

# RHP 8 & RHP 17 Joint Learning Collaborative Event

## Lunch & Learn: Six Sigma

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RHP 17 Program Assistant


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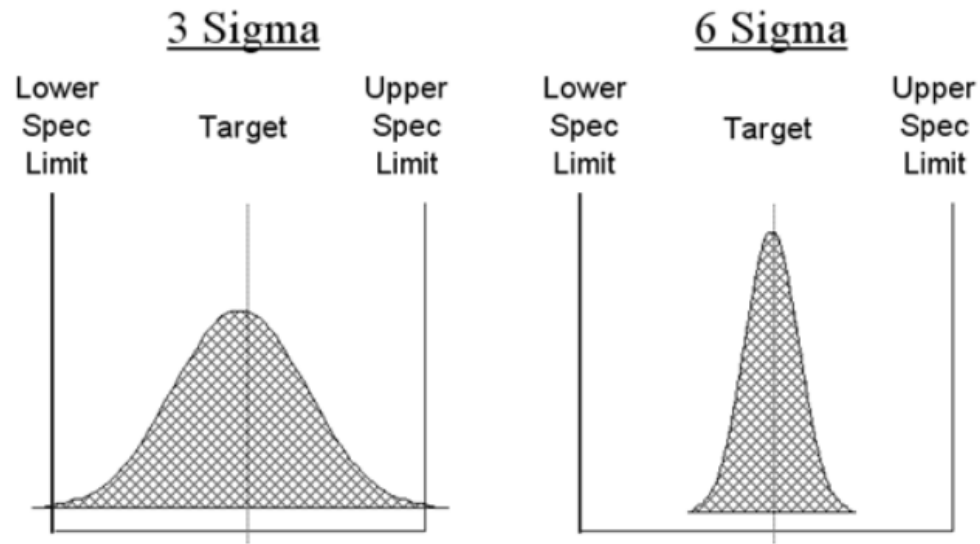
# What is Six Sigma?

Slide A

- ▶ ‘Sigma’ ( $\sigma$ ) is a Greek letter used to represent the statistical term ‘standard deviation’
  - ▶ Standard deviation is a numerical value that represents the measure of the average variability between the mean (average) of a sample or population and the individual data points that make up the total sample.
  - ▶ Six Sigma measures the deviations from average in a particular business process
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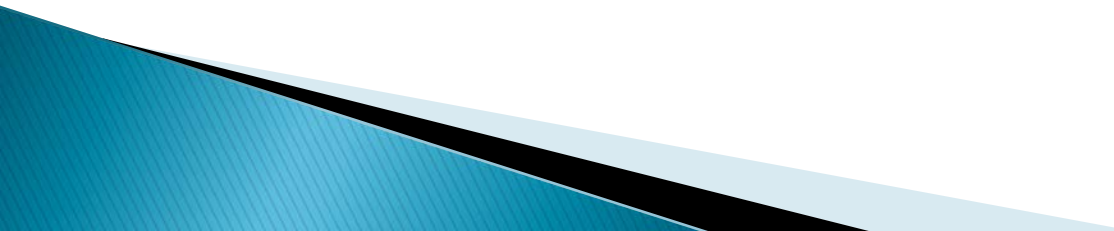
# What is Six Sigma?

- ▶ As a quality management methodology, uses different theories and tools to improve upon business processes
- ▶ 6 Sigma process produces only 3.4 defects per million opportunities.





# History of Six Sigma

- ▶ (1777– 1855)– Carl Frederick first scientist to introduce the concept of the normal curve
  - ▶ (1920)– Walter Shewhart used same concept to demonstrate that once a manufacturing process deviates three standard deviations away from the mean (or average), the product must then be remade or it will not pass quality inspection
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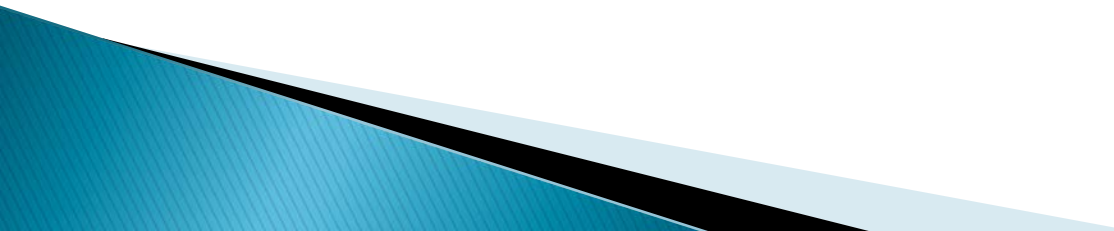


# History of Six Sigma

- ▶ (1980s)–Motorola engineer, Bill Smith, coined the term “Six Sigma.”
  - Motorola became the first corporation to create and implement this methodology (reported \$16 billion in savings)
  - 1987– launched Sigma Quality Program
  - 1989– Six Sigma Research Institute;
- ▶ (1990’s) – Other companies, such as GE, were using the Six Sigma Control method

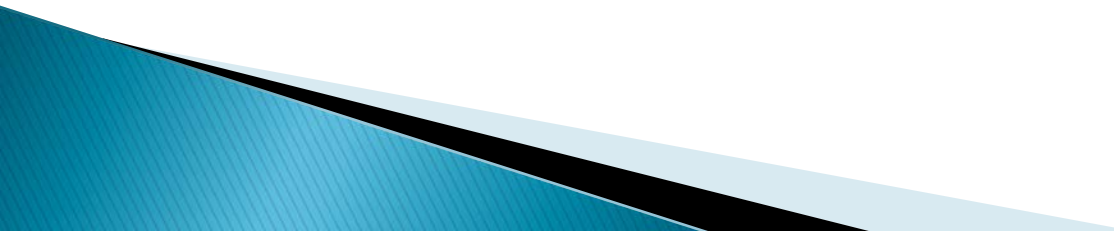


# Goals of Six Sigma

- ▶ Discover all of the problems within an organization that may or may not be apparent through research & data collection
  - ▶ To take appropriate action to reduce the number of errors and reworks which are known to cost time, opportunities, money and clients.
- 



