

QUALIMATIONS

**Six Sigma**  
Path to Excellence

QUALIMATIONS

# What's Next ?



Next Job

Next Promotion

Next Direction

Next Company

Next Country

Next Domain

# What's Next ?



The path to the next is in the quality Of the current and the additional qualification that you gain

Next Job

Next Promotion

Next Direction

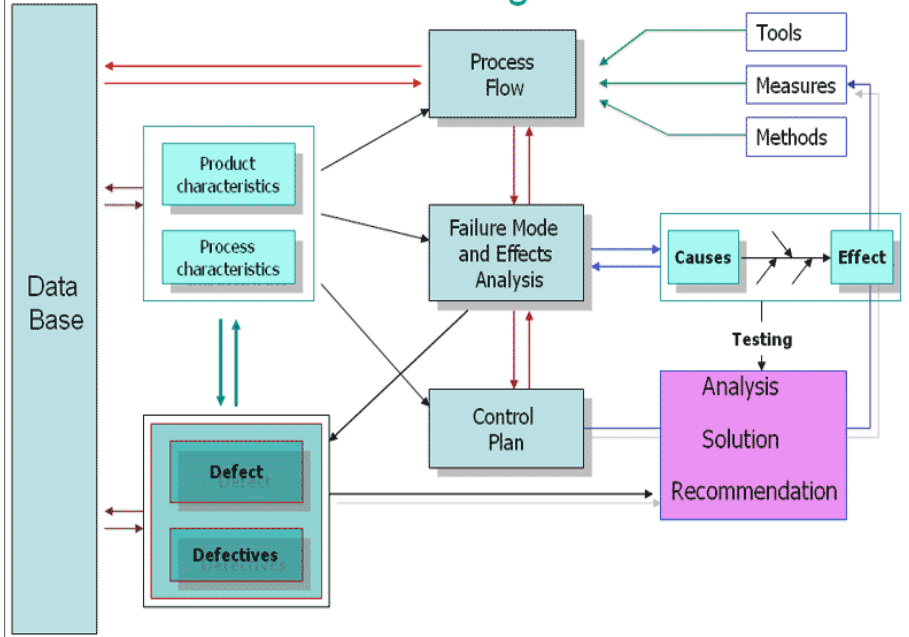
Next Company

Next Country

Next Domain

## Understanding and learning more about the process

### Problem Solving Process



### Quality of Understanding current process and work

- Do you go deep into the critical functions in the company.
- Do you clearly and Systematic Solve problem at work.
- Do you Involve people, inspire, meet and negotiate
- How close are you to the company objective of Revenue
- Do you add value and improve Product and Quality

# Issues with work and learning currently



## FMEA Failure Mode Effects Analysis - PFMEA

Title **Sample Product or Process - Rev C**

Program	<Value Stream, Program, Product Family...>	Level / Phase	Choose from list	Document Number	<Document Control Number>
Date (orig)	<date>	Revised	<date>	Description	<Description>
Controlled?	<yes/no/cond>	Author	<name>	Core Team	<Names>
		Responsible	<data3>	User	<User's default data>

Are you working hard for some thing critical for the company revenue Or **just working hard**

Are you **wasting time** knowing all And everything

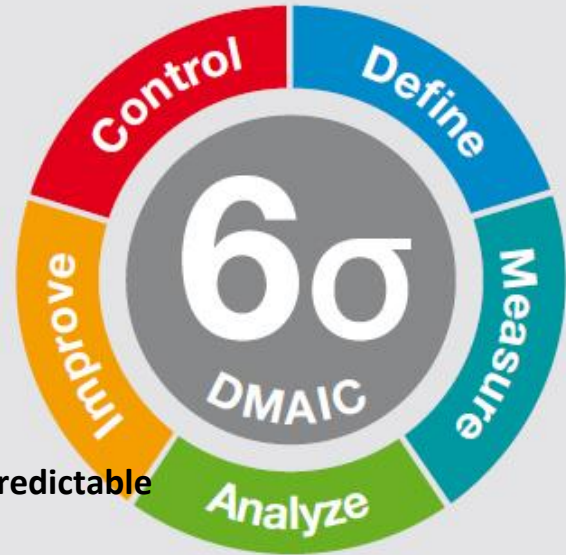
Are you involved in inspiring, coaching and Troubleshooting Or just **firefighting**

Are you developing **problem solving skills** in you Or you solve any how and some how

