

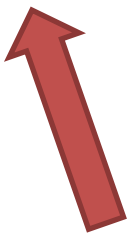
Lean Six Sigma White Belt Certification

The purpose of this program:

This study material is designed to provide a general background regarding six sigma, where it comes from, why it is used, and the very foundational concepts upon which it is built.

After you've completed this study material, you'll take the certification exam for:

Lean Six Sigma White Belt Certified (LSSWB)



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NOTE 2: If you need to exit the study material, click the black **X** in the top right corner of the screen to close the presentation viewer. Then log out.

History of Six Sigma

Although referred to regularly in today's working world, the [Six Sigma methodology](#) is a relative newcomer to the landscape of theories and practices to work quality. In 1986, Bill Smith was the first person to develop this principle. He was working for Motorola at the time and had been fascinated with ways to improve working practices. Making processes more efficient by pushing ahead with quality improvements and trying to get the most from a manufacturing production line.

History of Six Sigma

The idea that Mr. Smith came up with was to work on a way to minimize defects in production through continuous improvements. He recognized that every manufacturing and business process could be measured, analyzed, and improved based on analysis and then controlled to stay within that new process. Continuing to do this would reduce variations in the process; therefore, produce output much more effectively, meeting the desires of the customer.

History of Six Sigma

Six Sigma focuses on measuring the impact of an improvement project. It requires buy-in across the business for the project to make changes based upon those measurements, irrespective of personal views. Guesswork and assumptions have no place in Six Sigma; it is a precise process.

Definition:

Buy-in: Agreement to support a decision.

Quiz

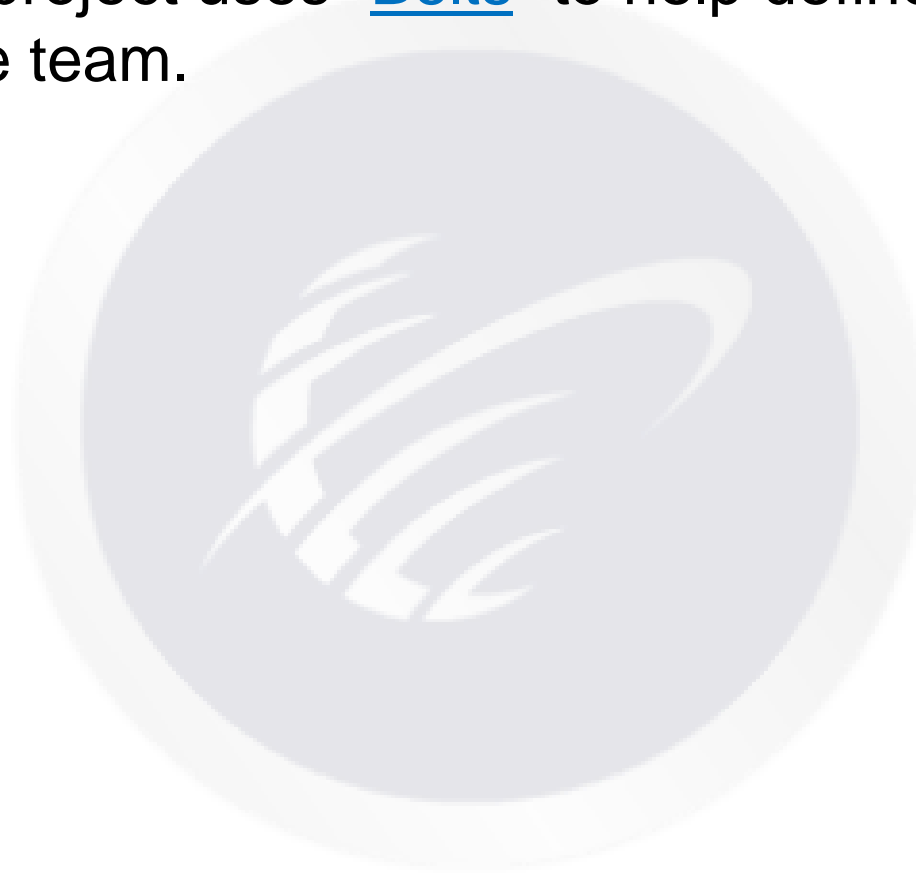
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Six Sigma requires _____ across the business for the project to effectively make change.