# Six Sigma Characteristics

- ▶ As a *management system*, it is reported to:
    - Ensure improvements are sustained
    - Bring production teams together to maximize their efforts
    - Bring business strategies in line with improvement efforts
    - Accelerate results
- 




# Six Sigma Characteristics

## ▶ *As a metric system:*

- Used as a scale of quality and refers to the goal of '6 sigma' or 3.4 defects per million
- Started as a means to reduce defects, but then principals carried over to other areas of business development

## ▶ *As a methodology:*

- Used to keep main focus of company on understanding needs of customer
  - Develop process to meet consumer needs using data and statistics to minimize variation in production, and create sustainable business models
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# Why use Six Sigma?

## Let's compare....

### ▶ 3 Sigma process

- Produces 6.7 DPMO
- 5,000 incorrect surgical procedures/week
- 200,000 wrong prescriptions/ year

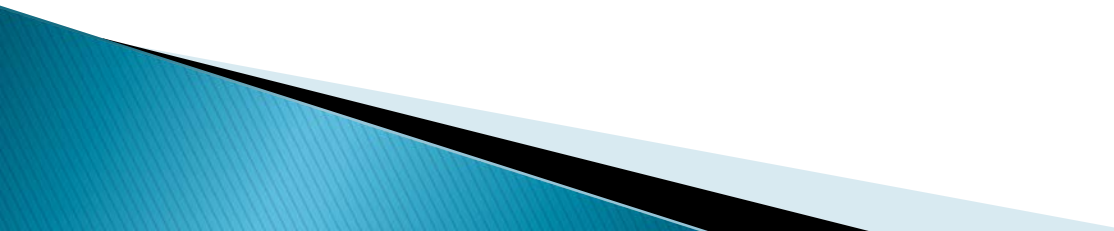


### 6 Sigma process

- produces only 3.4 DPMO
- 2 incorrect surgical procedures/ week
- 68 wrong prescriptions/ year



# Defects Per Million Opportunities

- ▶ '2 sigma' process produces 308,538 DPMO (31% defective)
  - ▶ '3 sigma' process produces 66,807 DPMO (6.7% defective)
  - ▶ '4 sigma' process produces 6,210 DPMO (0.62% defective)
  - ▶ '5 sigma' process produces 233 DPMO (0.023% defective)
  - ▶ '6 sigma' process produces 3.4 DPMO (0.00034% defective)
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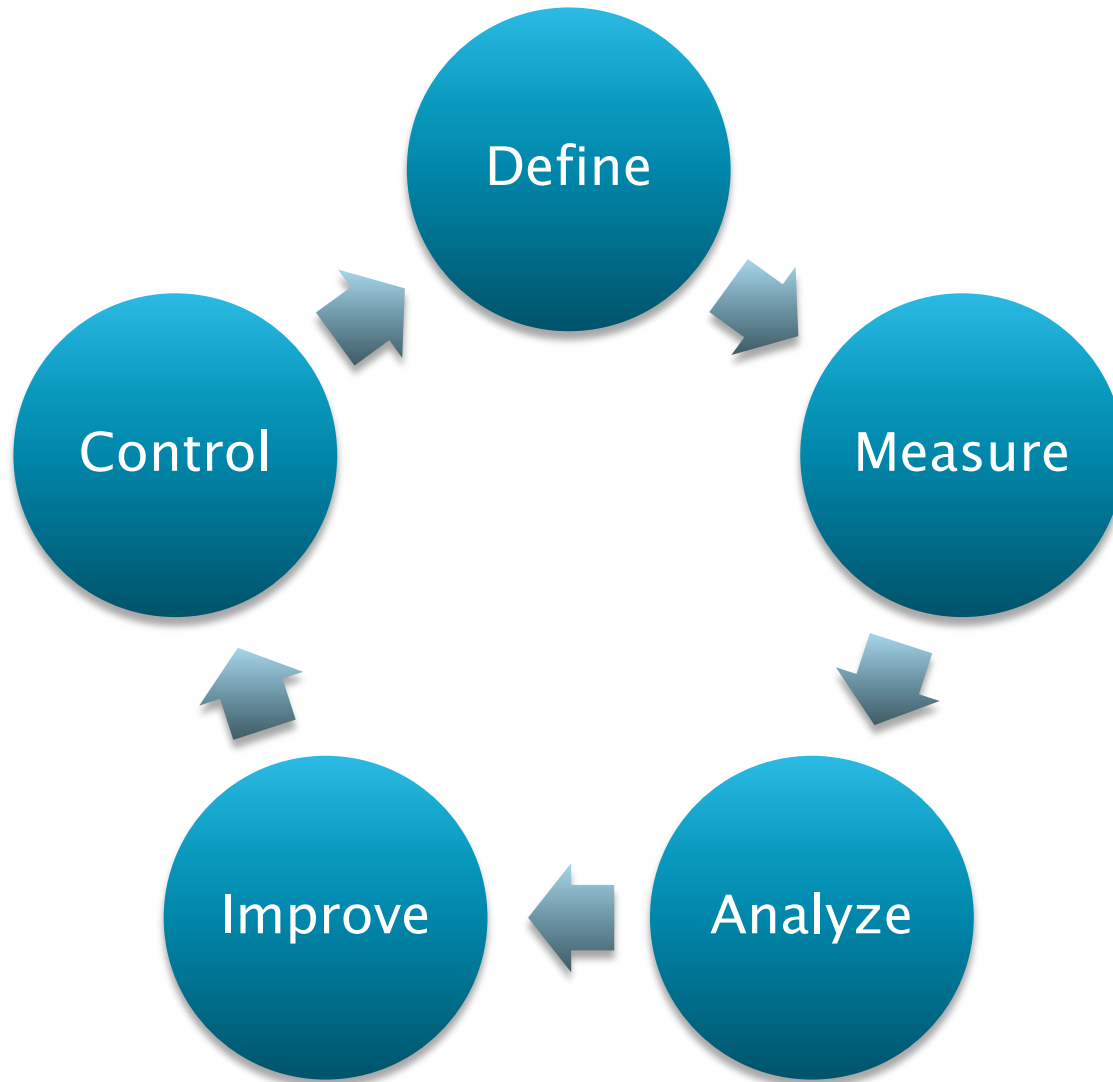


