



silicon beach training

eBook

6σ

What is Six Sigma?

Lean Six Sigma and the DMAIC Model Explained

Contact

Colin Welch

Training Manager

01273 622272

colin@siliconbeachtraining.co.uk

<http://www.siliconbeachtraining.co.uk/>

twitter.com/SBTTraining

facebook.com/siliconbeach

Table of Contents

About Us	3
What is Six Sigma?.....	3
The Six Sigma Management System	4
Benefits of Six Sigma.....	4
DMAIC model for process improvement.....	5
Define	5
Measure	5
Analyse	6
Improve	6
Control.....	6
Six Sigma Belt Levels.....	6
Six Sigma Black Belt.....	6
Six Sigma Green Belt	6
Six Sigma Master Black Belt	7
Six Sigma Training Courses.....	7



About Us

Silicon Beach Training is one of the UK's leading providers of IT, Project Management and **Six Sigma Training**. Our Six Sigma trainers are among the best in the UK, and bring a host of real-world Six Sigma process improvement experience to the courses.

We run regular public Lean & Six Sigma Training courses at our Brighton training centre, including:

- **Lean Six Sigma Yellow Belt Training**
- **Lean Six Sigma Green Belt Training**
- **Six Sigma Black Belt Training**
- **Lean Awareness Training**
- **Lean Processes and Tools training**

In addition to our schedule of public courses, we also provide bespoke on-site training and consultancy. You can read more about how we provided bespoke training to help implement Lean & Six Sigma at **Hachette UK** in our [case study here](#).

What is Six Sigma?

Six Sigma is a methodology, a statistical analysis tool and a management system designed to streamline business processes by eradicating defects. The implementation of Six Sigma aims to improve and sustain quality, eliminate waste and raise profits. This is achieved by the:

- Reduction of variations in processes
- Measuring, analysis, improvement and control of processes
- Involvement and dedication from the whole organisation including top level management.

Processes are measured and defects recorded, the aim of Six Sigma is to operate processes with less than 3.4 defects per one million opportunities. The implementation of these processes can enable vast savings for the organisation. Motorola claims that the implementation of Six Sigma has saved the company in excess of 17 billion American dollars.

Originally developed for the manufacturing industry Six Sigma is now applied to the service industry. This means, however that rather than measuring manufacturing processes for defects, organisations need to look to their staff. Streamlining staff performance may cause problems; the human factor needs to be taken into consideration. It may look good on paper to have fewer employees serving more customers, but customer and employee satisfaction may suffer. To improve the Six Sigma system for the service industry, more emphasis is needed to be placed on:

- Understanding and managing customer needs
- Adapting business processes to meet those needs
- Using data analysis to minimise variation in those processes
- Using the above to quickly improve existing processes using sustainable practices



What's in a name?

“Sigma” comes from statistics and means the measurement of variance. Mainly Six Sigma is about measuring defects (quality) and production time. There is a statistical scale for measuring this.

“Six” refers to the highest possible score on the scale (0 being the lowest score), this would be a defect score of 0.34% and an on-time score of 99.966%

Six Sigma time and quality measurements methodology can be applied to all types of businesses that have customers, including service industries. Six Sigma tools allow companies to assess and measure the quality of their processes and improve delivery to the customer. This can be done incrementally one Sigma level at a time.

Learn more about what Six Sigma is in [this video](#)

The Six Sigma Management System

From experience, large companies such as Motorola have found that the use of metrics (statistics) alone is not enough to sustain improvements over time. In order to achieve sustainable results the methodology must be linked to the overall company strategy. This is why it is necessary to implement Six Sigma from the top-down.

Those companies making the biggest savings have implemented Six Sigma practices throughout their organisation and fundamentally changed their management approach. These businesses train lots of people and make continuous improvement a way of life. Companies that have not applied Six Sigma throughout the organisation have not achieved the same level of results.

In order for Six Sigma to produce maximum benefit:

- The overall business strategy must be aligned to the implementation of continuous improvement of processes
- Management teams must be created to govern key projects
- You must drive the implementation of improvements to achieve the quickest possible results
- You must monitor continued effort to sustain improvements

Benefits of Six Sigma

The key benefits of the Six Sigma Management system are:

- process flows are improved
- defects are reduced
- communication is improved as the whole company works towards the same goals
- cycle times are reduced
- customer satisfaction improved



- staff satisfaction improved
- productivity is increased
- capacity and output are improved
- quality is improved
- reliability of products and processes are improved
- unit costs decreased
- designs improved
- time to market is quicker
- better delivery time

Six Sigma enables organisations to become more effective and efficient. Organisations using the Six Sigma Management System improve their processes, efficiency, products, services and customer experience.