Occurrence	Prevention Method	Detection Method	Detection	Low	Risk PN	Actions Recommended	Who	Action Target Date	Actions Completed	Action Done Date	Severity	Occurrence	Detection	Risk PN
2	NC program inputs verified by sensor input (D-C0018Cno). Scan to travel for Western or US Code Requirement	Machine lock-out if cause is detected. ST-SPC check. Verification template - Visual only	3	3	54	Develop Error-proof method to ensure cause never occurs. Develop Error-proof method to improve detection	HH	On-going	See Preventive Action D-CPA-00023478					
2	NC program inputs verified by sensor input (D-C0018Cno)	Machine lock-out if cause is detected. ST-SPC check	2	2	36	Develop Error-proof method to ensure cause never occurs	HH	On-going	See Preventive Action D-CPA-00023479	4/22/2012	9	2	2	36
5	Std. Procedure D-C0034Cba	Visual inspection	8	8	88	Place Std. Procedure D-C0034Cba on Control Plan. Develop Error-proof method to ensure cause never occurs	JW	4/24/2012	D-C0034Cba on Control Plan	4/22/2012	9	4	8	88
	NC program inputs verified by sensor input (D-C0022Cno)	Machine lock-out if cause is detected. ST-SPC check. Visual inspection	3	3	72	Improve hinge width detection sensor performance to reduce	HH	7/8/2012	See Preventive Action D-CPA-00023480					

# You need the following to win

- **Convert customers requirement into Company specification**
- **Critical to Quality (CTQ):** Attributes most important to the customer
- **Tools that support problem solving**
- **International Validity**
- **Scope for growth and Job**
- **Process Capability:** What your process can deliver
- **Stable Operations , controls and Alerts:** Ensuring consistent, predictable processes to improve what the customer perceives



You need a process that support Company and your personnel growth which is faster and reliable



## Six Sigma

Green Belt Training

Understand clearly the fundamentals of Quality planning.

Effectively use the DMAIC improvement process.

Select successful Deep Analysis projects for improvement.

Plan and execute quality into the design and process.

THE QUALIMATION QUALITY TECH IS A PROBLEM ANALYSIS AND IDEA GENERATING ORGANIZATION, WITH AN INTELLIGENCE NETWORK OF PROBLEM SOLVERS.....

We offer NDT Training, Examination, Six Sigma, Reliability Level 3 and Consultancy Services.

“Six Sigma Certification can make you grow faster and very reliably”



# The Applications of Six Sigma

SIX SIGMA CERTIFICATION  
Is in all application and domains





## Six Sigma for Engineering and Research, Qualimations Training



The training is of high Quality and covers many domains. The trainers knowledge in six sigma implementation is shared systematically and in a way i could understand. The Deep Analysis method is very analytical.

This has given me more clarity on my own process that i handle daily.

**N Pradosh, INDIAN NAVY**

## Six Sigma in Oil and Gas Sector



Support monitoring the condition of your rigs and drill pipes. Detect potential internal and external, corrosion, pitting, cuts, gouges, wall loss, and fatigue cracks before they result in severe damage.



*" Perfect, Interesting and highly educative. I have no regret attending the course because it has broaden my knowledge on how to handle and solve problems in my organization and to tackle the most pressing issues or problems first. Also to always lookout to block all defect as ----- as possible to maximize profit for any organization and minimizing cost. I have gained a lot"*

**Julie O Kodu , protocol manager/project co ordinator, Sea Petroleum & CTAS Group of companies,Lagos,Nigeria**

The training was an eye opener for me on the knowledge of Six Sigma and applying its quality tools in problem solving. The training was satisfactory. I am planning to apply this in my company.

**Akpavie David Okeoghene, M.D, Signet Business Option, Nigeria**

## Six Sigma For Hospitality And Health sectors

- ❖ Doctors to lead the Lean Six Sigma implementation.
- ❖ Ability to control key critical characteristic.
- ❖ Health care professionals with process improvement activities.

Excellent course and instructor, explains on the concepts, takes trouble to explain with every day examples. Illustrated with actual field problems. As healthcare is relatively new area for six sigma application it will take time but the principles apply. I would consider starting from patient registration and then the billing process.

**Dr Satish Kurivilla, Gynaecologist,  
Pondicherry Institute of Medical  
Sciences,**



## Six Sigma for Logistics and Inventory Management

- ❖ With Process optimization expertise
- ❖ With coordinating and managing teams
- ❖ With Quality in Inventory control and order expertise

Learnt lots of essential concepts for upper management on methods and implementation, the USP of this course is " clarity on where to focus for improvement". I gained knowledge on how to maximize revenue through Quality, over all Good course.

**K. Varadharajan, General Manager(Sales and Marketing),  
Race Pharma, Chennai.**



## Six Sigma for Banking, Finance and Revenue Management



Big improvement in the way I think about a process and Quality. Good program and excellent training material. The way the trainer has chalked out the contents and training methodology is immaculate. Excellent content.

**Adarsh, Business Analyst, SOD Technologies, Cochin**

- ❖ Revenue Maximization expertise
- ❖ Support sales for growth
- ❖ Process Optimisation expertise



**Six Sigma software development companies that are claiming success with Six Sigma are using it to improve the processes within the standards of CMMI and ISO.**

	Individual Process	Organizational infrastructure
Six Sigma	Identifies how the activities might be improved, problem solving, and potential failures to come.	Identifies what activities are used for improvement (DMAIC).
CMMI	Identifies what activities are expected in the process.	Identifies how those activities might be implemented.