# Six Sigma Processes

- ▶ Two types of Six Sigma “Processes”:
  - DMAIC: Improve an existing system or process
    - Define–Measure–Analyze–Improve–Control
  - DMADV: Create new system or process
    - Define–Measure–Analyze–Design–Verify

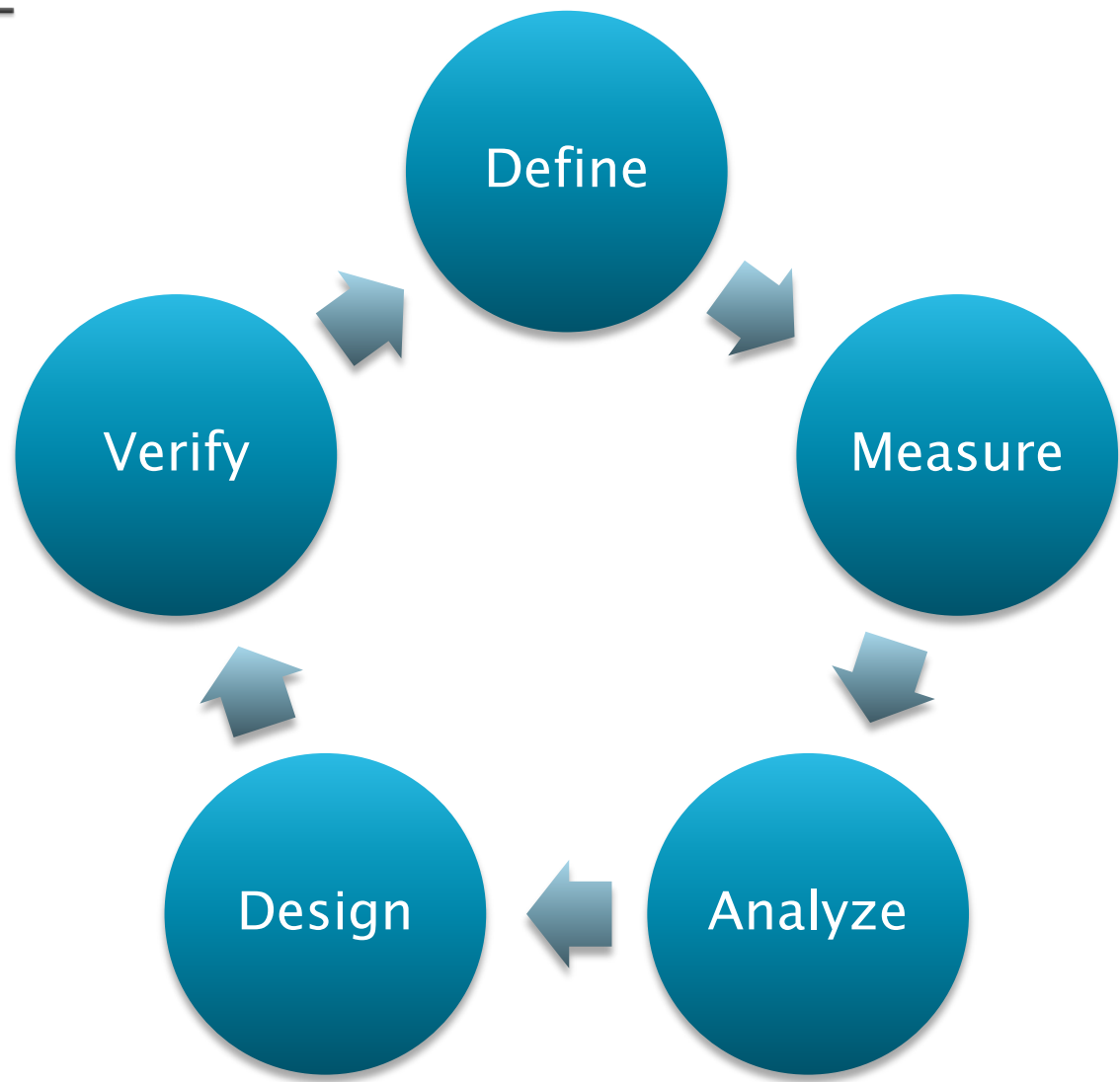


# DMAIC

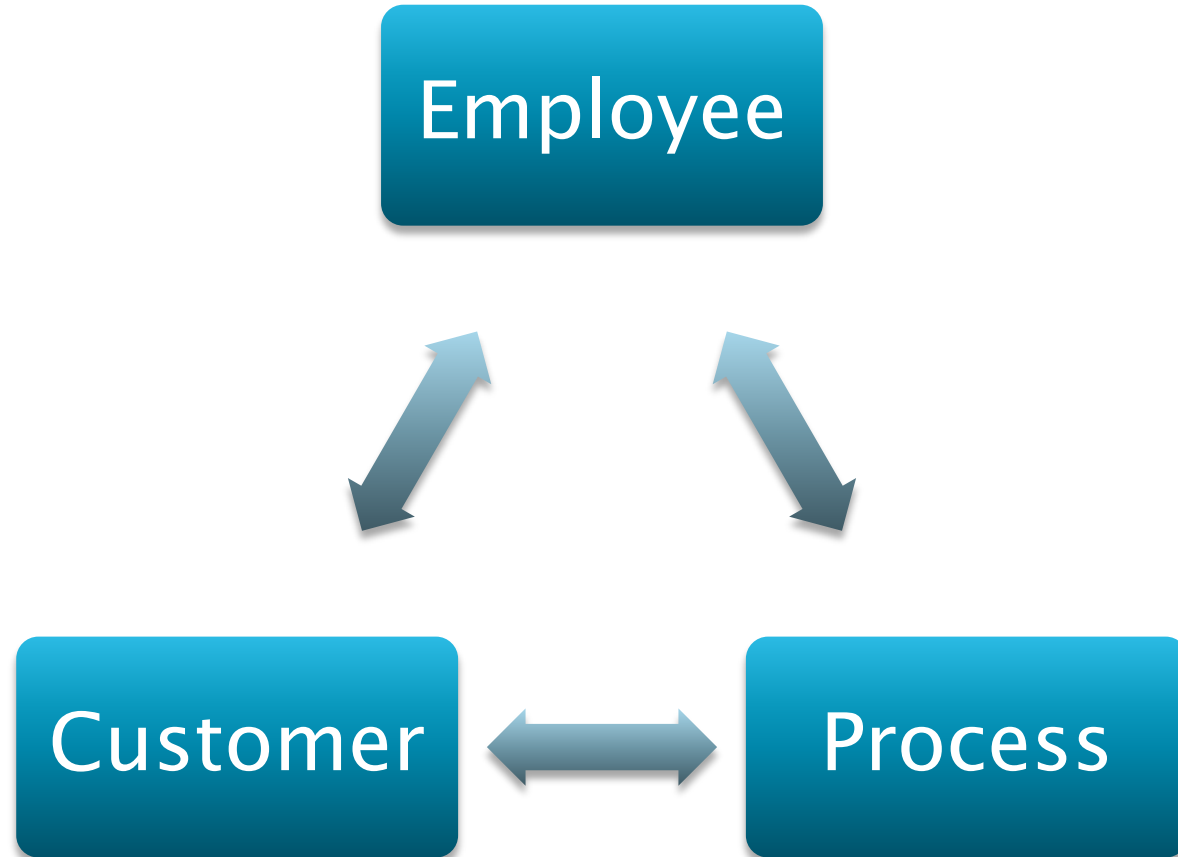




# DMADV

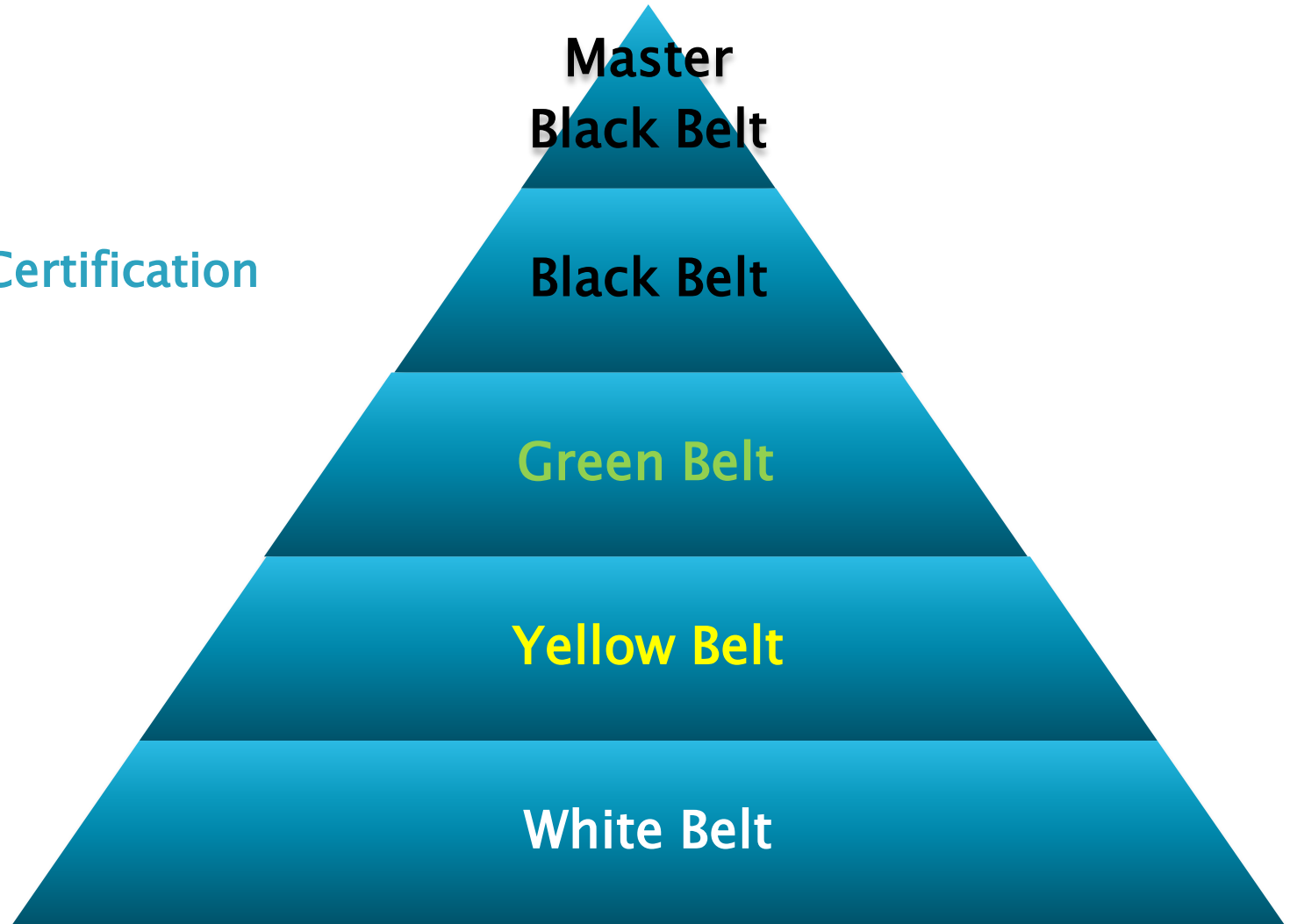


# Three Holders of Quality



# Teamwork: Levels of Six Sigma

Levels of  
Six Sigma  
Training & Certification



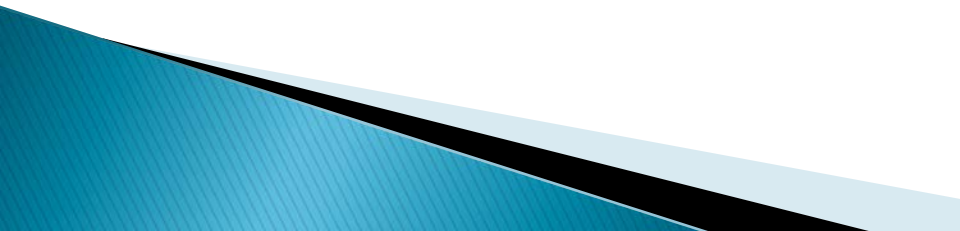


# Teamwork: Roles & Responsibilities

## ▶ White Belt

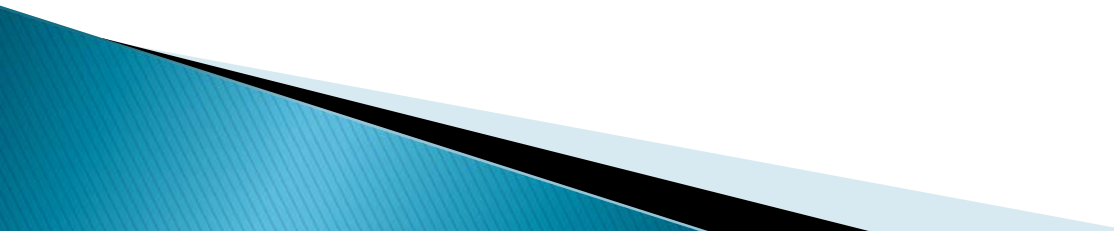
- Intro to the most basic foundation of Six Sigma knowledge (*\*\*may not be fully recognized by some members in Six Sigma community*)