- ☐ Money
- ☐ Vendors
- ☐ Buy-In
- ☐ Executives

Six Sigma White Belt

A Six Sigma project uses “[Belts](#)” to help define the roles of people on the team.



Six Sigma White Belt

A Six Sigma “White Belt” is an entry-level certification for those individuals who need to have a basic understanding of what Six Sigma is. These individuals are not involved in a Six Sigma project but may work in a company or department going through a Six Sigma process improvement.

Six Sigma Yellow Belt

A Six Sigma “Yellow Belt” is typically a subject-matter expert (SME) in a particular subject or area of the business being reviewed. These members are generally not involved with the Six Sigma project directly. Instead, they may provide information and assistance to Green Belts (as subject matter experts) so that they can better understand a particular segment of the business.

Six Sigma Green Belt

A Six Sigma “Green Belt” is an employee who takes on a Six Sigma implementation project along with his or her other job responsibilities, operating under the guidance of Black Belts.

A Green Belt works to understand which business processes are not performing as needed, identify root causes of problems, analyze and improve contributing factors, and sustain gains in those improvements.

Six Sigma Black Belt

A Six Sigma “Black Belt” has knowledge of Six Sigma philosophies and principles and leads a team during a Six Sigma project. They must have both leadership and project management skills to be successful.



Six Sigma Master Black Belt / Champion

A Six Sigma “Master Black Belt” is in charge of training Black Belts and Green Belts in Six Sigma processes. They are also a go-to reference for ideas and theories during a project. Master Black Belts typically have years of experience as a Black belt, before taking on the Master Black Belt role.

A Six Sigma Champion is a senior executive within the organization whose role is sponsoring specific projects. They have the authority within the organization to allocate resources for the project.

An Overview of DMAIC

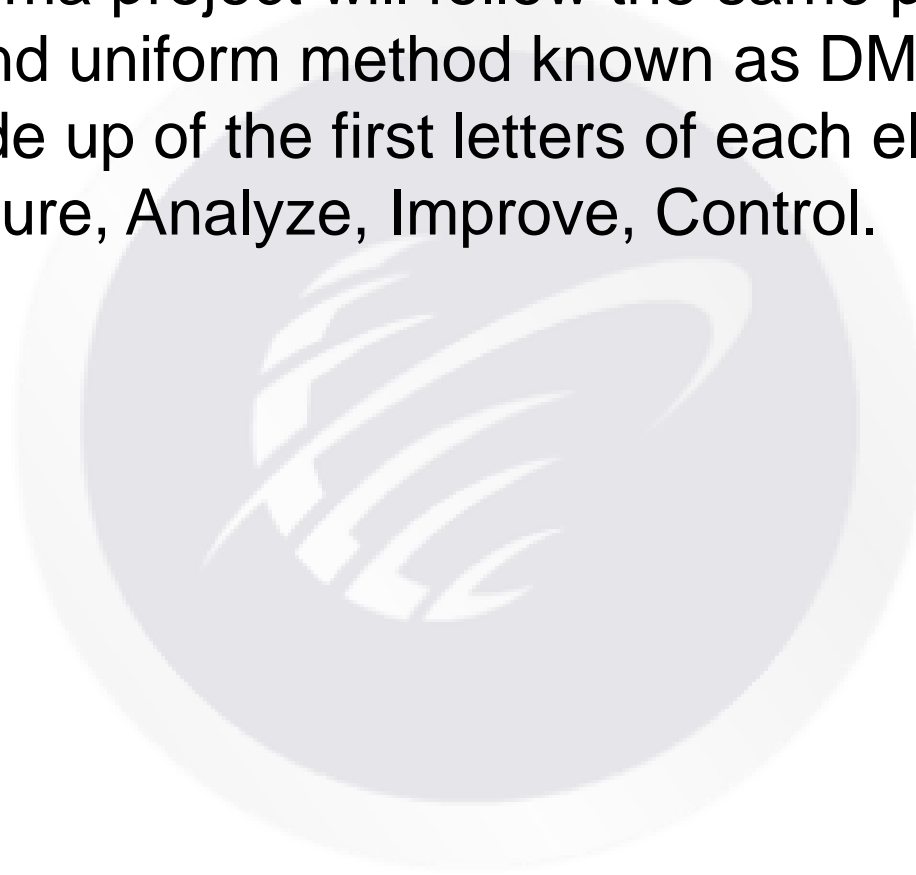
Now we'll gain a basic understanding of the DMAIC fundamentals at the core of Six Sigma methodology.

