Six Sigma for the DoD

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Six Sigma. One does not have to look very hard to find this term popping up in various Department of Defense publications and presentations. Many people are certainly asking whether it's just another quality system; a fad that passed last century; the product of a business school MBA partnered with the likes of quality assurance, lean processes, statistical process control, ISO 9000, and worst of all, total quality management. The perception is that Six Sigma is for manufacturing companies or engineering processes—yet we do not manufacture products in the DoD. The reality is that Six Sigma is about making significant business process transformations. The real questions are whether Six Sigma can be employed effectively in the DoD and for what kinds of processes.

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Six Sigma has inherited stereotypes that have inhibited its use, specifically that it is a statistical process used primarily in manufacturing settings. Although Six Sigma is a logical data-driven process for improvement, the process can be used effectively in functional areas not typically considered in the DoD. For example, Six Sigma would help the DoD develop more efficient human resource functions and improve public relations, finance, budget, operations, customer service, information technology, project management, and much more. Business organizations do it all the time. If you manage a process or function, then you can profitably use Six Sigma.

At its most basic level, Six Sigma is a problem-solving technique. A commercial instructor for Six Sigma programs, SigMax Solutions, LLC <www.sigmaxsolutions.com>, describes Six Sigma as a philosophy, a metric, and a methodology. As a philosophy, it orients the workforce to focus on the issues that truly matter in support of the mission. As a metric, it supports objective, fact-based decision making. And as a methodology, it provides a strategy and a set of tools to help solve problems.

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Motorola pioneered the Six Sigma pathway in the mid-1980s and GE popularized its use in the 1990s. The value of using Six Sigma, well-established in business, has gained some acceptance in select areas within the DoD. Yet there remain many areas within the DoD that would benefit from Six Sigma use.

Symbol Technologies: Six Sigma in Action

Let us examine a recent business implementation of the process at Symbol Technologies, a New York-based manufacturer of mobile computers, wireless network infrastructure gear, advanced data capture devices, radio frequency identification (RFID) technologies, and management software. The use of Six Sigma by Symbol Technologies will highlight non-traditional business areas within the DoD where the process would be beneficial.

In February 2005, Symbol Technologies made a large commitment to ensure Six Sigma would work in their organization. By December of 2005, they had invested $1.2 million in training and resources; trained 62 senior-level Six Sigma practitioners ("black belts") and 37 mid-level ("green belts"); and initiated 72 projects. At the end of December 2005, the company had completed six projects and realized $2.2 million in savings. Minus the implementation costs, $1 million in process savings within a few months is impressive.

Why would Symbol—or any organization—undertake such an expenditure to develop a Six Sigma program and, in essence, transform to a Six Sigma culture? "Customer success, excellence, integrity, innovation, and commitment are part of the culture today at Symbol," says Art O'Donnell, senior vice president and general manager of Symbol's Global Services Division and chief quality officer. "We target Six Sigma performance in everything we do: cost structure, process improvement, speed and quality of execution."

In search of long-term positive results, Symbol implemented Six Sigma to maintain their competitive advantage and market leadership in mobile computing and ad-

vanced data capture. Those who are serious about winning know that once a process is improved or a breakthrough achieved, competitors (or adversaries) will design a new process or advancement and gain the advantage. Companies continue to improve and strive to make all operations better.

But What About DoD?

Symbol is an engineering and manufacturing company, so Six Sigma naturally makes sense in their business. Think of the countless improvements in consumer electronics and the large number of competitors that continuously release innovative products. But how would the process help a nonmanufacturing organization such as the DoD? In our line of work, think of the improvised explosive device cycle in Iraq, with its continuous loop of improvement. One side advances the effective use of explosives, how they are hidden, and how they are detonated; the other side increases its detection abilities and its protection from the devices. Military, just like businesses, must continue to refine, redesign, and improve to maintain a competitive advantage.

Let's examine nine of Symbol's 72 projects across several company divisions (shown in tabular form below) for insights to application in the military services. Clearly a few of the projects (like finance and marketing) would be considered atypical *areas* in which to use Six Sigma. Others are atypical *uses* for Six Sigma, like the product engineering project whose goal is to improve the process for applying software upgrades on hardware already sold and at a customer's location. The first supply chain project is to improve the process for managing inventory, and the second is a process to decrease errors in software coding. The sales project is to design a process that will help the sales team sell more products to a specific customer type. The other areas—information technology, finance, customer service, marketing, and human resources—are functional areas that do not come to mind when we think about re-engineering error-causing, costly processes. Yet Symbol is yielding benefits in these areas.

Owning Organization	Project	Projected Benefit
Product Engineering	Improve hardware and software license upgrade process	$3.8 million annual revenue cost avoidance
Supply Chain Operations	Improve forecast quality for large sales	Improved forecasts will allow shipping $10 million in additional product quarterly
Supply Chain Operations	Improve software coding process for specified products	Cost avoidance of $2 million in defects
Sales	Develop process to increase product sales to Original Equipment Manufacturers	Decreased time to assess sales opportunities; increased revenue from selling additional product to OEMs
Information Technology	Improve help desk customer support	Defects reduced to one-eighth of current level, decreasing costs and increasing customer satisfaction
Finance	Increase forecast accuracy for returns, credits, and debits	Increased revenue by $15 million annually through better revenue flow and inventory management
Customer Service	Increase repair depot turnaround times	$6.2 million in increased revenue
Central Marketing	Increase efficiency with integrated marketing activities	$180,000 annual savings and greater speed to deliver marketing products
Human Resources	Standardize relocation and commuting process	Decreased cost for the company and greater process transparency for associates

Symbol Six Sigma Projects, 2005

It's Not All About Statistics …

One of the strengths of the Six Sigma methodology is that it requires leaders to stop and think through the problem in detail. The Six Sigma tools are very useful in defining and understanding the problem. Before applying the first statistical tool to the first piece of data, you must know what problem you are trying to solve and the benefit you expect to derive. Conducting an effective problem "define," the first step in a Six Sigma project, will probably account for 50 percent of the effort spent on the project.