# SOFTWARE DEVELOPMENT



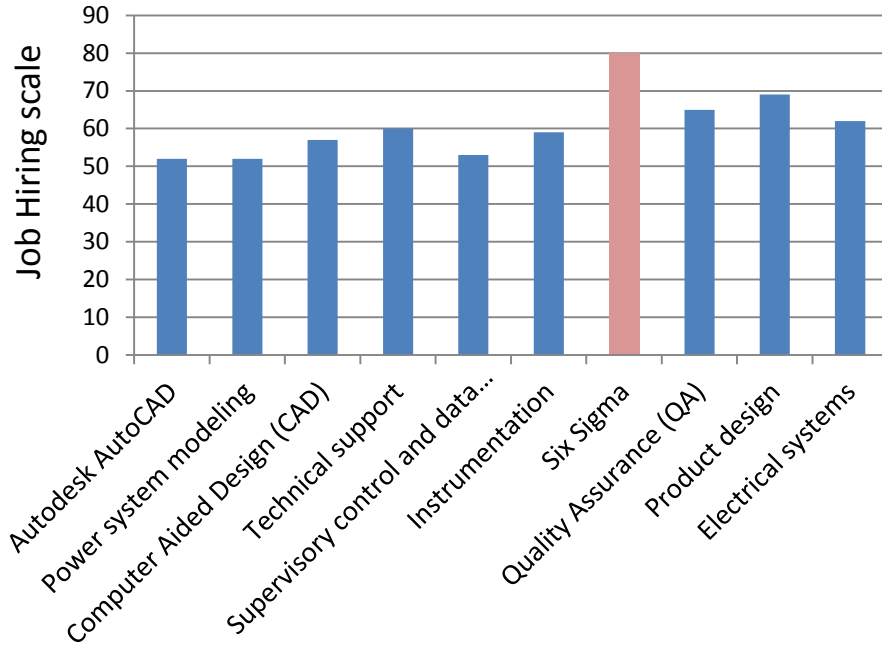


## Six Sigma for the Engineers



- ❖ With six sigma project application expertise
- ❖ With Green Belt Certification
- ❖ With Quality improvement expertise
- ❖ With Problem Solving Skills
- ❖ With Ability to manage and handle projects

## Skill and Hiring Scale Score



- ❖ With six sigma project application expertise
- ❖ With Green Belt Certification
- ❖ With Quality improvement expertise
- ❖ With Problem Solving Skills
- ❖ With Ability to manage and handle projects

# The Certificate



Traditionally, six sigma skills are associated with **manufacturing and engineering jobs**. However, this method of process improvement are cross-functional and can be applied in other functional areas or industries.

In fact, the industry with the most ads for six sigma qualified candidates is **direct Health and medical insurance carriers**, Other industries with high demand included support activities for **commercial banking, general medical and surgical hospitals, and pharmaceutical manufacturing**.

*Analytics, market source*

# Six Sigma Improvement - DMAIC

Define

## Measure

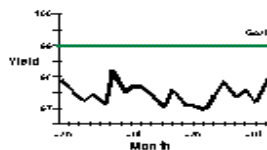
- (1) Determine CTQ Characteristics



- (2) Establish Measures and Goals



- (3) Identify Gaps in Performance



## Analyze

- (4) Separate into Mistake Proofing and Variation Reduction



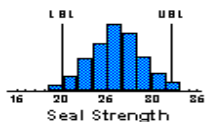
- (5) Develop Measureable Outputs



- (6) Validate Measurement System

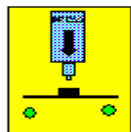


- (7) Evaluate Stability and Capability of Outputs

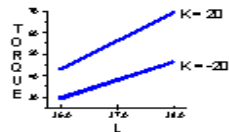


## Improve

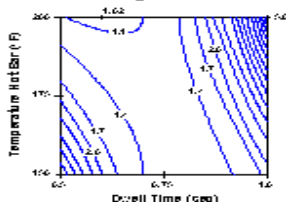
- (8) Reduce Errors Using Mistake Proofing



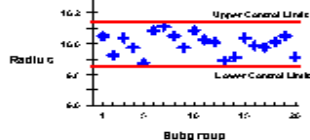
- (10) Improve Average by Adjusting Key Inputs



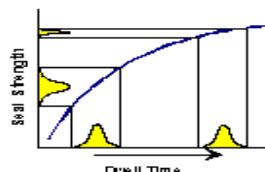
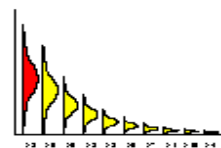
Seal Strength Std. Dev.



