

# SIX SIGMA WAY AND SOFTRACK



## WHAT IS SIX SIGMA

Six Sigma is a roadmap to higher quality. In *The Six Sigma Way*, Peter S. Pande, Robert P. Neuman, and Roland R. Cavanagh define it as a comprehensive and flexible system for achieving, sustaining, and maximizing business success. Six Sigma is uniquely driven by close understanding of customer needs, disciplined use of facts, data, and statistical analysis, and diligent attention to managing, improving, and reinventing business processes.<sup>1</sup>

At the core of Six Sigma is a simple concept: the term “sigma” is taken from statistics and indicates how far a process deviates from perfection. The idea behind Six Sigma is that if you can measure how many defects (deviations) you have in a process, you can systematically figure out how to eliminate them to get as close to “zero defects” as possible.<sup>2</sup>

Sigma levels of performance are also often expressed in “Defects Per Million Opportunities” or “DPMO”—DPMO simply indicates how many errors would show up if an activity were to be repeated a million times. So, if your yield is 99.9997 and your DPMO is 3.4, your sigma is 6.0

## SIX SIGMA APPROACH

Six sigma approach can be used both in improve an existing process and creating a new process.

Six sigma improvement methodology for a a process or product is composed of five specific steps: Define, Measure, Analyze, Improve, and Control (DMAIC). At each stage, data is collected, analyzed, and acted on in a closed-loop system that leads to lasting, continuous improvement and better performance.

### **DMAIC :**

*Define:* identify and articulate the requirements for each process and how they need to be improved to meet customer expectations.

*Measure:* identify the data sources and additional information that are used to convey how the process works.

*Analyze:* examine each process in depth and in detail from a customer perspective to determine what’s causing the defects or deviations.

*Improve:* identify solutions to reduce or eliminate defects and deviations and develop a plan to implement them.

*Control:* modify existing processes and structures or implement new ones that can ensure that the improved process remains within an acceptable performance range.

**DFSS**-Design for Six sigma methodology, for a new process is composed of five specific steps: Define, Measure, Analyze, Design and Verify/Validate

*Define:* initiate, scope and plan the project (resources, constraints etc)

*Measure:* understand customer needs and specify the key quality measures as perceived by the customer; benchmark competitors and industry

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<sup>1</sup> Peter S. Pande, Robert P. Neuman, and Roland R. Cavanagh, *The Six Sigma Way: How G.E., Motorola, and Other Top Companies are Honing Their Performance*, Tata McGraw-Hill, 2002

<sup>2</sup> G.E. Brochure: *What is Six Sigma? The Roadmap to Customer Impact.*



*Analyze*: review the current process and map it to the desired process to meet the customer requirements

*Design*: develop a detailed design for the 'should-be' process

*Verify/ Validate*: test process and validate the performance against the key measures

## WHY IS IT IMPORTANT?

Six Sigma projects have resulted in tangible, often dramatic improvements in many different areas: cost reduction, productivity improvement, market growth, customer retention, cycle time reduction, and product and service quality. Examples of Six Sigma successes both large and small abound.

Here are three:

1. MOTOROLA: Remarkable 'turnaround' performance  
The 1980s were a harrowing time for Motorola. Overseas competition was eating away at its market share. Top company leaders agreed that the quality of their products was substandard. Existing quality programs had no effect and Six Sigma was introduced. In the decade between Six Sigma's beginning in 1987 and 1997, achievements included the following:
  - Five fold growth in sales, with a 20% increase in its annual profit
  - Cumulative savings of US\$14 billion
  - Stock price gains compounded to an annual rate of 21.3 percent
2. HONEYWELL: Business Transformation  
AlliedSignal (now Honeywell) began its Six Sigma activities in the early 1990s. Achievements include the following:
  - Annual savings of \$600 million after only a few years.
  - Reduced the amount of time required to design and certify new aircraft engines from 42 months to 33.
  - In 1998, the company recorded productivity increases of six per cent and record profit margins of 13 per cent.
3. G.E: Holistic development  
The most commonly cited and widely studied Six Sigma success story is G.E. Unhappy with the quality of the company's products, and armed with a simple yet powerful idea that each of G.E unit had to be No.1 or No.2 in its market, Chairman Jack Welch launched an aggressive Six Sigma program with considerable fervor.