DMAIC:

Define, Measure, Analyze, Improve, and Control

The DMAIC Method

Every Six Sigma project will follow the same process in a systematic and uniform method known as DMAIC, an acronym made up of the first letters of each element – Define, Measure, Analyze, Improve, Control.



The DMAIC Method

DMAIC is a formalized problem-solving method that is designed to improve the effectiveness and ultimate efficiency of the organization. These slides will provide a basic understanding of the concept and how it applies to the life cycle of a Six Sigma project.

The DMAIC Method

The Steps to a Solution:

Define

- This first stage sets the context within which the Six Sigma project is to be performed. Identify and state the practical problem.
 - Who wants the project and why?
 - The Scope of the project or improvement
 - Key team members and resources for the project
 - Critical Milestones and stakeholder review
 - Budget Allocation

The DMAIC Method

The Steps to a Solution:

Measure

- The second stage is where the starting-point metrics are recorded. Validate the practical problem by collecting data
 - Ensure measurement system reliability
 - Prepare data collection plan
 - How many data points do you need to collect?
 - How many days do you need to collect data for?
 - What is the sampling strategy? (i.e. where from, from whom)
 - Who will collect data and how will data get stored?

The DMAIC Method

The Steps to a Solution:

Analyze

- The third stage reviews the metrics. Using a variety of tools, practitioners gain an understanding of the cause and effects within the system being studied.

The DMAIC Method

The Steps to a Solution:

Improve

- The fourth phase focuses on fully understanding the top causes identified in the Analyze phase, with the intent of either controlling or eliminating those causes to achieve better performance. The overall theme for the Improve phase is *process redesign*.

The DMAIC Method

The Steps to a Solution:

Control

- The final phase is about sustaining the changes made in the Improve phase to guarantee lasting results. The best controls are those that require no monitoring (irreversible product or process design changes).
- Frequently there are process settings, setup procedures, etc., that need employees to follow specific requirements in daily operations – these items are typically documented in a control plan.

The DMAIC Method

The 5 stages to improving the business process can be defined as a series of steps or rungs on a ladder. They follow in sequence with the activities of each stage being dependent upon the outcome of the previous stage.

The DMAIC Method

The define stage begins the process of improvement. Here we are writing the problem statement, objective of goal, and formally launching the activities to apply Six Sigma methodology. Once we know this, we can then start to understand the process through measurement of the associated activities. We can determine the range of the process so that we know what limits we can work within, then confirm the accuracy of the metrics collated in the process. This ensures that they are valid to use as a benchmark for improvement.

The DMAIC Method

With the metrics available we need to define the relationship within the process. We use this data to define the **$y = f(x) + \epsilon$ function**. This will enable us to begin looking at the potential for refinement and improvement within the process and look at the causes of error or failure within the process. Having identified where these variances are occurring in the function, we can determine how to improve the function. Let's define **$y = f(x) + \epsilon$**

The DMAIC Method

- $y = f(x) + \epsilon$ function:
 - Y is the outcome or result you desire
 - X represents the inputs or factors necessary to create the outcome
 - f is the function. The way by which the inputs are transformed into the outcome.
 - ϵ is the presence of error or uncertainty surrounding how accurately the x is transformed to create the outcome.

Don't worry about memorizing this equation for now. It is not required for the White Belt level. It does, however, help to give you a general understanding of how Six Sigma uses formulas to improve processes.

The DMAIC Method

Having arrived at one or more solutions, we then implement the new process or system within a controlled environment. We use a period of monitoring to ensure consistent achievement into the standard business process and to maintain the identified results.

The DMAIC Method

When looking at a Six Sigma project and the DMAIC journey, the need for Black, Green, and Yellow Belts at every stage of the project is evident.

In the define stage, the activity will be a mutual collaboration with company management and the appointed Black Belt. This is where the Black Belt's experience and knowledge are used to clearly define a workable problem statement. They also ensure everyone comprehends the task-at-hand and the projects likely impacts.