- (9) Improve Stability by Identifying Causes of Shifts

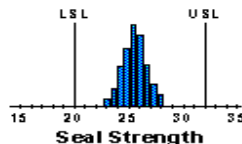


- (11) Reduce Variation by Identifying VIP and Robust Design

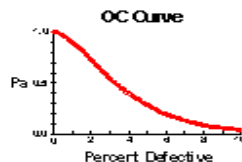


## Control

- (12) Verify Capability of Outputs



- (13) Perform Other Testing



- (14) Implement Controls

Control Plan

Rev	Product	Value Stream	Control	Owner	Control
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Qualimations is training and certifying people for the past 10 years in Six Sigma



# Six Sigma


Green Belt Training

- Understand clearly the fundamentals of Quality planning.
- Effectively use the DMAIC improvement process.
- Select successful Deep Analysis projects for improvement.
- Plan and execute quality into the design and process.

THE QUALIMATION QUALITY TECH IS A PROBLEM ANALYSIS AND IDEA GENERATING ORGANIZATION, WITH AN INTELLIGENCE NETWORK OF PROBLEM SOLVERS.....

We offer NDT Training, Examination, Six Sigma, Reliability Level 3 and Consultancy Services.

Qualimations Six Sigma certification is given with a 1 year project development support  
*Directly from the consultant.*



Methods to deploy Six Sigma  
Policy Deployment  
Customer centric change support  
Process Optimisation  
Performance Measures  
Green Belt, Black Belt Training  
Enterprise Quality planning



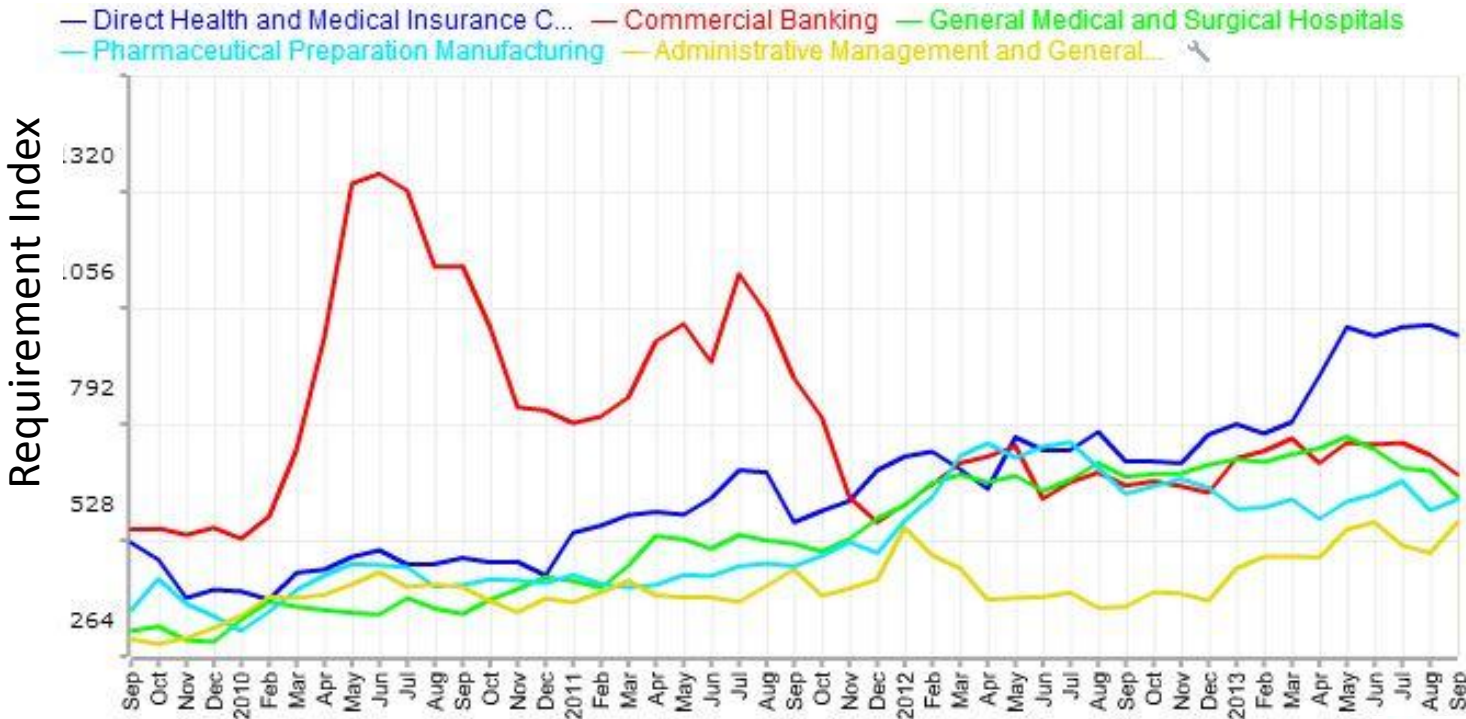
6 $\sigma$   
Six  
Sigma



# Qualimations consultants shows you real time application examples of six sigma tools and projects



# The Scope of Six Sigma : 3 years Ads for six sigma requirements



## Jobs with most request with six sigma skill



- ✓ Quality Engineer
- ✓ Manufacturing Engineer
- ✓ Project Manager
- ✓ Process Engineer
- ✓ Quality Manager
- ✓ Production Supervisor
- ✓ Business Analyst
- ✓ Quality Assurance Manager
- ✓ Senior Quality Engineer
- ✓ Software Testing lead
- ✓ Medical Specialist
- ✓ Logistics coordinator

