseline. It becomes confusing and unnecessarily challenging to introduce multiple value streams during the training process.

- Once the leadership team agrees on the representative value stream based on key criteria, the organization can rally behind the project and the leaders can more easily support it.

The baseline looks at the whole of a value stream. While it is easy to confuse the baseline with reengineering or other improvement activities, there is a significant and critical difference. The baseline looks at the composite business model, not just discreet process elements or departmental functions, to paint a holistic picture of enterprise functionality.

The baseline is conducted with six areas of focus; each designed to examine a particular slice of performance. The experts divide into six sub-teams and follow a defined method to paint a current picture of enterprise fitness. The six teams include:

- **Customer:** The Customer sub-team investigates customer and market issues to determine where and how the value stream is competitively positioned and if we are targeting the right customers with the right products. The Customer team looks at how the voice of the customer is integrated into the enterprise, and how responsive the enterprise is to that message.
- **Operations:** The Operations sub-team investigates the value stream in depth, and assesses how well it is aligned to deliver customer value with minimum waste and variation. The Operations sub-team answers the question of how the value stream works, how much time is spent on value- and non value-added activities.
- **Knowledge Systems:** The Knowledge Systems sub-group examines the intellectual capital of the enterprise. It looks at traditional areas such as strategy, design, engineering, operations planning and project management to discover disconnects and waste in these critical areas and to ensure they are aligned to support the value stream.
- **Organization:** The Organization sub-team examines the systems, reporting structures, policies and procedures that underlie enterprise behaviors. It pays particular attention to the human resource and cultural issues that define how the enterprise does things, and seeks to find improvement opportunities that address gaps.
- **Management Systems:** The Management Systems sub-team seeks improvement opportunities in all the systems that make up enterprise management work; strategy, information systems, performance review, accountability, rewards and recognition, communication, planning and employee involvement.
- **Financial:** The Financial sub-team focuses on the numbers. How does the enterprise perform, and what are the opportunities for increased revenue and profits? The Financial team looks not only at the financial outcomes, but also the finance and accounting systems, policies and procedures that drive enterprise behavior.

The baseline team integrates their sub-group findings into a comprehensive picture of the enterprise that illustrates the interactions and effects of the six sub-systems working together. This comprehensive cause-and-effect model

pinpoints the systemic changes required to implement enterprise-wide solutions that address the largest problems with the greatest payback potential. In short, the baseline team is tasked to prioritize and recommend the critical issues that, if resolved, would make the greatest change in “better, faster, lower cost” customer value delivery.

The Baseline event is equal parts methodology, tools and leadership. It spans seven to eight weeks, beginning with a focus on the fundamentals, illustrated by a baseline case study and preparation for data collection. Following the initial week of training, the teams spend three weeks collecting data and characterizing the value stream. During data collection, our consultants provide hands-on coaching and consulting support to ensure the teams stay on target.

The second training week is devoted to analysis and synthesis – making sense of the data collected and planning a recommended course of action. Following week two training, the teams resume the baseline analysis in earnest, culminating in a full week of collaborative discussion with site leaders that results in a final value stream improvement plan.

*The important fact here is that most clients experience break-even within 12 months and sustain significant improvements in the way they do business. Simply stated, lean6sigma becomes **the way** they do business.*

After Baseline: Enterprise Roll Out

The baseline project identifies and prioritizes a number of improvement opportunities. It provides a highly visible and powerful way to identify the potential for change and cement management support for it. Following the baseline, the leadership team commissions projects that are led by the experts who conducted the baseline work. The leaders challenge the status quo, remove barriers and obstacles, mentor experts, and ensure accountability for delivering results to the bottom line.

As teams realize success, cost savings are captured and brought to the table. This means that when a savings is realized, the found money must be deducted from the affected budget and put into the enterprise coffers. By taking this dramatic action, management illustrates the practical value of lean6sigma, and signals its determination to make significant, meaningful return on its lean6sigma investment.

Large clients are self-sufficient within 12 to 18 months, depending on the number of value streams addressed in the roll out. Smaller firms move more quickly. The important fact here is that most clients experience break-even within 12 months and sustain significant improvements in the way they do business. Simply stated, lean6sigma becomes **the way** they do business.

IS LEAN6SIGMA RIGHT FOR YOUR ORGANIZATION?

Many executives think, “Our business runs just fine. We don’t need to do anything differently.” Others scoff at the notion that their enterprise may be so inefficient: “Surely we spend more than 5% of our time adding value! We’re the industry leaders. Why change?”

We understand how this thinking develops. It is almost beyond belief that organizations are so ineffective and inefficient, yet our experience continues to reinforce that fact. Those who choose lean6sigma find rich rewards in looking at the world differently. In fact, many of our clients are the leaders in their respective industries, and came to lean6sigma after realizing their performance improvement had reached a plateau. They recognized that doing more of the same wasn’t cutting it, and that they needed a new way of looking at the business if they were going to get to the next level.

Lean6sigma is that way. It helps you look at your enterprise through the eyes of the customer. It forces you to ask about the value of every action in your enterprise and to evaluate its benefit against a stringent standard: are you creating value the customer will pay for? It combines Lean and Six Sigma to create a powerful method for making dramatic performance improvements. It focuses on the entire value stream, and it gives you a way to make decisions on where to invest in change that will pay dividends in customer loyalty, revenue and profits.

Lean6sigma helps you look at the entire economic value stream – all the operational and transactional processes and systems that are involved in delivering value to the customer. The objective of lean6sigma is to seek out and eliminate the waste and variation that stands in the way of delivering only the value that customers pay for. In the end, that’s all we want to do, with excellence.

Thank you for your interest in lean6sigma. We look forward to talking with you and sharing ideas.

ABOUT HUMAN CAPITAL ASSOCIATES

Human Capital Associates (HCA) has been helping businesses realize enterprise excellence for over a decade. To achieve the highest level of performance, HCA helps organizations become faster, leaner, more effective, and more efficient using a proven, powerful combination of Lean and Six Sigma—lean6sigmaSM. It's how we do it that makes the difference. Our unique 3CSM approach pinpoints *customer* value, creates an enabling *culture*, and builds on your organizational *capability* to accelerate business performance and achieve sustainable results. Our record speaks for itself—with documented client savings and revenue growth of over \$7.5B.

Colorado Springs

Atlanta

Robert Blaha	Charlie Johnson
719-590-1171	770-642-0052
rblaha@hca- YUYfg\jd"Wa	W\bgcb4 \W\YUYfg\jd"Wa

For more information about Human Capital Associates or to visit our Web site, navigate to www.hca-leadership.com.

© 2003 Human Capital Associates. No part of this document may be distributed, posted, or reproduced without the express written consent of Human Capital Associates.

Lean6sigma:
Accelerating Performance Improvement

A Human Capital Associates
White Paper
January 2003



HUMAN CAPITAL ASSOCIATES

Human Capital Associates
1155 Kelly Johnson Blvd., Suite 110
Colorado Springs, CO 80920
www.hca-leadership.com
719.590.1171

© 2003 Human Capital Associates
All rights reserved.