

What is Six Sigma?



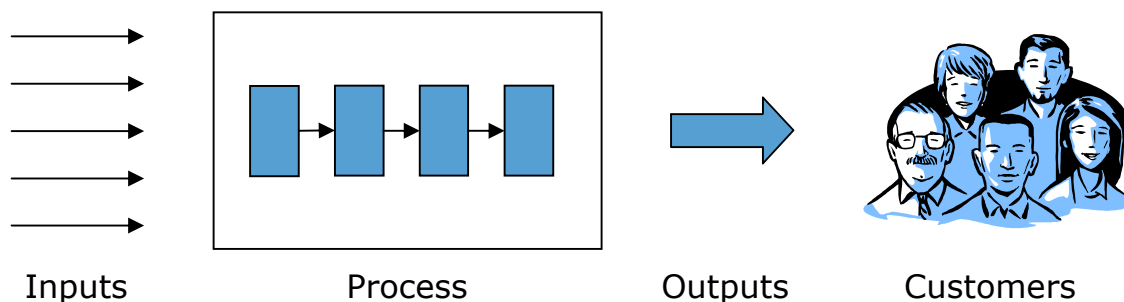
Six Sigma is a structured, data-driven approach for solving business problems in both manufacturing and transactional organisations.

The Big Picture

Organisations exist to provide a product or service to their customers. In order to be successful, they have to firstly understand what it is about the product or service that is important to the customer and then satisfy those needs with high quality at an affordable cost.

Process Thinking

The product or service which the customer receives from the organisation is the output of a process.



The quality of the output depends on how good the process is. Therefore, if the organisation wants to improve quality they can only do so by improving the process. Six Sigma is a rigorous, proven, process improvement methodology supported by powerful process improvement tools.

How does Six Sigma Work?

Many things influence the outcome of a process but it is well established that only a few will be critical drivers of quality. Six Sigma uses a measurement-based approach to isolate the critical drivers so that focused solutions can be used to eliminate them. It uses the DMAIC Methodology to accomplish this.

The DMAIC Methodology



DMAIC is a project based problem solving methodology. DMAIC teams are led by a trained Six Sigma practitioner known as a Green Belt or Black Belt.

The 5-Step DMAIC Methodology Explained		
Define	What exactly is (and what is not) the problem to be addressed by this project	Define prevents teams jumping straight to solution-mode.
Measure	What is the true current process performance	Data is used as a benchmark for before-after comparison – so benefit can be proved at end of project
Analyse	Find the root cause of the problem using process analysis and data analysis techniques	Prevents sticking-plaster solutions (which never really work).
Improve	Develop, validate and risk-proof a focused, innovative solution	Solutions directed at proven root causes will almost always be successful
Control	Make sure the solution sticks and quantify the benefits	The solution does not fall over when the project ends but becomes the new standard way of operating the process

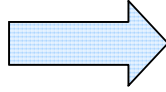
Six Sigma works because the DMAIC Method is very rigorous, and also because it is supplemented by many powerful planning, management and analysis tools.

Project selection is key. Typically, Six Sigma is used to address stubborn business problems which may have been unsuccessfully addressed previously.

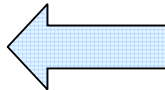
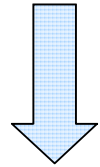
- In Define, the customer needs are established along with business goals, and the process causing the problem is identified.
- In Measure, the current process performance is confirmed
- In Analyse, the root cause of the problem is identified and verified
- In Improve, a solution directly addressing the root cause is developed and validated.
- In Control, the solution is implemented along with a control plan which ensures its long term success.

How the DMAIC Method is Applied

Improvement project ideas generated

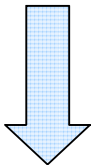


Project ideas evaluated up front and prioritised based on expected benefits

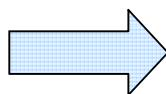


Projects led by Six Sigma trained employees - known as Black Belts or Green Belts

Each project has a Six Sigma Champion (a management sponsor)



Following delivery of improvements, benefits are quantified on a project by project basis



Longer term, Six Sigma brings about a continuous improvement / management by fact culture

Benefits of Six Sigma



In 2004, Six Sigma was in use in 28 of FTSE100 companies and in 80% of Fortune 500 companies. Some reasons are listed below.

- At a high level Six Sigma delivers
 - Process, product and service quality improvement
 - Increased customer satisfaction and loyalty
 - Business growth
 - Enhanced competitive position
 - Management by fact
 - Improved process speed and flexibility
 - Reduced operating cost and cost avoidance
 - Increased efficiency
 - Capable processes

- Specific benefits delivered by actual projects include
 - 50% reduction in scrap on a crankshaft manufacturing process
 - 30% reduction in number of chasing calls to a contact centre
 - Reduction in time to set up new account from 11 days to 2 days
 - 30% reduction in sealing defects on a contact lens packing line
 - Elimination of checking and rework loops
 - 15% improvement in accuracy of Laser etching machine
 - Surface mount placement machine capability improvement from CpK=0.9 to CpK=1.4
 - 30% reduction in oven maintenance in an electronics factory
 - 50% reduction in dead-on-arrivals shipped by a repair centre
 - 20% reduction in data modification requests to an IT dept
 - 20% reduction in excess cables ordered in a power station tendering process
 - 15% reduction in engineering development time
 - Wrong/incomplete information given to callers reduced from 14% to 1%
 - Errors in commission payments reduced by 20%
 - 20% improvement in sales of surgical equipment
 - 50% reduction in time to build power station control room