Qualimations also supports you from site and company wide training

## Most Commonly Advertised Skills in Six Sigma Job Ads

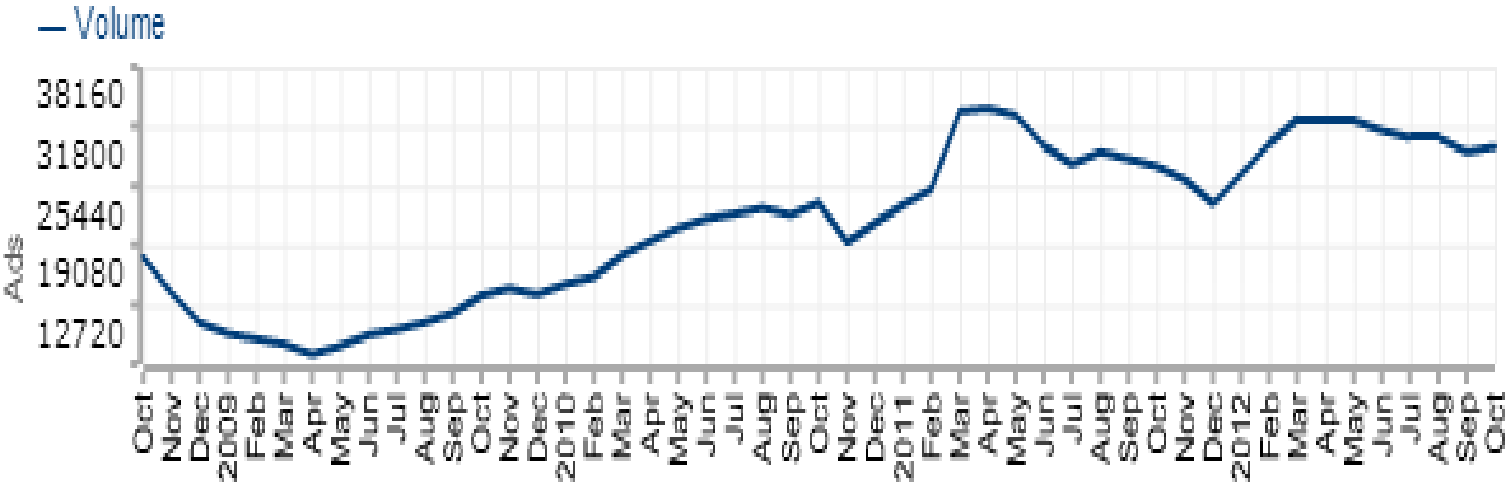
Totally changed my perception regarding Failure mode and effect analysis. This course was very useful as an individual to contribute to the company in maximizing revenue and reducing cost at the factory.

Got charged up, the training was very practical and lots of examples explained well. Planning to deploy in compounding, dripping and packing process in the company.

**D. Mohanaraj, GM Manufacturing,  
Teleflex medical private ltd.**

- Project Management
  - Problem Solving
  - Process Improvement
  - Quality Function deployment
  - Failure Mode Effect Analysis
- 
- Six Sigma Green Belt (SSGB) – 80%
  - Six Sigma Black Belt – 20%

# Jobs With Six Sigma expertise expected in the last 4 years in the US



Hiring demand for six sigma skills experienced its highest volume of job ads during March 2011 with over 36,000 job ads posted online. Since then, hiring demand decreased 10%. Despite the decrease, as of October 2012, demand was 22% higher than it was 2 years ago.

# Six Sigma Companies



**Honeywell**



*Johnson & Johnson*

**Kodak**

**LOCKHEED MARTIN**  
*We never forget who we're working for™*

*ServiceMASTER.*

**Raytheon**

**DUPONT** *The miracles of science™*



**SONY**

**MOTOROLA**  
*intelligence everywhere™*



*Living.  
Improved daily.*

**CATERPILLAR®**

**GM**

**AlliedSignal**

**AIG**

**QUALIMATIONS**



# What does Qualimations provide ?

- ✓ Intensive 25 hrs / 3 days Class Room Training course leading to Six Sigma Green Belt Certification
- ✓ 1 year support for Six sigma support for improvement from the consultants.
- ✓ Software to update Failure mode effect analysis and Statistical Process control.
- ✓ Syllabus in line with American Society for Qualities requirement of Six Sigma.
- ✓ Price just Rs 11,500 for all the above with the best trainer in Six Sigma.



## Who are the trainers at Qualimations?

- ✓ We bring you the best Trainer in 6sigma with 20 years Quality Management and application expertise.
- ✓ The consultant shows you real time applications in the class room.
- ✓ The consultant provides support for development directly fro 1 year.

