

Six Sigma

3rd year

Laboratory management and quality assurance MLS-QUAL-323

30/12/2018

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Objectives

- By the end of this lecture you will be able to:
 - Define six sigma
 - Discuss six sigma improvement methods

What is Six Sigma?

- A goal of near perfection in meeting customer requirements
- A sweeping culture change effort to position a company for greater customer satisfaction, profitability and competitiveness
- A comprehensive and flexible system for achieving, sustaining and maximizing business success; uniquely driven by close understanding of customer needs, disciplined use of facts, data, and statistical analysis, and diligent attention to managing, improving and reinventing business processes

(Source: The Six Sigma Way by Pande, Neuman and Cavanagh)

Is 99% Quality Good Enough?

- 22,000 checks will be deducted from the wrong bank accounts in the next 60 minutes.
- 20,000 incorrect drug prescriptions will be written in the next 12 months.
- 12 babies will be given to the wrong parents each day.

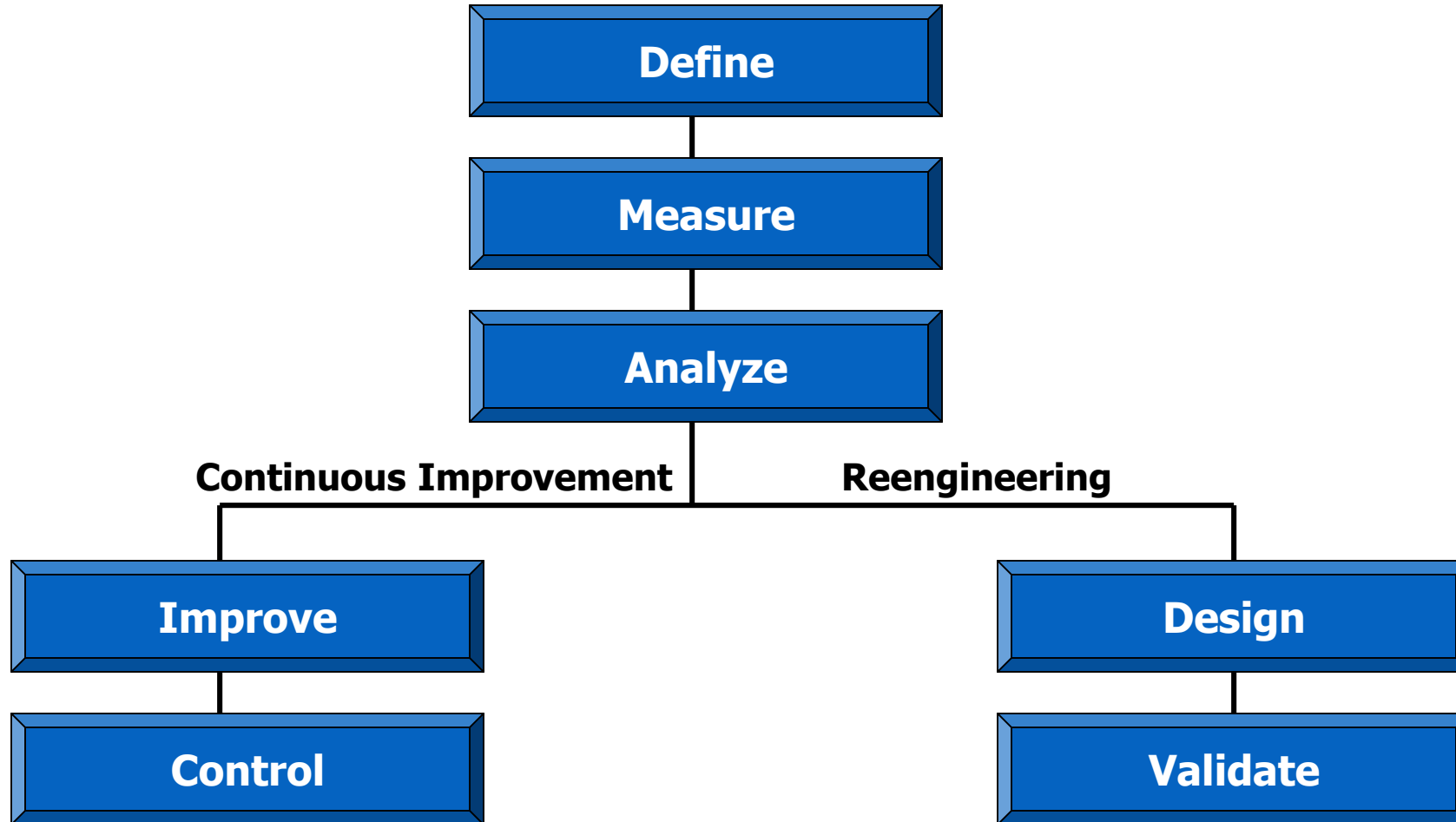
Six Sigma Quality

The objective of Six Sigma quality is 3.4 defects per million opportunities!