## ▶ Yellow Belt

- Overall insight to the techniques of Six Sigma, its metrics, and basic improvement methodologies (*\*\* traditionally seen as most basic intro by Six Sigma community*)
- 




# Teamwork: Roles & Responsibilities

- ▶ Green Belt
    - Enhanced problem-solving skills
    - Emphasis on the DMAIC model
    - Incorporate quality language and tools in daily operations
    - Help deploy Six Sigma techniques in organization
    - Lead small-scale improvement projects in employee's focus area
- 




# Teamwork: Roles & Responsibilities

## ▶ Black Belt

- Embodies a thorough knowledge of Six Sigma philosophies and principles (including supporting systems and tools)
  - Complete understanding of DMAIC/DMADV models in accordance with Six Sigma principles
  - Have a basic knowledge of lean enterprise concepts
  - Can quickly identify "non-value-added" activities
  - **CHANGE AGENT**
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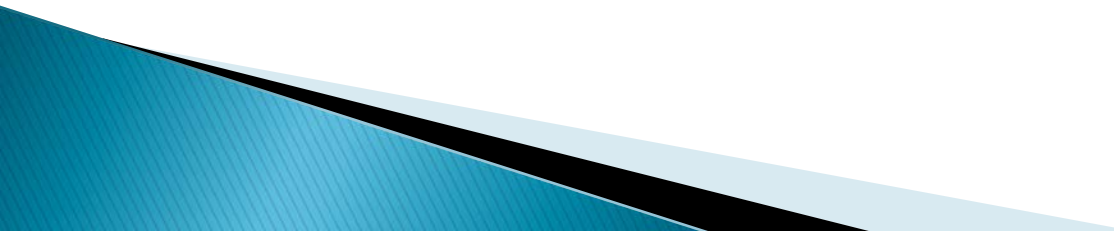


# Teamwork: Roles & Responsibilities

- ▶ Master Black Belt
    - Black Belt with additional training and experience
    - Renowned for leadership skills and ability to handle situations
    - Apply appropriate methodologies to attain tangible results
    - Expertise in identification of project deployment opportunities
    - Level of skill ranges from communication, coaching, and project management to statistical analysis
- 