Course Delivery: Excellent  
Course Materials: Crisp and Clear  
Length of Course: Excellent  
Course Tools: Very Good  
Course Examples used: Excellent

Over all the course was excellent using real time projects by the consultant.

**Udhaya Kumar, QHSE Advisor, PROSAFE,  
Vancouver, Canada**

# Benefits of Six Sigma



"The Six Sigma initiative is in its fifth year — its fifth trip through the operating system. From a standing start in 1996, with no financial benefit to the Company, it has flourished to the point where it produced more than \$2 billion in benefits in 1999, with much more to come this decade."

- GE 1999 Annual Report [http://www.ge.com/annual99/letter/letter\\_three.html](http://www.ge.com/annual99/letter/letter_three.html)

# Benefits of Six Sigma

## Honeywell

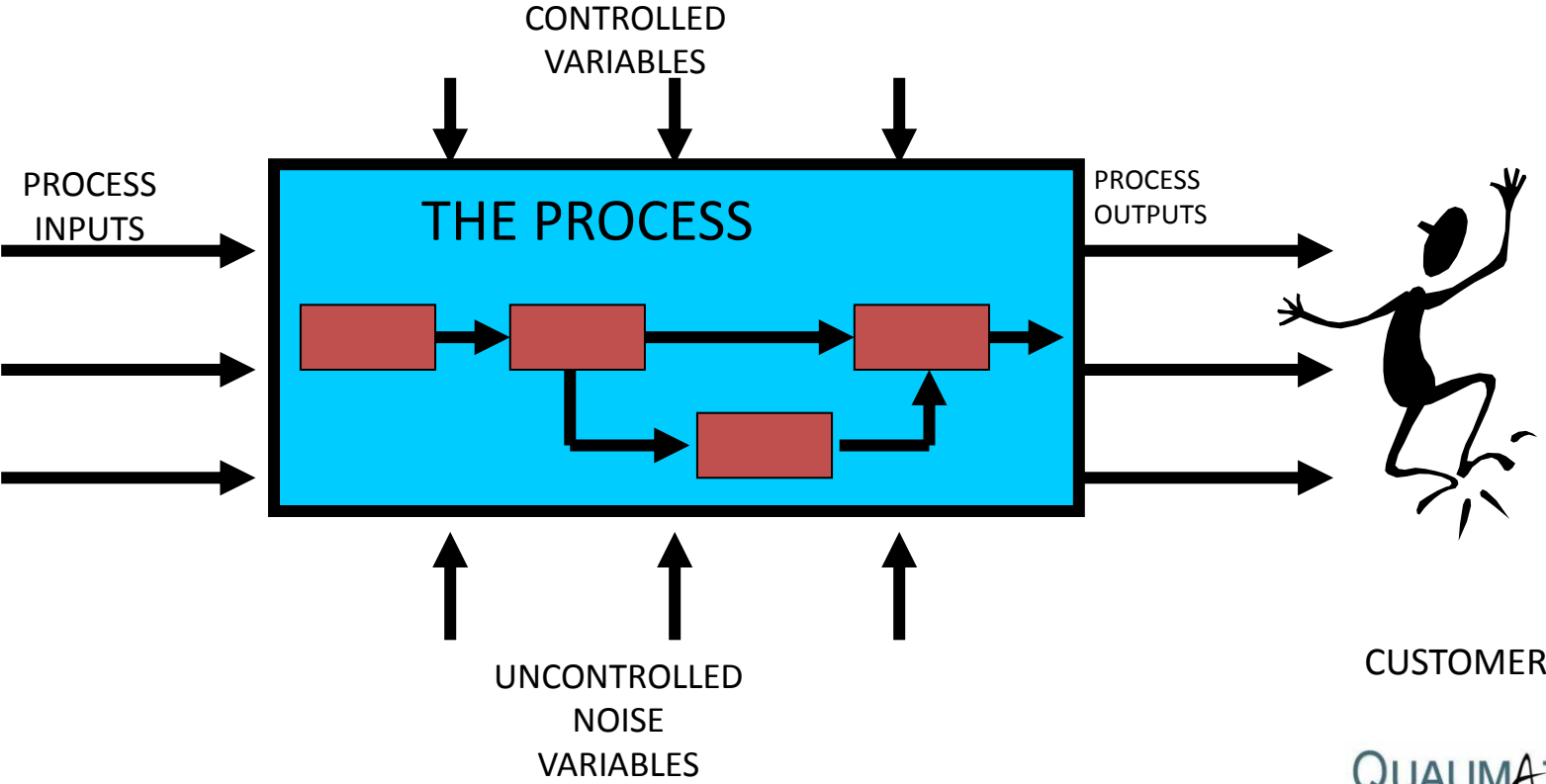
"We achieved \$600 million in Six Sigma cost savings in 1999, but cost savings are only one part of the story. Delighting customers and accelerating growth completes the picture. When we are more efficient and improve work flow throughout every function in the company, we provide tremendous added value to our customers—through higher quality solutions that are more competitively priced, delivered on time and invoiced correctly. That makes us a more desirable business partner."

