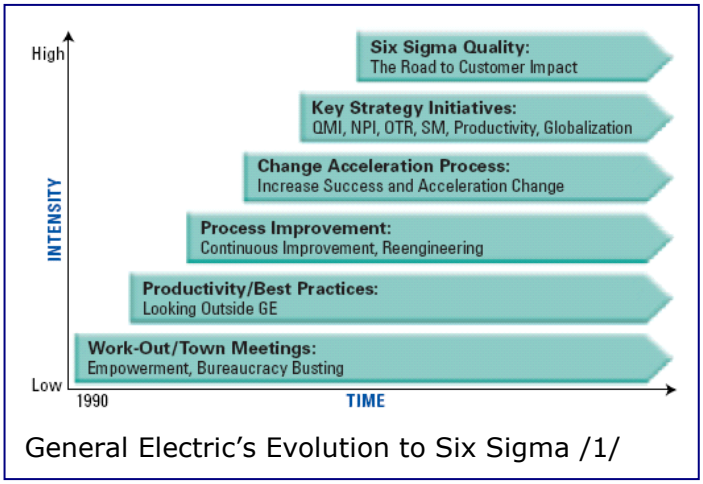
Six Sigma – Show me the Money!

By Dr. Uwe H. Kaufmann

"Globalisation and instant access to information, products and services continue to change the way our customers conduct business.

Today's competitive environment leaves no room for error. We must delight our customers and relentlessly look for new ways to exceed their expectations. This is why Six Sigma Quality has become a part of our culture." /1/

What is Six Sigma?



General Electric's Evolution to Six Sigma /1/

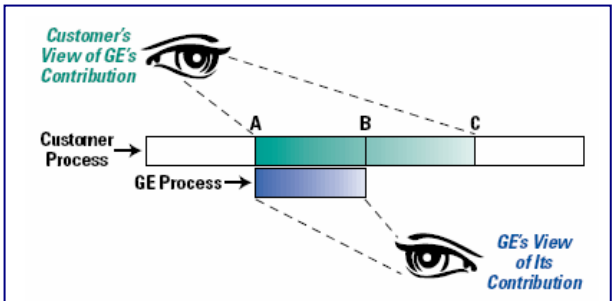
First, what it is not. It is not a secret society, a slogan or a cliche. Six Sigma is a highly disciplined process that helps all kinds of companies focus on developing and delivering near-perfect products and services.

Why "Sigma"? The word is a statistical term that measures how far a given process deviates from perfection. The central idea behind Six Sigma is that if you can measure how many "defects" you have in a process, you can systematically figure out how to eliminate them and get as close to "zero defects" as possible. To achieve Six Sigma Quality, a process must produce no more than 3.4 defects per million opportunities. An "opportunity" is defined as a chance for non-conformance, or not meeting the required specifications. This means we need to be nearly flawless in executing our key processes.

Achieving Quality for the Customer

There are three key elements of quality: customer, process and employee.

Customers should be the centre of each company: they define quality. They expect performance, reliability, competitive prices, on-time delivery, service, clear and correct transaction processing and more. In every attribute that influences customer perception, we know that just being good is not enough. Delighting our customers is a necessity. Because if we don't do it, someone else will!



Outside-In View /1/

Quality requires us to look at our business from the customer's perspective, not ours. In other words, we must look at our **Processes** from the outside-in. By understanding the transaction lifecycle from the customer's needs and processes, we can discover what they are seeing and feeling. With this knowledge, we can identify areas where we can add significant value or improvement from their perspective.

People create results. Involving all employees is essential to quality. All employees should be trained in the strategy, statistical tools and techniques of Six Sigma Quality. Training courses include Champion Training for the Leadership Team, Black Belt and Green Belt Training for Six Sigma improvement project leaders, awareness training for all employees as well as special training for functions like finance or sales. Additionally there is a need for internal coaches to support the Six Sigma journey – the so called Master Black Belts.

Master Black Belt, Black Belt and Green Belt Training include high-level statistical tools, basic quality control tools and soft-skills tools.

Quality is the responsibility of every employee. Every employee must be involved, motivated and knowledgeable if you are to succeed.

Focus on the Variance, Not the Mean

Often, the inside-out view of the business is based on average or mean-based measures of our recent past. Customers don't judge us on averages, they feel the variance in each transaction, each product we ship. Six Sigma focuses first on reducing process variation and then on improving the process capability.

> Customers value consistent, predictable business processes that deliver world-class levels of quality. This is what Six Sigma strives to produce. /1/

Six Sigma was Developed by Motorola

Although, General Electric has made Six Sigma as famous it is now, the real inventor of the concept was Motorola. Motorola – under economic pressure in their TV business in the 1980s – were looking for ways to improve the quality of their products.