# Teamwork: Roles & Responsibilities

- ▶ Six Sigma Champions
    - Senior or middle level executive
    - Role is choosing and sponsoring specific projects
    - Responsible for ensuring that whatever projects are undertaken mesh well with the goals and intentions of the business or corporation overall
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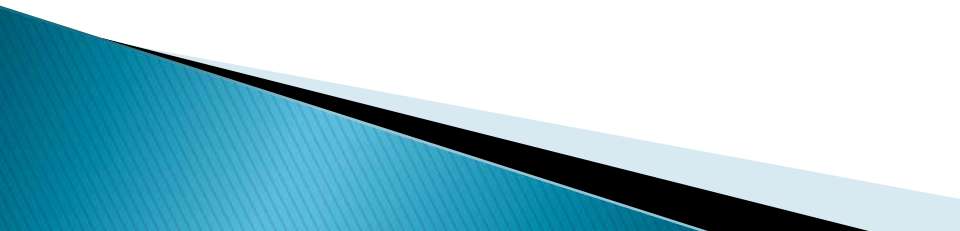


# What is Lean?

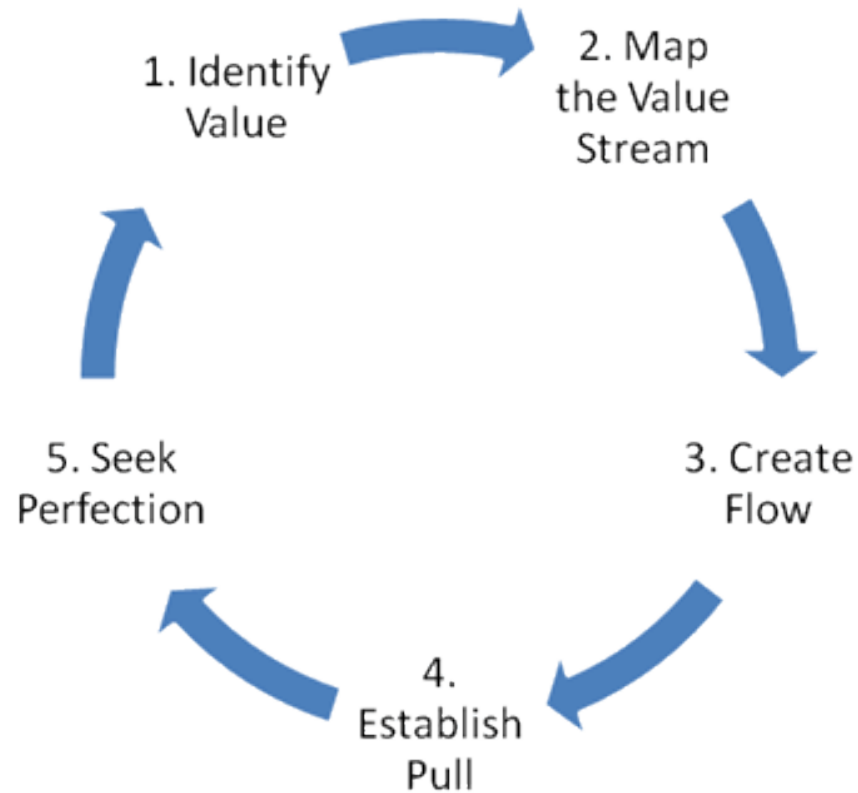
- ▶ Methodology that focuses on maximizing customer value while minimizing waste
- ▶ Eliminating waste creates a process that requires less human effort, less space, less capital, and less time



# History of Lean

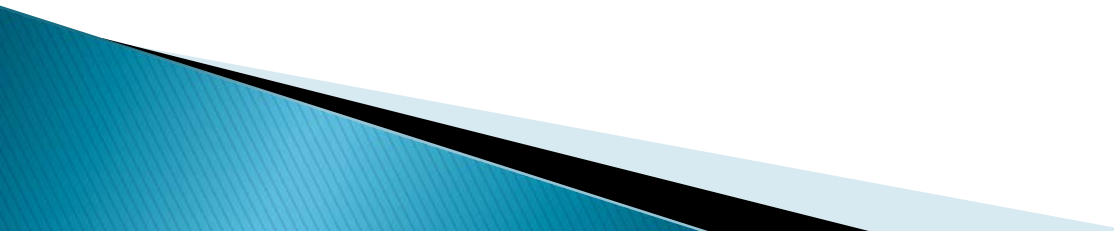
- ▶ (1890s)– Fredrick W. Taylor was the first to study work management scientifically
  - ▶ (1910)– Henry Ford’s vision of mass production inspired ideas about continuous assembly lines and flow systems
  - ▶ (1930s)– Taiichi Ohno of Toyota implemented Lean methodologies to reduce inefficiencies and improve overall value to customers. Toyota is the leading lean exemplar in the world
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# Lean Value Stream



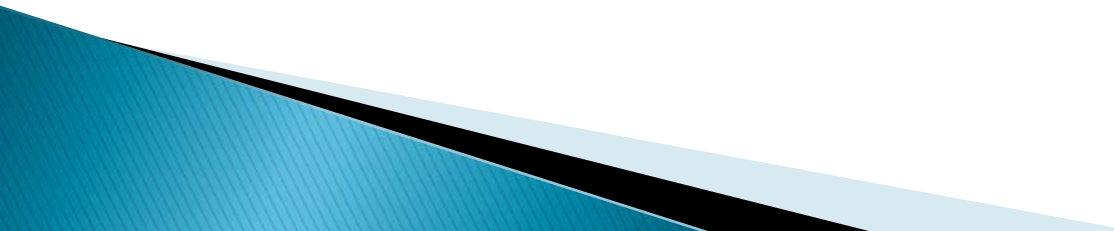


# 5 Lean Principles

1. Specify value from the standpoint of the end customer by product family
  2. Identify all the steps in the value stream for each product family, eliminating whenever possible those steps that do not create value
  3. Make the value-creating steps occur in tight sequence so the product will flow smoothly toward the customer
- 