DMAIC model for process improvement

The **DMAIC model** is the foundation of all Six Sigma projects.

DMAIC is an acronym for:

- Define opportunity
- Measure performance
- Analyse opportunity
- Improve performance
- Control performance

Define

In order to implement the Six Sigma Methodology and Management System it is crucial to define:

- The Customer – who is the customer, what do they want and what are their expectations? This will involve looking at quality control issues and core business processes
- The project boundaries – Where does the process begin and end?
- The process to be improved

Measure

In order to apply the Six Sigma Methodology and Management System it is essential that you measure the performance of Core Business Processes. You will need to –

- Develop a plan for the collection of data for the process
- Gather data to identify types of defects and metrics
- Compare evidence to customer survey results



Analyse

The next step in the DMAIC model is to analyse the data and process map to establish causes of defects and where you can improve:

- Current performance and goal performance are compared to identify gaps
- Opportunities for improvements are prioritised
- Sources of variation are identified

Improve

Using the data from the implementation of the above it is now possible to improve the process by designing creative solutions to fix and prevent problems. This is achieved by

- Using discipline and technology to develop innovative solutions
- Develop and implement a plan

Control

Control and sustain improvements over time by –

- Preventing the instinct to return to the old ways of doing things
- Developing, documenting and implementing an ongoing monitoring plan
- Integrating the improvements throughout the company through the use of training, staffing and incentives.

Six Sigma Belt Levels

The success of the Six Sigma management process is dependant on senior executives, master black belts, black belts, and Six Sigma green belts working together, towards the same aims and understanding and implementing the process throughout the organisation.

A senior executive should bring the whole company into alignment and instigate changes necessary for Six Sigma's ultimate success. The most successful Six Sigma projects all share in common clear and committed leadership from top management. Six Sigma processes initiated at lower levels may show benefits but not dramatic and sustainable changes.

Managers who have been trained as Six Sigma Champions have a vital role to play in conducting and implementing Six Sigma projects. Champions will work closely with the executive committee including the assigned Six Sigma black belt and the master black belt.

Six Sigma Black Belt

Six Sigma Black Belts are typically full-time change agents and lead by making improvements to processes across multiple Six Sigma projects. He or she will be in charge of a team of Green Belts and will be mentored by a Master Black Belt.

Six Sigma Green Belt

Six Sigma Green Belts usually work on large projects part-time. In many successful Six Sigma Organisations most of their managers have been trained to Six Sigma Green Belt level.



In complicated Six Sigma projects, Green Belts work closely with the project Six Sigma Black Belt to keep the team functioning together and monitor progression through the Six Sigma project.

Simpler projects may be lead by Six Sigma Green Belts and it is their responsibility to:

- Create or refine a project charter
- Discuss the project charter with the project champion
- Select team members for the project
- Liaise with the champion, master black belt, black belt, and process
- Facilitate the team through all phases of the project
- Schedule meetings
- Coordinate logistics
- Analyse data
- Train team members

Six Sigma Master Black Belt

A Six Sigma Master Black Belt takes a leadership role in the Six Sigma process. They will advise Senior Executives as well as oversee and offer direction for projects led by Six Sigma Black Belts and Green Belts.

A Six Sigma Master Black Belt will have proven success leading Six Sigma projects. It is preferable, although not always possible, for organisations to develop their own Master Black Belts.

Learn more about Six Sigma belt levels in [this video](#)

Six Sigma Training Courses

One of Six Sigma's strengths is the structure of belts to show level of achievement and capability. In all cases the training should be backed up by real experience on projects and at Six Sigma Black Belt level this is mandatory.

Six Sigma Yellow Belt Training

Six Sigma Yellow Belt Training is for somebody who is or going to be a **Team Member** so they need to understand the key processes and some of the basic tools. **No prerequisites.**

Six Sigma Green Belt Training

Six Sigma Green Belt training is for somebody who will be a **Team Leader**. They need to have a good understanding of the processes and many of the tools. They will understand a number of key statistical techniques but not be an expert in their application. This 5 day course is very intensive.



Six Sigma Black Belt Training

Six Sigma Black Belt training is for delegates who are leading or supporting Six Sigma projects on a continuous basis – it is their **full time job**. They may also be providing internal training programmes for Green Belts. They need to thoroughly understand Six Sigma processes and a wide range of statistical and process improvement tools.

Six Sigma Master Black Belt Training

This is an executive level position that is advising the board on the development and implementation of Six Sigma across the organisation. Master Black Belts will also be managing the Black Belts, in some cases they will also train the Black Belts, they will have a lot of management expertise in addition to their expertise in all aspects of Lean Six Sigma.