In 1986, Bill Smith, a senior engineer and scientist within Motorola's Communications Division, introduced the concept of Six Sigma in response to increasing complaints from the field sales force about warranty claims. It was a new method for standardising the way defects are counted, with Six Sigma being near perfection. Smith crafted the original statistics and formulas that were the beginnings of Motorola's Six Sigma methodology. He took his ideas to CEO Bob Galvin, who was struck by Smith's passion and came to recognise the approach as key to addressing quality concerns.

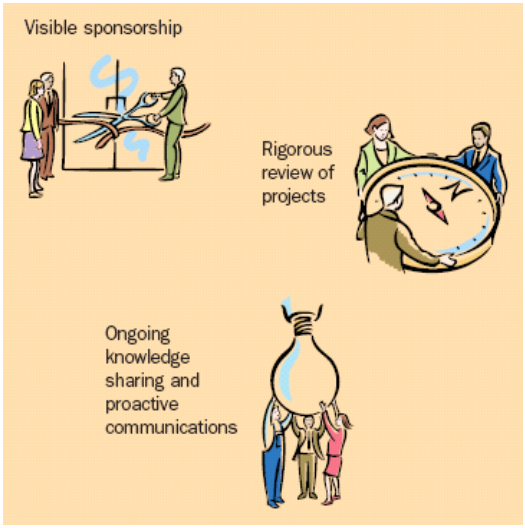
Six Sigma	Total quality management
Executive ownership	Self-directed work teams
Business strategy execution system	Quality initiative
Truly cross functional	Largely within a single function
Focused training with verifiable return on investment	No mass training in statistics and quality
Business results oriented	Return on investment
	Quality oriented

Six Sigma & Total Quality Management /2/

Six Sigma became central to Motorola's strategy of delivering products that were fit for use by customers.

Following a common Six Sigma methodology (measure, analyse, improve and control) Motorola began its journey of documenting key processes, aligning processes to critical customer requirements and installing measurement and analysis systems to continuously improve the process.

As a result, in 1988 Motorola became the first company to win the Malcolm Baldrige National Quality Award. In 1990, Motorola—together with companies such as IBM, Texas Instruments and Xerox—created the concept of Black Belts (BBs), who would be experts in applying statistical methods. Later, Allied Signal (now Honeywell International Inc.) and General Electric Co. successfully applied and popularised Motorola's Six Sigma methodology as part of leadership development.



Govern Sustained Improvement /2/

Four Steps To Success

Experience leads to the insight that Six Sigma demands the following four steps:

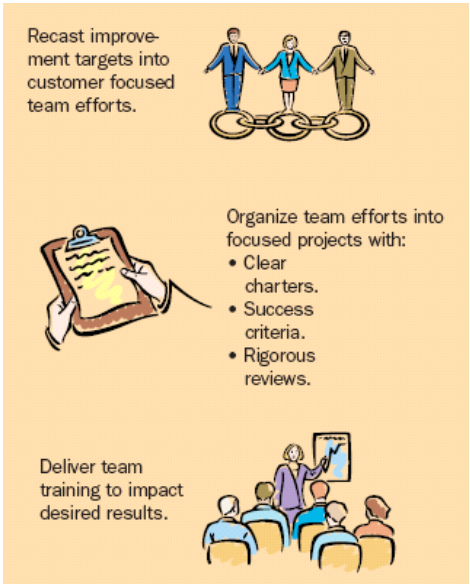
Align Executives to the Right Objectives and Targets.

Align Executives to the right objectives and targets: It starts with senior executives creating a balanced scorecard of strategic goals, metrics and initiatives to identify the improvement points that will have the most effect on the organisation's bottom line.

Mobilise improvement teams.

Customer focused project teams are formed and empowered to take action. Executive process owners empower Black Belts to lead well-defined improvement projects. Six Sigma business improvement teams use:

- A systematic problem solving method to frame the sequence of project tasks.
- Analytical techniques to drive fact based decision making.
- Interventions to sustain business impact. The step by step problem-solving framework. The DMAIC cycle.



Align Executives to Objectives & Targets /2/

Accelerate results.

Six Sigma business improvement teams use an action learning framework to build their capability and execute the project. Champions select appropriate BB and Green Belt (GB) team members

based on functional expertise and provide appropriate resources.

Govern sustained improvement.

Finally, the methodology includes a process for governance. Leaders actively and visibly sponsor the key improvement projects required to execute the strategy. They rigorously review projects in the context of process metrics and business outcome goals. Executive process owners look at overall organisational dashboards, their own process metrics and the status of improvement projects chartered to make improvements and ensure the overall business system is functioning as desired. The final governance step is for leaders to actively share best practices and knowledge about improvements with other parts of the organisation that can benefit.