Understanding the potential benefits and "critical-to-quality factors" are part of the Define phase of Six Sigma. Truly understanding the problem is difficult. In approximately one out of four cases, once you clearly understand the problem, the answer will be obvious and no additional work necessary. The Six Sigma rule is this: If the answer is obvious, then stop and implement the solution.

But Data *are* Important

After the problem is defined, the Six Sigma process requires that you dig deep into data and use statistical tools to help identify and isolate root causes of the problem. Six Sigma tends to work well in commercial companies because they usually place great emphasis on measuring all aspects of the company's operations. This is especially true if they are a publicly traded company and are subject to numerous Security and Exchange Commission regulatory reporting requirements. Symbol is highly data-driven. Six Sigma practitioners at Symbol always look at numbers to measure what the business does, evaluate new sources of data, and look

for new ways to examine existing data. Traditional Six Sigma powerhouses such as Motorola or GE are even more rich with data. The DoD, by comparison, is data-poor. There are exceptions—such as maintenance or readiness rates in tactical units, aviation maintenance rates, depot repair rates, or supply depot transactions—but the inescapable fact is that, particularly in our business processes, most of DoD, is data-poor or absent of data.

Why DoD Needs Six Sigma

I recently made a trip to a Washington, D.C.-area Common Access Card (CAC) issuance facility to obtain an ID card. When I arrived at 1:00 p.m., employees were serving "customer" number 20. I pulled customer ticket number 80, and the facility was scheduled to close at 4:30 p.m. Three numbers were served in the 45 minutes I waited before deciding to leave. The waiting room overflowed while many other customers waited outside, with some sitting on the street curb. This is an example of a customer service process that the Six Sigma methodology would improve. Why were new patrons allowed to continue pulling service numbers when they could not possibly be served before closing? Why does the facility not have ample seating? Where was the customer service desk to answer questions? The CAC process itself is slow and could be improved. There are several projects here for a team of black belts. But defining the scope of the problem and variables that influence how long it takes to get an ID card would be a good start.

Using the example of the CAC, looking at the best case time required to process an ID card, provides data that can be used to figure out why "best service" didn't happen the day I was trying to obtain my card. We can calculate how quickly customer orders are filled. The current lack of good data does not prevent us from measuring and providing baseline metrics for our processes.

Consider, as another example, the Government Accountability Office report (GAO-05-882) that cited problems with DoD's processes for recording and reporting costs associated with the global war on terrorism. DoD misstated payroll costs by $2.1 billion. Operational costs were overstated by $1.8 billion, and 5 to 30 percent of costs were improperly categorized. GAO stated that the DoD cannot "reliably know how much the war is costing and details on how appropriated funds are being spent."

For a public corporation, a $3.9 billion misstatement of costs and significant errors with its Sarbanes-Oxley-mandated accounting system would start an SEC investigation that would probably result in the public firing of the CEO and CFO, and possibly criminal prosecution or fines against the company and its officers. But publicly traded companies are required to protect the interests of their investors. The area of cost accounting in the DoD would benefit greatly from a team of Six Sigma black belts to analyze root causes and develop a multi-generational plan to improve accountability. Six Sigma projects do not get better than this.

As a final example, it was estimated that there are more than 5,000 business systems within the DoD. With this many systems, it is almost certain that there is much duplication of data, effort, and resources. The obvious answer, one that is recognized and being addressed, is to collapse these to the minimum required to support the DoD mission. This would be another multi-generational black belt project to redesign the business process, establish useful and timely metrics, and then begin the consolidation that must happen if we are to conserve our valuable and dwindling financial resources.

Leadership Buys In

Key to Six Sigma project success and cultural transformation at Symbol is their committed leadership. From the CEO and senior vice presidents to directors and managers, it is understood that the success of the company depends on improving their performance and their products. Efforts to improve are everyone's business and goals.

The good news is that the current DoD leadership recognizes our lack of data-driven decision making and is taking positive steps to make DoD a fact-based, objective, decision-oriented organization. Identifying fixes to hard problems, saving large dollar amounts, and improving our processes are exactly the reasons to use Six Sigma. The need for data is a process improvement. Demanding more data will result in the ability to collect and measure more data, and will engage a loop of continuous improvement.

There are numerous areas within the DoD where Six Sigma tools and techniques should be implemented. Eliminating irritating customer service processes is good business; improving our warfighting and business support processes is vital; and saving billions of dollars in excess costs is financially and ethically imperative. While it may not be possible to implement Six Sigma throughout the DoD, it should be implemented as widely as possible, and taught in detail at appropriate DoD professional development schools. (Symbol black belt trainees received 104 hours of classroom instruction and countless hours of one-on-one mentoring sessions while working real company problems.)

The bottom line is that our need to continuously improve and refine is critical and pressing. Six Sigma offers us a highly effective and successful methodology and a means to use it in ways most of us never considered.

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