As they were for Motorola and Honeywell, the results were dramatic and across varied businesses:

- *G.E.'s lighting unit* cut invoice defects and disputes with Wal-Mart (one of their biggest customers) by 98 per cent, speeding payment and improving productivity for both companies.
- Streamlined contract review processes at one of *G.E. Capital's* service businesses led to increased responsiveness and more completed deals for annual savings of \$1 million
- G.E Power systems registered annual savings of hundreds of thousand dollars just by addressing the burning needs of its utility customers identified through Six Sigma



- approach of process improvement.
- G.E. Capital Mortgage analyzed the processes at one of its best-performing branches and expanded them to its 42 other branches. This improved the rate of customers receiving a “live” G.E. employee from 76 to 99 per cent.

Other companies, including Black & Decker, Bombardier, Caterpillar, Dow Chemical, FedEx, Kodak, Sony, Toshiba, and many others have all implemented or are implementing Six Sigma projects of their own.

## SIX SIGMA APPROACH CAN BE APPLIED TO ANY INDUSTRY

Six Sigma has its roots in manufacturing, but its unprecedented success has led many to adopt its principles and apply them in other sectors.

The following examples are all drawn from *The Six Sigma Way: How G.E., Motorola, and Other Top Companies are Honing Their Performance*, McGraw-Hill, 2002.

### **At the post office:**

- 300,000 letters delivered—  
with 99 per cent accuracy = 3,000 misdeliveries  
with Six Sigma = 1 misdelivery

### **In the IT department:**

- 500,000 computer restarts—  
with 99 per cent reliability = 4,100 crashes  
with Six Sigma = less than 2

### **In Finance:**

- 500 years of month-end closings—  
with 99 per cent accuracy = 60 months not  
balanced with Six Sigma = 0.018 months  
not balanced

### **In Broadcasting:**

- For every week of TV broadcasting—  
with 99 % of airtime filled = 1.68 hours of dead  
air with Six Sigma = 1.8 seconds

## WHAT IS BUSINESS INTELLIGENCE?

Business intelligence is taking all the necessary corporate data about your business and turning it into meaningful understanding. BI creates the right kind of information base in bring about reliability into the planning process. BI can aggregate and consolidate disparate internal and external (third-party) data from different sources and applications into a central framework and creates a contextual collaborative platform within a department or an entire organization.

BI can be deployed at the department level to support a specific DMAIC Six Sigma project (for example: reporting and analyzing the deviations in an existing process), or enterprise wide to measure and manage an entire company’s performance with reference to a group of projects. Organizations can use BI to align operations with strategy and to measure performance against overall business goals.



## WHY SIX SIGMA NEEDS BUSINESS INTELLIGENCE

Six Sigma initiative takes place at three levels—thinking, doing and communicating. A Business intelligence solution, delivered as an enterprise portal, becomes the ideal platform for all the levels of a typical Six Sigma initiative. It provides a visual presentation layer for the wide variety of reports and statistics that a Six Sigma projects initiative requires, while offering an enterprise wide communication platform..

BI can help companies analyze cost of poor quality and track the costs of each business process or Six Sigma project. It can identify bottlenecks in supply chains, isolate specific defects in manufacturing, errors in accounting, and other “defects” that result out of the process execution.

(Note: Defect in Six Sigma parlance is anything that causes customer dissatisfaction)

## SIX SIGMA BUSINESS CHALLENGES

### COMMUNICATING KEY QUALITY MEASURES ACROSS THE ENTERPRISE

Six Sigma is a highly statistical and data-driven process where In a Six Sigma approach every business problem is first converted into a statistical problem. Hence Six Sigma is a highly statistical and data-driven process. The success of a Six Sigma project depends on employees’ ability to collect and analyse the volumes of data that even a small-scale project can create and then communicate that understanding to the rest of the team.

If a Six Sigma project is cross-functional, the sheer volume of cross tabs, spreadsheets, and other charts scattered across the business units can make some employees hesitant to undertake a project. Black belts/Green belts and six sigma associates need a way to communicate facts in a way that is easy-to-understand and that enables quick decision making.