The DMAIC Method

The Measure, Analyze and Improve stages will be undertaken within the project team. The Green and Black Belts use all their skills to undertake this work, pulling information and subject knowledge of the business through intelligent use of Yellow Belts and the process owner(s).

The DMAIC Method

The Control stage is the release of responsibility from the project team to the business. It is where the process owner takes back control of the process and with the support of the Six Sigma project team, ensures the sustainability of the improvement into the future.

Quiz

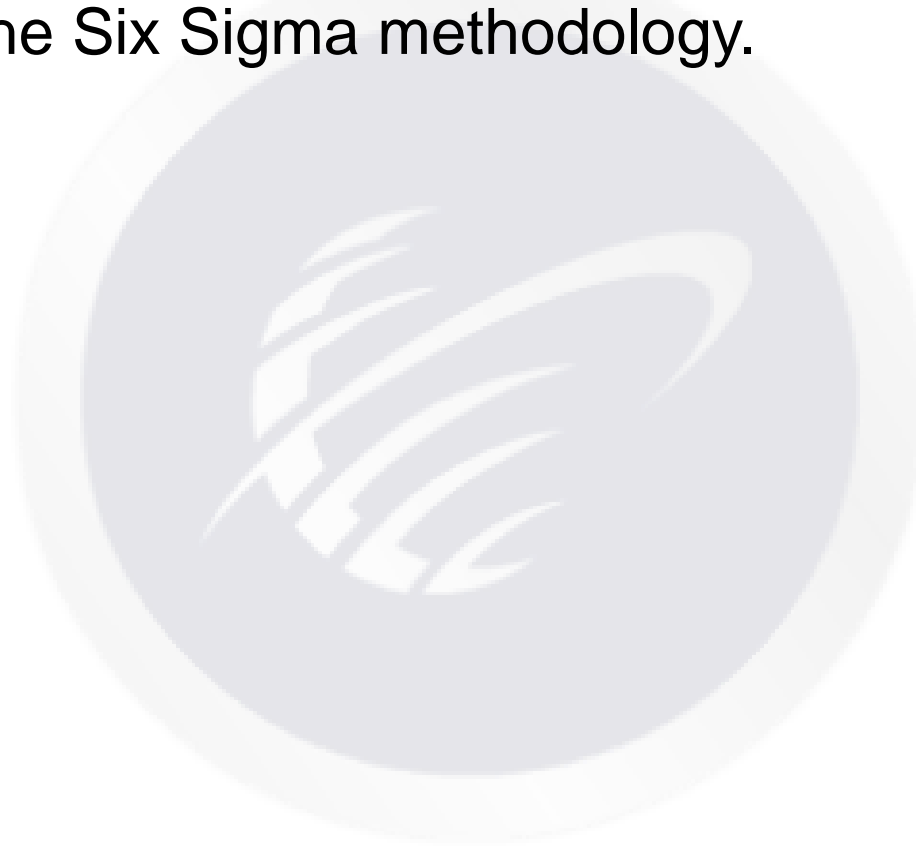
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The Phase of the project where starting point metrics are recorded.

- ☐ Analyze
- ☐ Improve
- ☐ Measure
- ☐ Control
- ☐ Define

What is Lean?

Now let's discuss **Lean** and gain a basic understanding of Lean within the Six Sigma methodology.



Definitions of Lean

The idea of '*Lean*' is to maximize customer value while minimizing waste. Simply put, lean means creating more value for customers with fewer resources. A lean organization understands customer value and focuses on vital processes to continuously increase it. The goal is to provide perfect value to the customer through a perfect creation process with zero waste.

- **Value** - The product or service provided to a customer at the right time at an appropriate price, as defined in each case by the customer. Features of the product or service, availability, cost, and performance are dimensions of value.
- **Waste** - Any activity that consumes resources but creates no value.

What is Lean?

Lean focuses on eliminating waste in processes, expanding capacity by reducing costs and shortening cycle times.

Lean is about understanding what is important to the customer. It is not about eliminating people.