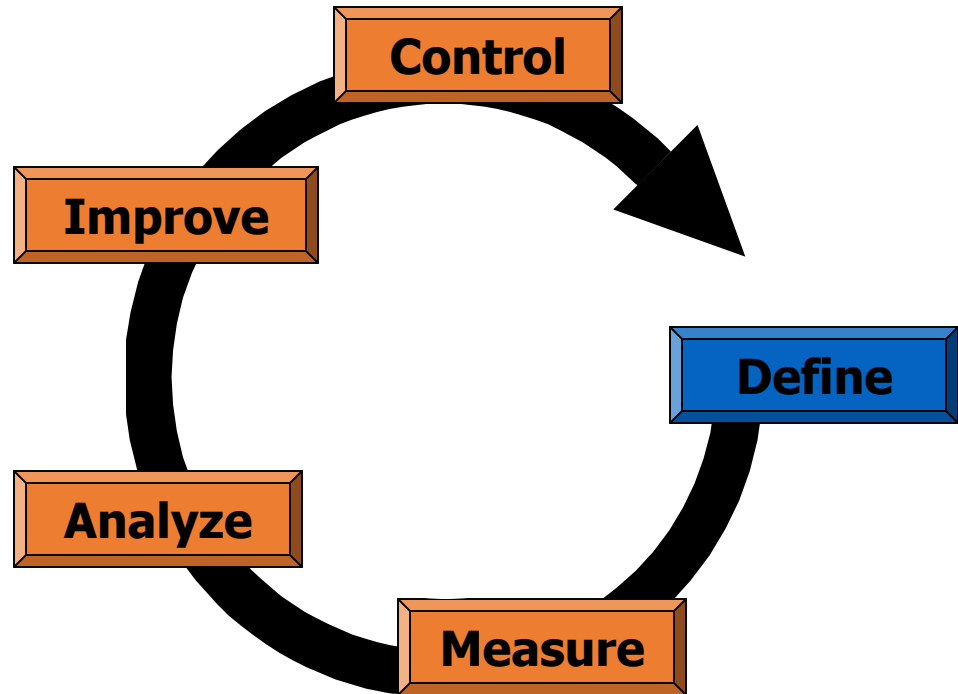
(Number of Standard Deviations)	3 Sigma	4 Sigma	5 Sigma	6 Sigma
0.0	2700	63	0.57	0.002
0.5	6440	236	3.4	0.019
1.0	22832	1350	32	0.019
1.5	66803	6200	233	3.4
2.0	158,700	22800	1300	32