### PROVIDING CURRENT AND ACCURATE INFORMATION

Early and quick Six Sigma wins in a particular department or a business unit can help build momentum for more projects in the future and set the pace for the acceptance for Six Sigma within the organization. Two main criteria for achieving these wins are having accurate information, and having it as soon as possible. This ensures that all the departments involved can agree on data sources, performance thresholds, defect definitions, and performance targets. There are two barriers: using data from different systems that collect data in different ways, and using data sets that are refreshed at different rates.

### ACHIEVING ENTERPRISE WIDE CONTEXTUAL COLLABORATION

Improving work practices within business processes requires collaboration in context while tapping into communities of practice as sources of best practices and innovation<sup>3</sup>. As a company becomes increasingly interconnected, one single defect can adversely affect performance in any number of areas. Finding the cause of this defect and eliminating it using a quality initiative like Six Sigma can mean having to look at several processes across various departments or business units. Individuals and teams need to understand their roles, their responsibilities, and the cross-functional impact of their decisions more clearly. This can be done more easily if all the members have information readily available and to share. This information also needs to be shared with a company’s external stakeholders.

## HOW SOFTRACK’S BI ADDRESSES THESE CHALLENGES

### COMMUNICATING KEY QUALITY MEASURES EASILY

Softrack’s enterprise BI portal has a unique browser based interface that displays the measures across all the Six Sigma projects in the organization through its dashboards and linked reports. Further, grouping of



projects is possible to allow cross-process measures consolidation. These digital dashboards can display performance information from every stage in a given process. Dashboards offer all the managers an instant, end to- end understanding of every aspect of their project. Black/Green Belts can identify and isolate defects and click through to conduct more in-depth analysis, and share this information with the rest of the team.

### **PROVIDING CURRENT AND ACCURATE INFORMATION**

Six Sigma projects can only move as quickly as data is collected, analyzed, and acted upon. And data is only valuable if it is current and if it helps users identify defects, warning signals, or downward trends early enough to stop them. As all data comes from a single data source, using Softrack, the entire team can receive key reports instantaneously. And everyone has a single version of the truth. This means everyone involved in the project is always looking at the most recent and same data. Alerts can be set against the measures against defects or deviations, the moment they slip above or below acceptable thresholds. Softrack has detailed defect analysis and trends. These features are available to all the members in the team. This speeds up the feedback loop, leading to more improvements, carried out more quickly, and more often.

### **ACHIEVING ENTERPRISE WIDE CONTEXTUAL COLLABORATION**

Contextual collaboration requires collaboration to be embedded into production applications across all the processes. Softrack provides just that. This enables Black/Green belts to see how defects in one process or production plant affect outcomes further down the line. This information resides in a central location in a single database and can be easily accessed through an intranet, or extended to partners and other stakeholders through a secure extranet. In this way, everyone involved in the Six Sigma project gains a greater understanding of how their roles fit into the bigger picture and how they can take direct action to reduce defects and take steps to improve the process.

Softrack is 100%browser based application, providing for easy access to external stakeholders without the need for additional software.

## **ADDITIONAL BENEFITS OF SOFTRACK'S BI IN A SIX SIGMA ENVIRONMENT**

### **ENABLING MANAGEMENT BY FACT**

Six Sigma places a strong emphasis on data and fact driven management. Despite the attention paid in recent years to measures, improved information systems, and knowledge management, many business decisions are still being based on feelings, opinions and assumptions. Other companies find that they are measuring the right things but don't have the closed-loop systems and technology in place to actually implement the improvements.

Six Sigma discipline clarifies the measures needed to gauge business performance; then it applies data and analysis to build an understanding of key variables and optimize results. In Six Sigma, data serves as the basis for every decision. Softrack *manages* all this data in a single database and ensures that the data collecting to guide them through the DMAIC stages is accurate, reliable, current, and complete. In addition if Softrack is already implemented, it provides excellent knowledge base which can be used in bench-marking or VOC or other Six Sigma related techniques.