# 5 Lean Principles

4. As flow is introduced, let customers pull value from the next upstream activity
  5. As value is specified, value streams are identified, wasted steps are removed, and flow and pull are introduced, begin the process again and continue it until a state of perfection is reached in which perfect value is created with no waste
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# Lean Six Sigma

- ▶ Managerial concept that combines the two methodologies of Lean & Six Sigma
- ▶ Results in the elimination of 8 kinds of wastes and improved capability of performance

Program	Six Sigma	Lean thinking
Theory	Reduce variation	Remove waste
Application guidelines	<ol style="list-style-type: none"><li>1. Define.</li><li>2. Measure.</li><li>3. Analyze.</li><li>4. Improve.</li><li>5. Control.</li></ol>	<ol style="list-style-type: none"><li>1. Identify value.</li><li>2. Identify value stream.</li><li>3. Flow.</li><li>4. Pull.</li><li>5. Perfection.</li></ol>
Focus	Problem focused	Flow focused

Source: Nave, Dave. (2002). [How to Compare Six Sigma, Lean and the Theory of Constraints: A Framework for Choosing What's Best for Your Organization](#). *Quality Progress* March. pp.73–78.



# Applying Six Sigma to Healthcare

- ▶ Four indicators to define performance level
  - Service level
  - Service cost
  - Customer satisfaction
  - Clinical excellence
  
- ▶ Challenges of implementation
  - Patient care involves human elements as opposed to manufacturing
  - Levering Six Sigma data to drive human behavior

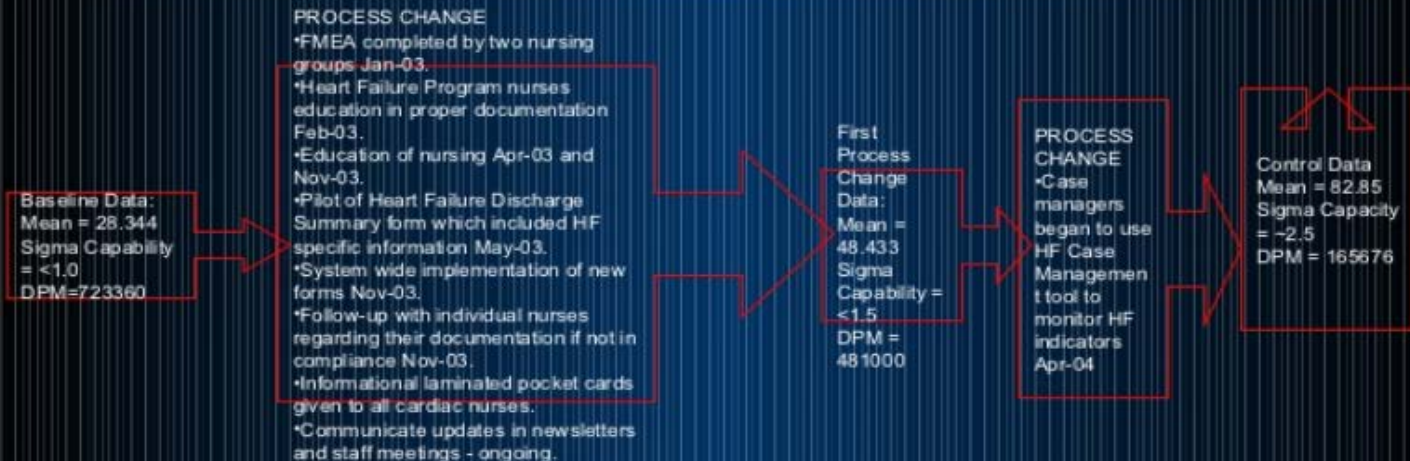
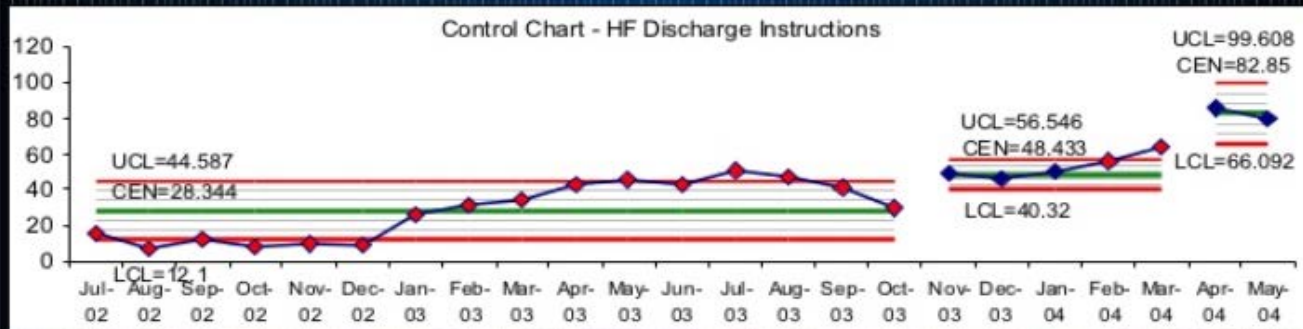


# Applying Six Sigma to Healthcare: Measuring the patient's perspective

- ▶ Determine patient's preference
- ▶ Patient's evaluation of the services
- ▶ Measure patient's perspective through reports of objective observations

# Applying Six Sigma in Healthcare

## Heart Failure Patients Given Education Share



Source: Beaver, Rick. "Successfully Applying Six Sigma in a Healthcare Organization." 6 January 2012. 02 July 2014