Six Sigma Improvement Methods

DMAIC vs. DMADV



Six Sigma DMAIC Process

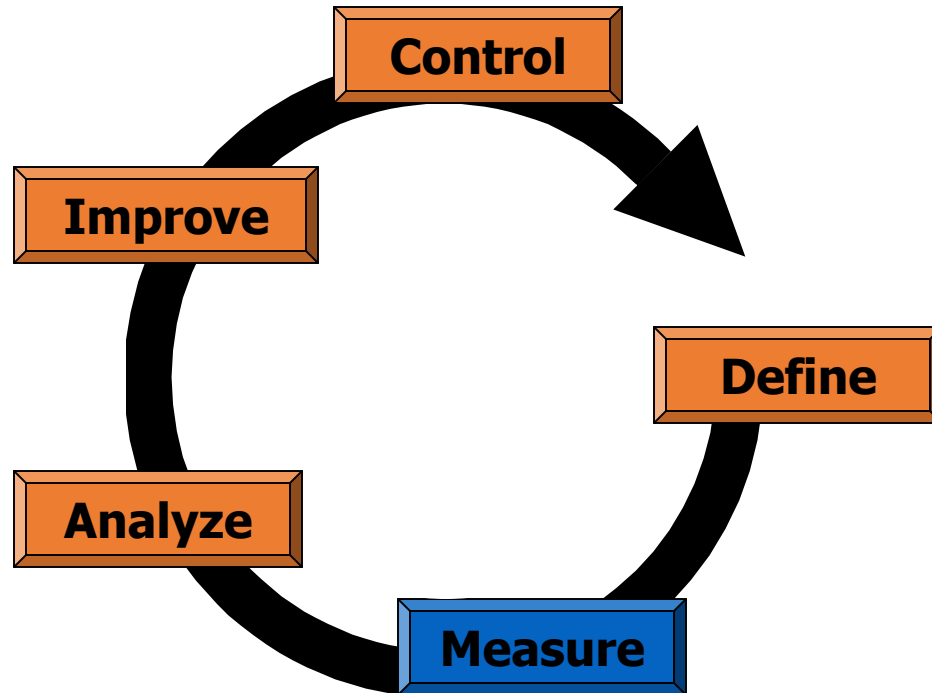


Define: Define who your customers are, and what their requirements are for your products and services – Their expectations.

Define your team goals, project boundaries, what you will focus on and what you won't.

Define the process you are striving to improve by mapping the process.

Six Sigma DMAIC Process

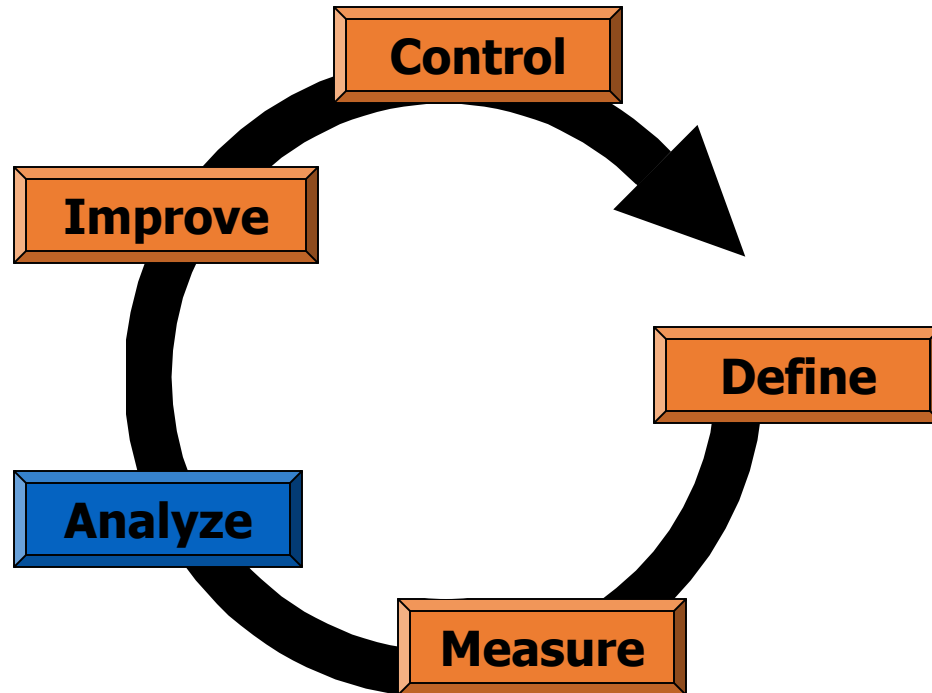


Measure: Eliminate guesswork and assumptions about what customers need and expect and how well processes are working.

Collect data from many sources to determine speed in responding to customer requests, defect types and how frequently they occur, client feedback on how processes fit their needs, how clients rate us over time, etc.

The data collection may suggest Charter revision.