- Honeywell 1999 Annual Report [http://www-a.honeywell.com/investor/ar99\\_intro\\_smarter.html](http://www-a.honeywell.com/investor/ar99_intro_smarter.html)

## So What exactly will you learn in Six Sigma

- DMAIC, Six Sigma Cycle of improvement
- QFD : System to transform customer requirement into company measures
- FMEA: Failure Analysis tool
- QC TOOLS,: Tools that Support problem solving
- STATISTICAL PROCESS CONTROL: Tools to Control and alert deviation
- DEEP ANALYSIS: Problem Solving method
- DPMO : Measuring the sigma level
- MSA: Measurement System Analysis.
- FACTORS & LEVELS: Understanding on factor analysis of problem analysis.

# Schematic of a Process and Its Variables





# Six Sigma Targets



## What does Six Sigma Target..

- Improving customer satisfaction
- Reducing cycle time
- Reducing defects.

# Six Sigma

## DMAIC

The DMAIC process evolved from the Deming Circle (Plan-Do-Check-Act). You can use the DMAIC cycle to control virtually any process. It has been used for safety, quality, yield (scrap), and efficiency improvements in manufacturing to name a few.

DMAIC is the five-step approach that makes up the Six Sigma, and its objective is to drive costly variation from manufacturing and business processes.

The five steps in DMAIC are [Define](#), [Measure](#), [Analyze](#), [Improve](#), and [Control](#).



# Six Sigma

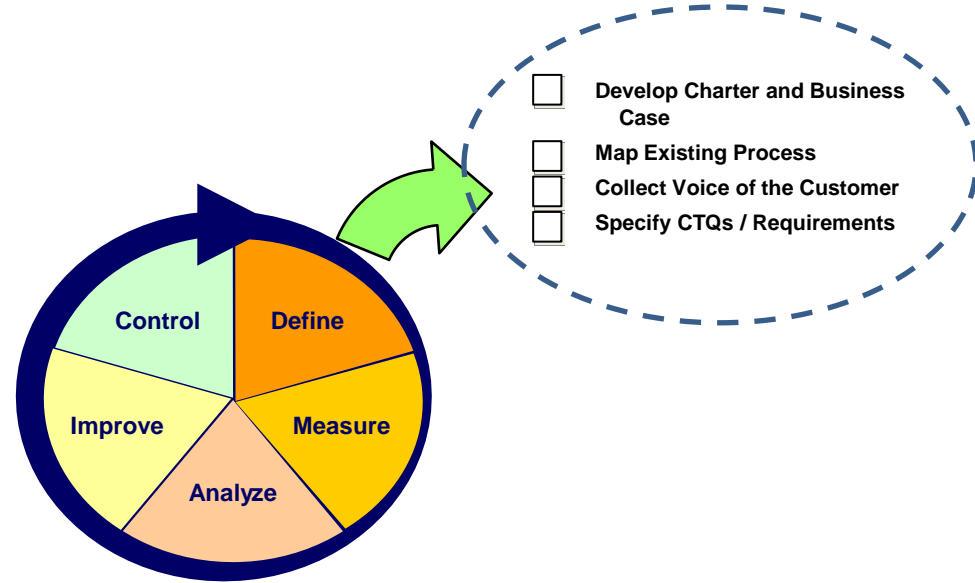
## DMAIC

## What you will learn

### DMAIC Step 1 – Define

The “D” ([Define](#)) in the DMAIC process focuses on selecting high-impact projects and understanding which underlying metric(s) will reflect project success. In some cases the project metric will be a subset of a higher level business metric, as in the example below where warranty rates for a specific product line are being addressed.

In other cases the leadership team may already know that poor performance on a particular [CTQ](#) needs to be addressed, and achieving Six Sigma process capability on that CTQ would be the team’s goal. The deliverable for the Define phase is a team charter to be reviewed and updated with the leadership team:



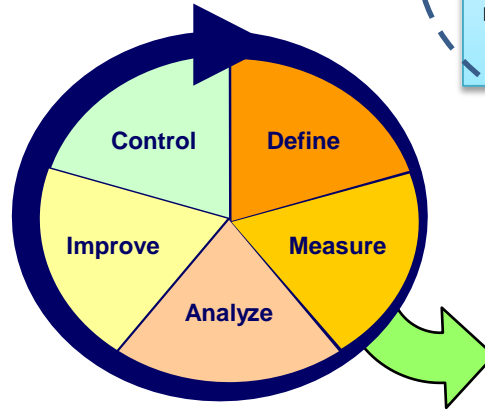
# Six Sigma

## DMAIC

### DMAIC Step 2 – Measure

The “M” ([Measure](#)) in DMAIC is about documenting the current process, validating how it is measured, and assessing baseline performance.