# Applying Six Sigma to Healthcare

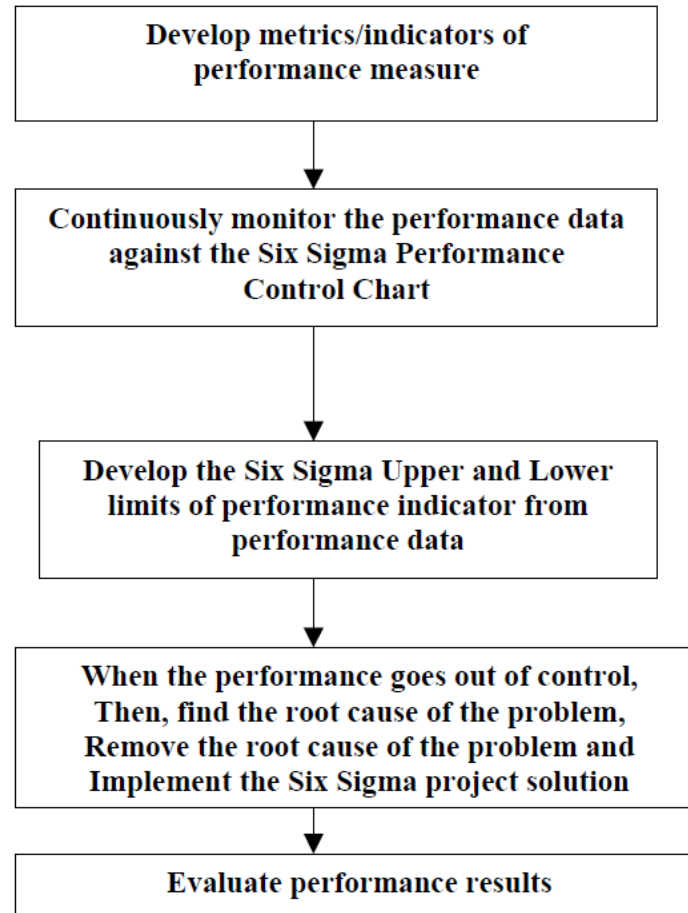
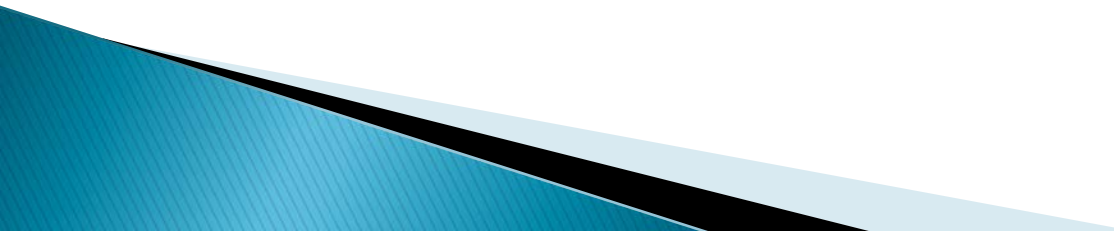


Figure 1. A model of Six Sigma approach to health care quality improvement

# Using Six Sigma Approach

- ▶ Define the goal and scope of the project
  - ▶ Create a performance baseline
  - ▶ Monitor performance and collect performance related data
  - ▶ If performance goes below expected level, analyze the root causes of the problem
  - ▶ Implement procedures to remove root cause
  - ▶ Evaluate performance of the system before and after implementation
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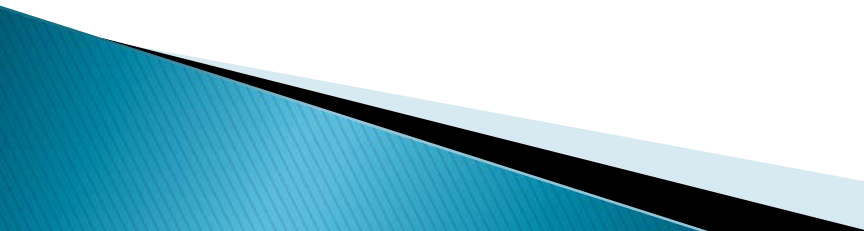


# Experience Six Sigma for Yourself

## ▶ Get White Belt Certified

- Most basic level of understanding of the Six Sigma Methodology
  - Provides basic definition, history, and structure of the discipline

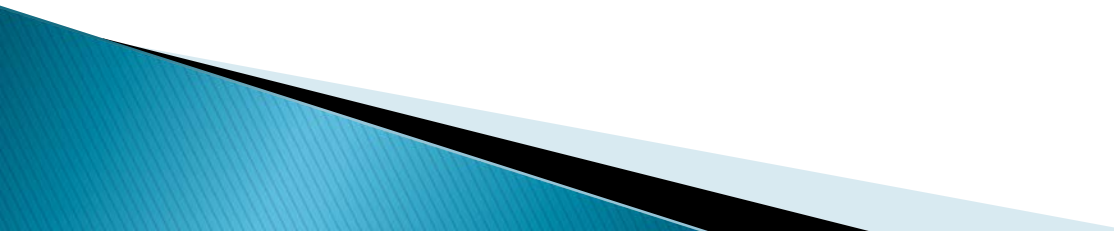
## ▶ Why Get White Belt Certified?

- Provides a solid understanding of who is involved in the actual implementation within an organization
  - Resume builder & conversation starter
  - You can do it for FREE!
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# White Belt Certification

- ▶ For a limited time, Aveta Business Institute is offering Free Six Sigma White Belt Certification
- ▶ Visit the [Aveta website](#) for more information and to complete the Six Sigma White Belt Certification

# Collaborative Discussion

- ▶ Six Sigma use among Regional Stakeholders
    - Do you currently use Six Sigma within your organization?
      - If yes, have you found it easy to implement and how has it impacted quality?
      - If no, do you have plans to start using Six Sigma within your organization?
  
  - ▶ Open Q&A
- 

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