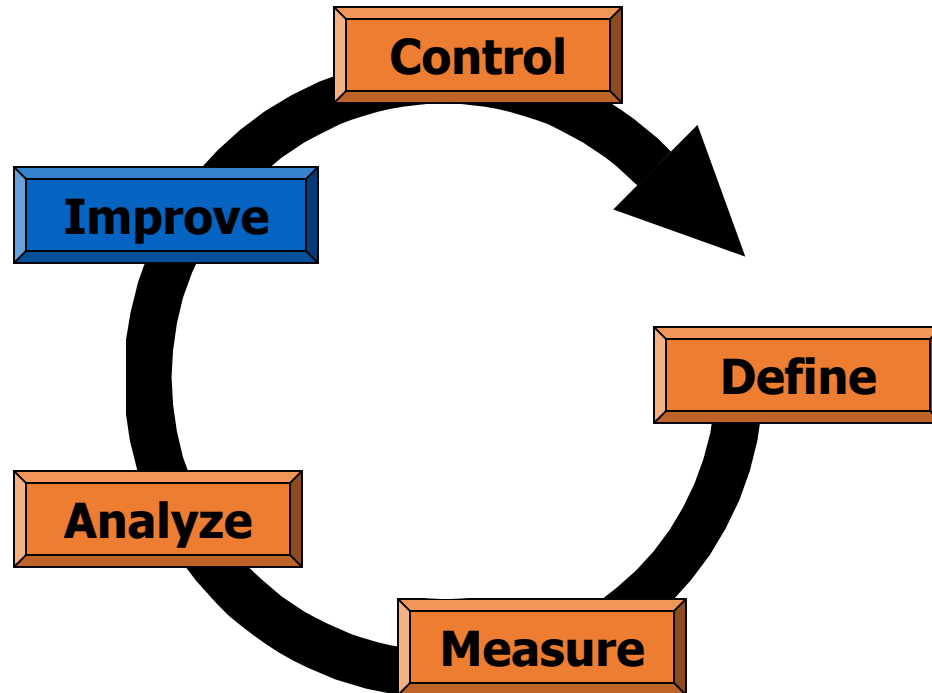
Six Sigma DMAIC Process



Analyze: Grounded in the context of the customer and competitive environment, analyze is used to organize data and look for process problems and opportunities.

This step helps to identify gaps between current and goal performance, prioritize opportunities to improve, identify sources of variation and root causes of problems in the process.

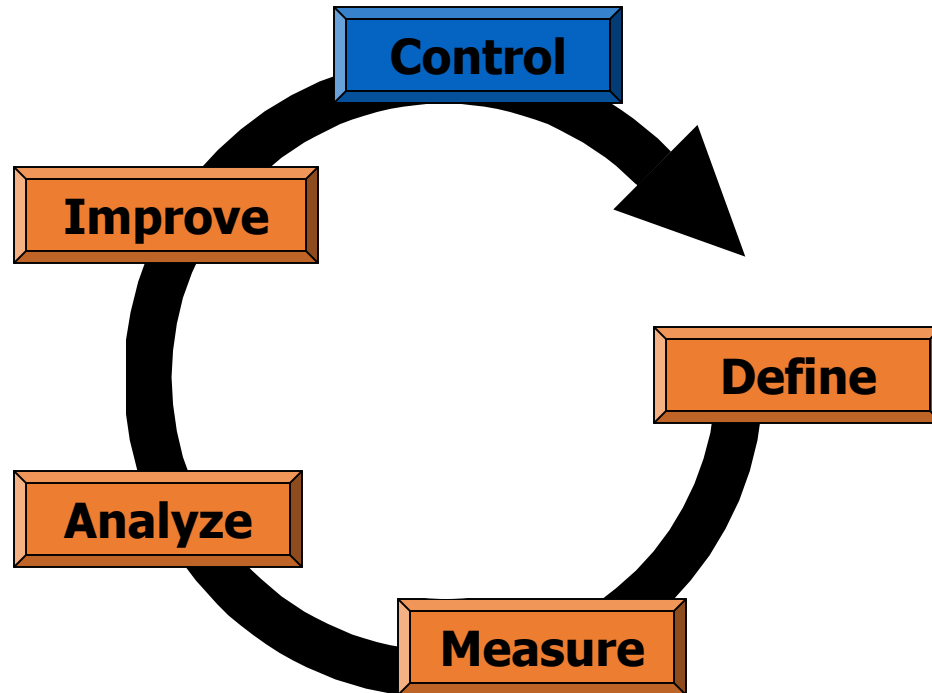
Six Sigma DMAIC Process



Improve: Generate both obvious and creative solutions to fix and prevent problems.

Finding creative solutions by correcting root causes requires innovation, technology and discipline.