Depending on the project scope, the team might hold off on the process flowchart and Gage R&R activities until primary focus areas are identified further into the project. In some cases, a macro flowchart is useful in providing all team members with an initial, high-level view of the process



Some of the important tools in this phase include trend charts, basic [Pareto charts](#), [process flowcharts](#), [Gage R&R](#), and process capability measurement (sigma level, also referred to as [process sigma](#)).

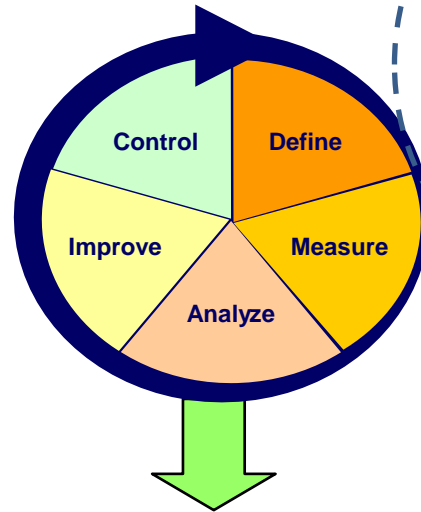
- Measure CTQs / Requirements
- Determine Process Stability
- Determine Process Capability
- Calculate Baseline Sigma
- Refine Problem Statement

# Six Sigma

## DMAIC

### DMAIC Step 3 – Analyze

The [Analyze](#) phase in DMAIC isolates the *top causes* behind the metric or [CTQ](#) that the team is tackling. In most cases there will be no more than three causes that must be controlled in order to achieve success – if too many causes are identified, then the team has either not isolated the primary causes or the project goal is too ambitious to achieve success with a single project. There are always exceptions, but speed and results are key ingredients to building Six Sigma momentum inside an organization, and projects should be sized to assure team success and project closure inside reasonable time limits.



[Pareto Analysis](#)  
[Cause and effect](#)  
[5-Why](#)  
[Hypothesis Testing](#)  
[Regression Analysis](#)  
[Time Series Plots](#)  
[Histograms](#)  
[Scatter Diagrams](#)  
[Tree Diagrams](#)  
[Failure Mode and effect Analysis](#)

- Identify Root Causes
- Quantify Root Causes
- Verify Root Causes

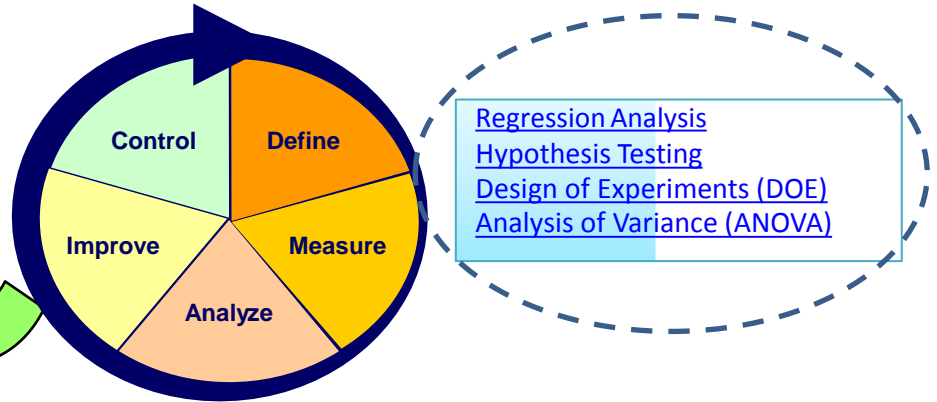
# Six Sigma

## DMAIC

### DMAIC Step 4 – Improve

The [Improve](#) 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 breakthrough performance.

- Select Solution (Including Trade Studies, Cost/Benefit Analysis)
- Design Solution
- Pilot Solution
- Implement Solution





# Six Sigma

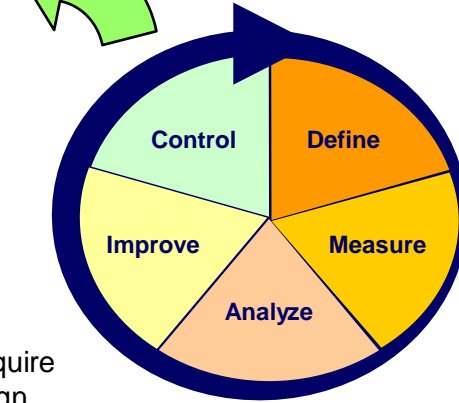
## DMAIC

- Institutionalize Improvement
- Control Deployment Quantify
- Financial Results Present
- Final Project Results and Lessons Learned
- Statistical Process Control

In cases like this the Six Sigma team should do everything possible to error-proof the process, and should then add the appropriate checks and balances to the quality system for the long run

### DMAIC Step 5- Control

DMAIC's [Control](#) 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). But oftentimes there are process settings, setup procedures, etc., that require employees to follow specific requirements in daily operations – these items are typically documented in a [control plan](#).



ANY QUESTIONS?

THANK YOU!!