Application & Benefits

During the last 15 years, companies like General Electric or Motorola have moved from counting defects in their product manufacturing to managing variation and systematically improving all their processes. Most important, they have moved from Six Sigma as a tool for improving product quality to Six Sigma as an overall business improvement methodology. The new Six Sigma combines the power of good business application of statistics with the critical elements of effective business strategy. It uses an overall business improvement framework to improve the organisation's ability to realise its strategic objectives.

The results are impressive: "GE's success with Six Sigma has exceeded our most optimistic predictions. Across the company, GE associates embrace Six Sigma's customer-focused, data-driven philosophy and apply it to everything we do. We are building on these successes by sharing best practices across all of our businesses, putting the full power of GE behind our quest for better, faster customer solutions." /1/

With an investment of about 700 Million US$ GE was able to gain about 2 Billion US$ by Six Sigma improvement work in 1999. In 2001 Johnson & Johnson was proud to deliver about 900 Million US$ benefits with their Process Excellence Initiative – an umbrella Initiative that includes a strong Six Sigma pillar. JPMorgan Chase announced savings of about 400 Million US$ in 2002 with their newly launched process improvement efforts. This is only the tangible part of the benefits, whereas the intangible benefits like customer and employee satisfaction are noticeable considerably as well.

Now, Six Sigma applications are on the way in all kind of industries all over the world. Apart from Manufacturing it has become the way for managing and improving the business for financial services companies like banks and insurances, for Healthcare institutions, and even for governments, who are aiming to streamline their processes. Although, the principles of Six Sigma are applicable in all kind of industry, there are some differences that need to be paid attention to in order to make it successful even in these environments:

- Processes are not clearly defined like in a manufacturing environment. It means the early stages of the improvement cycle need more attention since the "identification" and definition of process, customer needs and defects are critical.
- Processes are "people" driven and labour intensive. We can't adjust or measure humans the way we adjust machines. The soft-factor needs much more attention than in manufacturing companies.
- Measurements more often manual rather than automated. Data collection is more complicated, focuses on discrete data and needs manual intervention. Therefore, to achieve high-quality data, more effort is needed.

- All these factors result in a constant need to motivate and attain people-buy through-out the whole initiative.
- Rewards and recognition as well as success stories are critical to ongoing success.

Six Sigma and ISO 9000

Almost all companies who apply Six Sigma have already implemented ISO 9000. One of the major differences between both systems is that ISO 9000 is a shell of requirements without any tools, whereas Six Sigma is a methodology connecting tools and procedures for applying these tools through a “red thread”. Done the right way the combination of both approaches is a perfect fit:

On the one hand ISO 9000 is designed to assess companies based on both, external and internal needs and is made to help closing the gaps on a mid-term and long-term basis. Adding typical Six Sigma deployment requirements to the ISO 9000 internal audit questionnaires makes Six Sigma becoming part of the Quality Management System.

On the other hand Six Sigma provides a rich toolbox for process improvement to meet the requirements of ISO 9000:2000 targeting on continuous process improvement.

Aligning ISO 9000 and Six Sigma can help to improve the credibility of the ISO 9000 Quality Management System and can increase the sustainability of the Six Sigma initiative at the same time. It can save resources and investments and enriches the way to manage the business.

What Comes Next?

Over the last 15 years, Six Sigma went through a couple of cycles to adjust to evolving needs and to accommodate all the learning experience made by thousands of people using it every day in a lot of companies world-wide. After gaining confidence in the approach and through an outstanding image it has been moved from production processes to transactional processes in manufacturing companies, later it has been applied in service companies and even in non-profit organisations. By adding design tools to the “standard” toolbox a new methodology to be used in all kind of design processes has been developed.

General Electric brought it to the customer in different aspects and call it ACFC – “At-the-customer-for-the-customer”. Johnson & Johnson developed an approach to bring it to their sales force in order to increase incremental revenue. They call it “Sales Force Effectiveness”. Pfizer is heavily focusing on customer satisfaction by zero-defect products and call it “Right The First Time”. Other companies bring the variation reducing power of Six Sigma into the supply chain and apply it as a combined toolset called “Lean – Six Sigma”.

All this leads to the conclusion that there is no end of Six Sigma in sight. The name may change, the toolset may be enriched, the methodology may be adjusted but the goal remains the same: Quality products and services for customers through constantly improving and profitable processes driven by knowledgeable and motivated people.

About the Author

Dr Uwe H Kaufmann is the Singapore-based Managing Director of COE. He has extensive experience in implementing process and organisation improvements for various industries. He specialises in Six Sigma and Quality Improvements as well as Strategy Implementation and Change Management. Uwe is a German national and can be reached at Uwe.Kaufmann@COE-Partners.com.

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