



Streamlining Tools™: Six Sigma - 6σ - Improvement

World-class organizations emphasize process, simplicity, clarity and continuous reduction in errors (improvement).

Six Sigma Revolution

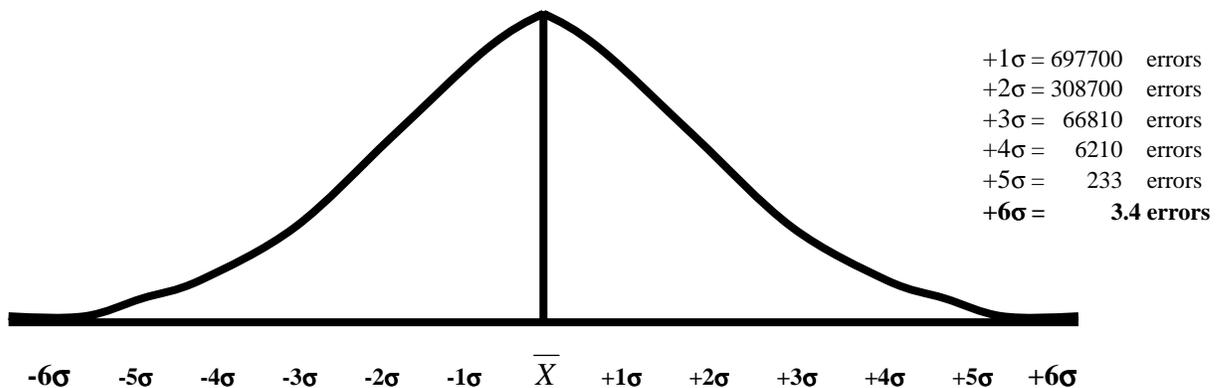
Organizations have been using the Six Sigma principles that were first initiated at Motorola to improve their business processes and gain a competitive edge.

Resources freed from inefficiencies in organizations (waste) can be redirected towards strategic objectives. General Electric has declared that some \$20 billion of savings will be gained due to improvements that have been made in the organization using the Six Sigma quality improvement processes.

Six Sigma Principle

Six Sigma (6σ) is a statistical measurement of defect or error precision that is aimed at achieving **3.4 errors per one million transactions**.

Generally, a 2σ (308700 errors per 1 million transactions) organization is likely to be on its way out of business. A 4σ (6210 errors per 1 million transactions) organization is one that is existing but not necessarily leading or able to effectively fight off competition.



Six Sigma brings together a number of important quality management tools to make the process effective:

- It forces the organization to define a "Daily Management System" for identifying and solving day-to-day business processes.
- It gets the organization to use the discipline of "Measurement" to identify and justify problems and opportunities.
- It promotes the use of: [1] Statistical Analysis, [2] Experimental Design, [3] Quality Function Deployment, and [4] 7-Step Process Improvement Process.

Six Sigma Process

The intent behind the Six Sigma process is to have a very simple and clearly defined method to solve problems and improve business processes. There are four fundamental steps to the 6σ process, known as PIMC (Problem, Improvement, Measure, Control):

1. **Problem:** Find the problem and measure the defects/errors that it is creating. Formulate a problem theme for what has to be done to fix it. We need to identify:
 - Who is the customer?
 - What does the customer value (*what is important to them*)?
 - The customer sets the acceptable interval of what is "good" vs. what is "bad".
 - We measure "good" and "bad" in the process.
 - We measure percentage (%) of time that we are in the "bad" range (for example, using a run chart).
 - We define the problem theme.
2. **Improvement:** During the improvement phase, we try to understand why the defects are generated. We use a 7-step problem solving/process improvement method to identify root causes (*variables that cause the defect*) and leverage areas for improvement (with such tools as Bottleneck Analysis and Pareto Analysis – 80:20 rule).
3. **Measure:** We measure against benchmarks and make sure that the key variables that we want to fix are indeed the main problem. We set an acceptable range for what the process is supposed to operate in: **[minimum value maximum value]** (measurements can be in the form of Histograms, Pareto Charts, Scatter Plots, or sophisticated statistical models – developed with more experience and field specialists or experts).
4. **Control:** The final part is to control the process (using Statistical Process Control, Control Charts, Run Charts or simple Checklists) so that it does not deviate out of the acceptable ranges. We also ensure that the improvement made is engrained in the daily activities of the organization and its operational culture.