“In America today we have good people working in poor processes. What we want are good people working in great processes” *Michael Hammer*

Thinking Lean

Examples of Lean project goals:

- Reduced inventory requirements
- Reduced floor space requirements
- Quicker response times and shorter lead times
- Decreased defects, re-work, and scrap
- Increased overall productivity

Benefits

Lean provides tangible benefits. It reduces costs, not just selling price. Lean helps to:

- Reduce delivery time, cycle time, set-up time
- Eliminate waste
- Seeks continuous improvement
- Improve quality
- Improve customer ratings and perceptions
- Increase overall customer satisfaction
- Improve employee involvement, morale, and company culture
- Helps “transform” organizations

Additional Belt-Level Certifications

Interested in learning more about Six Sigma? The Management and Strategy Institute (MSI) offers Six Sigma Certification at all levels.

- Six Sigma Yellow Belt Certified (SSYBC)
- Six Sigma Green Belt Certified (SSGBC)
- Six Sigma Lean Green Belt Certified (LGBC)
- Six Sigma Black Belt Professional (SSBBP)
- Six Sigma Lean Black Belt Professional (LBBP)
- Lean Six Sigma Master Black Belt (LSSMBB)
- See all [Six Sigma Certification options](#)

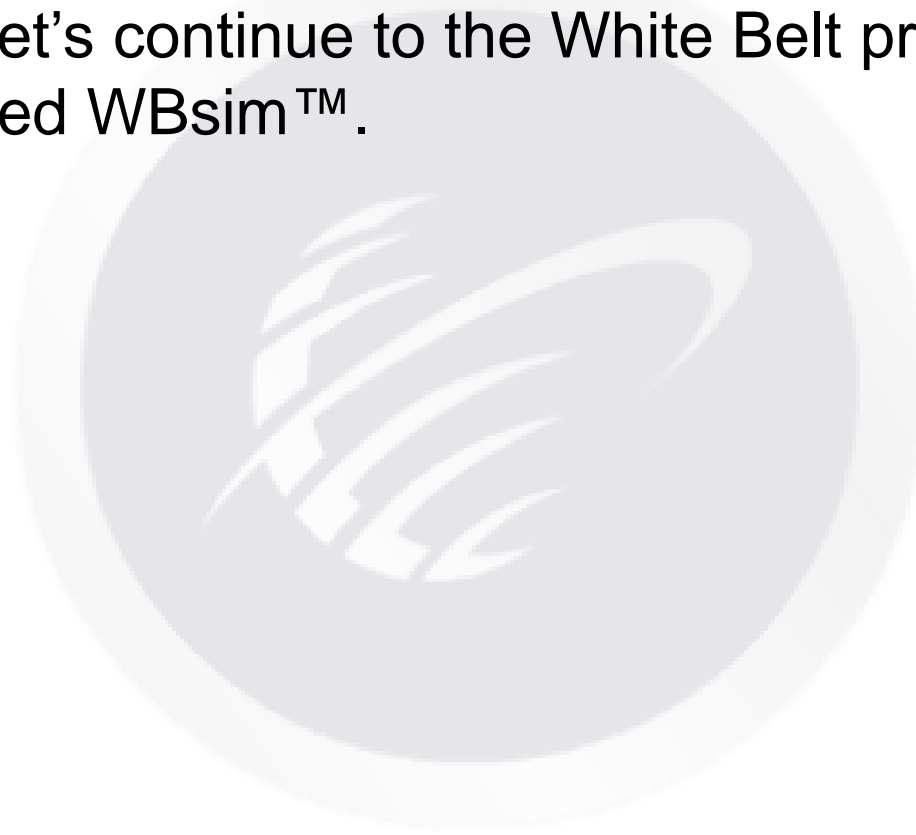
Additional Certification Options

MSI also offers popular certifications such as:

- 5S Concept Certified (5SC)
- Project Management Qualified (PMQ)
- Continuous Improvement Manager (CCIM)
- Corporate Trainer Certified (CTC)
- Change Management Specialist (CMS)
- Project Management Essentials (PMEC) - **FREE**
- Plus Many More! [See All Certifications](#)

WBsim™

Now that you've completed the study material for MSI's **Lean Six Sigma White Belt Certified (LSSWB)** certification, let's continue to the White Belt project simulator called WBsim™.



End of Course

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