Six Sigma DMAIC Process

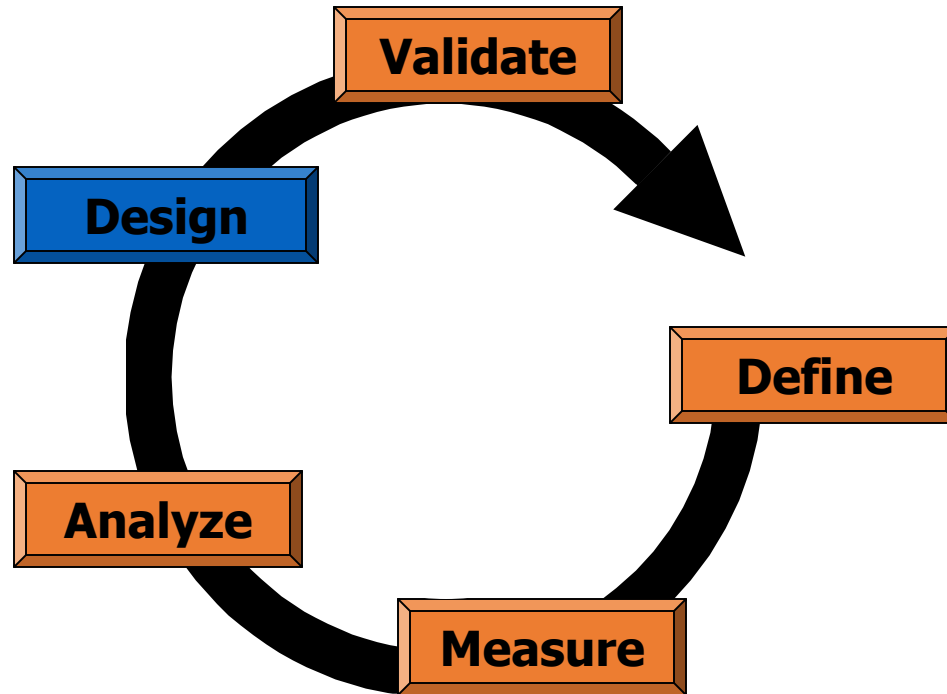


Control: Insure that the process improvements, once implemented, will “hold the gains” rather than revert to the same problems again.

Various control tools such as statistical process control can be used.

Other tools such as procedure documentation helps institutionalize the improvement.

Six Sigma DMADV Process

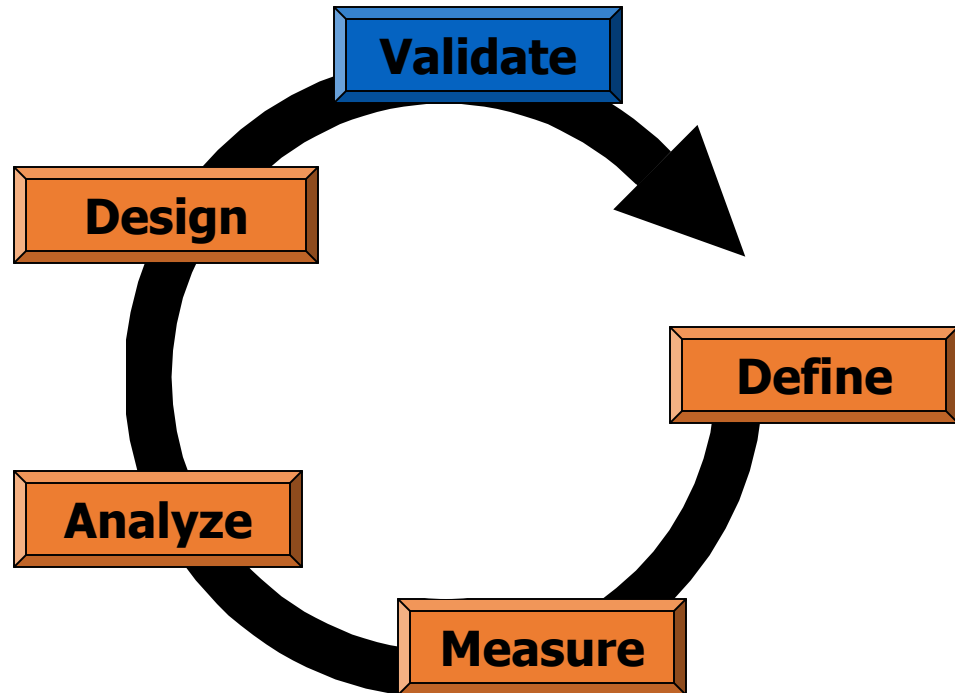


Design: Develop detailed design for new process.

Determine and evaluate enabling elements. Create control and testing plan for new design.

Use tools such as simulation, benchmarking, DOE, Quality Function Deployment (QFD), FMECA analysis, and cost/benefit analysis.

Six Sigma DMADV Process



Validate: Test detailed design with a pilot implementation.

If successful, develop and execute a full-scale implementation.

Tools in this step include: planning tools, flowcharts/other process management techniques, and work documentation.

Questions Time ?

