Six Sigma

Gain a vast increase in profits and product quality by using a structured, disciplined, rigorous approach to process improvement: Six Sigma.

Introduction
It is a methodology that provides businesses with the tools to improve the capability of their business processes and/or IT processes. This increase in performance and decrease in process variation leads to defect reduction and vast improvement in profits, employee morale and quality of product.

The term six sigma refers to the statistical notion of having 99.99% confidence of achieving specified results. A greater sigma implies a lower number of expected defects or errors.

The fundamental objective of the Six Sigma methodology is the implementation of a measurement-based strategy that focuses on process improvement and variation reduction through the application of Six Sigma improvement projects.

The practical goal of this is to increase business performance by eliminating the variability and defects, thus achieving reduced costs, higher quality and higher customer loyalty.
Origin
The use of Six Sigma as a measurement standard can be traced back to Carl Frederick Gauss (1777-1855). He introduced the concept of the normal curve.

The use of Six Sigma as a measurement standard originates in the 1920’s. Then, Walter Shewhart showed that three sigma from the mean is the point where a process requires correction. Many further developments followed until, later Motorola introduced the term ‘Six Sigma’.

In the early and mid-1980s Motorola engineers decided that the traditional quality levels – measuring defects in thousands of opportunities – didn’t provide enough granularity. They started measuring the defects per million opportunities and this helped the company realize more than $16 Billion in savings.

Since then, hundreds of companies around the world have adopted Six Sigma as a way of doing business.

The popularity of Six Sigma increased exponentially when many of America’s business leaders, such as Larry Bossidy of Allied Signal (now Honeywell), and Jack Welch of General Electric Company, experimented with the approach and began praising the benefits of Six Sigma.

Six Sigma phases
The approach for improving existing processes is called DMAIC – being an acronym for the five phases involved in the approach:

- **Define**
  The first phase is concerned with outlining the project, the plan and the team. More importantly: based on the voice of the customer the processes to be improved are defined.

- **Measure**
  The gathered data from the previous phase is statistically analyzed, in order to find the root causes of defects. Experiments can be designed to support this root cause analysis. Once found, the root causes are correlated with the effects that they have on the output quality of the process.

- **Analyze**
  Here the actual improvements are designed. Solutions are quantified and analyzed. The best solutions are tested, optimized and implemented.

- **Improve**
  In this final phase the improved process is documented and secured in the quality system.

For new processes, DFSS (Design For Six Sigma) is used. The approach is based on the same Six Sigma principles and sets out to design and implement new business processes with a high sigma level. This can only be done when the customer requirements are fully captured. DFSS has five phases:

- **Define**

- **Measure**

- **Analyze**

- **Design**
  Similar to DMAIC’s ‘improve’ here the detailed process is designed.

- **Verify**
  In this final phase the design is tested for performance and its ability to meet the customer requirements.
Capgemini's way

Three levels
Capgemini perceives Six Sigma in three different ways, or levels:

- **Level 1: Metrics**
  The true meaning of six sigma is 3.4 Defects per Million Opportunities (DPMO). DPMO allows you to take complexity of product/process into account. This should be measured in Critical to Quality (CTQ) characteristics.

- **Level 2: Methodology**
  Six Sigma includes a number of approaches for improving existing processes and for developing new processes.

- **Level 3: Philosophy**
  The philosophy behind Six Sigma is to reduce variation in your business and take customer-focused and data driven decisions. It is to use the framework not only for the process improvement projects but also for the complete operation of business. One of the leading companies that used Six Sigma in this way is GE.

Four step approach to first time implementation
Capgemini has developed the four step approach to help organizations embarking on Six Sigma for the first time to familiarize themselves with the approach and to avoid unexpected pitfalls. The advantage of this approach is that the organizations themselves obtain Six Sigma capacity in the process. The approach consists of the following steps: 1. Six Sigma Awareness; 2. Training; 3. Selection of possible projects; 4. Execution of one project.

Capgemini carries out these four steps together with you, with intensive co-operation during the various phases of a project. Capgemini can also train your employees to the various internationally recognised Six Sigma accreditations. This can be done on the job or at the Capgemini University in Paris.

Process maturity
Six Sigma is a methodology aiming to improve the performance of a business process. By doing so, a higher process maturity can be achieved. In our process maturity model this can be visualized as follows:

International expertise
Capgemini has international experience in Six Sigma projects in a variety of industry sectors, including the processing industry, logistics, the finance sector, the telecommunications sector and car manufacturing.
Capgemini, one of the world’s foremost providers of Consulting, Technology and Outsourcing services, has a unique way of working with its clients, called the Collaborative Business Experience.

Backed by over three decades of industry and service experience, the Collaborative Business Experience is designed to help our clients achieve better, faster, more sustainable results through seamless access to our network of world-leading technology partners and collaboration-focused methods and tools. Through commitment to mutual success and the achievement of tangible value, we help businesses implement growth strategies, leverage technology, and thrive through the power of collaboration.

Capgemini employs approximately 61,000 people worldwide and reported 2005 global revenues of 6.95 billion euros.

More information about our services, offices and research is available at www.capgemini.com