### **SUPPORT DESIGN FOR SIX SIGMA INITIATIVES**

Six Sigma is now part of the DNA of G.E., Motorola, Honeywell, and many other companies. At G.E., this means that every new product or process is Designed for Six Sigma (DFSS) and follows a systematic methodology involving tools, training, and measurement that ensures that it can meet customer expectations and can be consistently produced or followed at Six Sigma quality levels.

Softrack's Business intelligence can draw data from any source to provide visibility into key business, financial, and supply chain processes. This ensures that Black/Green Belts/Champions have a complete,



end-to-end understanding of their operations. Any key business activity or element—response time, billing cycles, return rates, product output or quality, inventory turns, customer satisfaction, etc. can be easily tracked, analyzed, and reported on.

## **DATA ANALYSIS**

Executives are often forced to look at too many things, the wrong things, or the end results. This can obscure defects that happen earlier in a process. Executives and Six Sigma teams alike need to look at predictive, or leading, indicators that can tell ahead of time whether a specific goal will be achieved. Monitoring these predictive metrics prevents defects from being repeated or reaching the customer. Sometimes this requires companies to develop new or more sophisticated metrics. For example: the department responsible for monitoring customer: customer profile, purchase history, billing status, loyalty, retention, satisfaction by product or geographic region, return and repurchase rates, etc.

Business intelligence lets project leaders analyze each of these components and provide more detail to identify trends, errors, or defects that may otherwise go unnoticed. Softrack provides as-on date process performance that helps the teams to attack the problems/defects in the budding stage. Softrack also provides excellent feedback mechanisms like process centric surveys which can be used in analysis.

## **SIX SIGMA- AS A WAY OF LIFE**

Most often quality initiatives burst on the scene and die out quickly. As the organization becomes big, this problem becomes even big. To motivate teams and improve the units' performance, in line with the business goals is no easy task, specially with an approach like Six Sigma which is so data intensive.

Six Sigma is not an end itself but a relentless pursuit of quality. Softrack not only sets you on the path of Six Sigma but also help you sustain the momentum. In Softrack measures are an integral part of the architecture. Let it be planning or reporting the data collected is measures' oriented and process centric. So, to pinpoint a process for Six Sigma implementation, which is often, considered the most important step in a Six Sigma initiative. In addition features like surveys, baseline measures, as-on date performance etc. allow you to plan and track the projects right from Define stage in both DMAIC and DMADV projects.

## **Glossary**

**Baseline measures:** Data signifying the level of performance as it is/was operating at the initiation of an improvement project (prior to solutions)

**Black Belt:** A team leader, trained in the DMAIC process and facilitation skills, responsible for guiding an improvement project to completion.

**Cycle time:** All time used in a process; includes actual work and wait time

**Defect:** Any instance or occurrence where the product or service fails to meet customer requirements

**Effectiveness:** Measures relating to how well the process output(s) meet the needs of the customer

**Efficiency:** Measures related to the quantity of resources used in producing the output of a process

**Management-by-fact:** Decision making using criteria and facts; supporting "intuition" with data; tools used include process measurement, process management techniques, and rational decision-making tools.

**Measure:** A quantified evaluation of specific characteristics and/or level of performance based on observable data



Process improvement: Improvement approach focused on incremental changes/ solutions to eliminate or reduce defects, costs or cycle times; leaves basic design and assumptions intact.

SPC: Statistical Process Control

Sponsor or Champion: Person who represents team issues to the senior management; helps Black Belt and team overcome obstacles; acts as mentor for the Black Belt.

VOC: Voice Of the Customer: Data (complaints, surveys, comments, market research etc.) representing the views/needs of a company's customers; should be translated into measurable requirements for the process.

Yellow/Green Belt: A Yellow Belt typically has a basic knowledge of Six Sigma, but does not lead projects on their own, as does a Black Belt. A Yellow Belt participates as a core team member or subject matter expert (SME) on a project or projects.

*Vortex is an innovative technology company headquartered in Hyderabad, India. Conventionally a product development company, Vortex is now fast expanding its services arm.*

*Vortex currently operates in the business space of business performance management with offerings in the fields of business intelligence and enterprise project management.*

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