

Six Sigma and Quality Management

Frank Hutchison

Client Services Consultant

Sirti

The University District

665 N. Riverpoint Blvd.

Spokane, WA 99202-1665

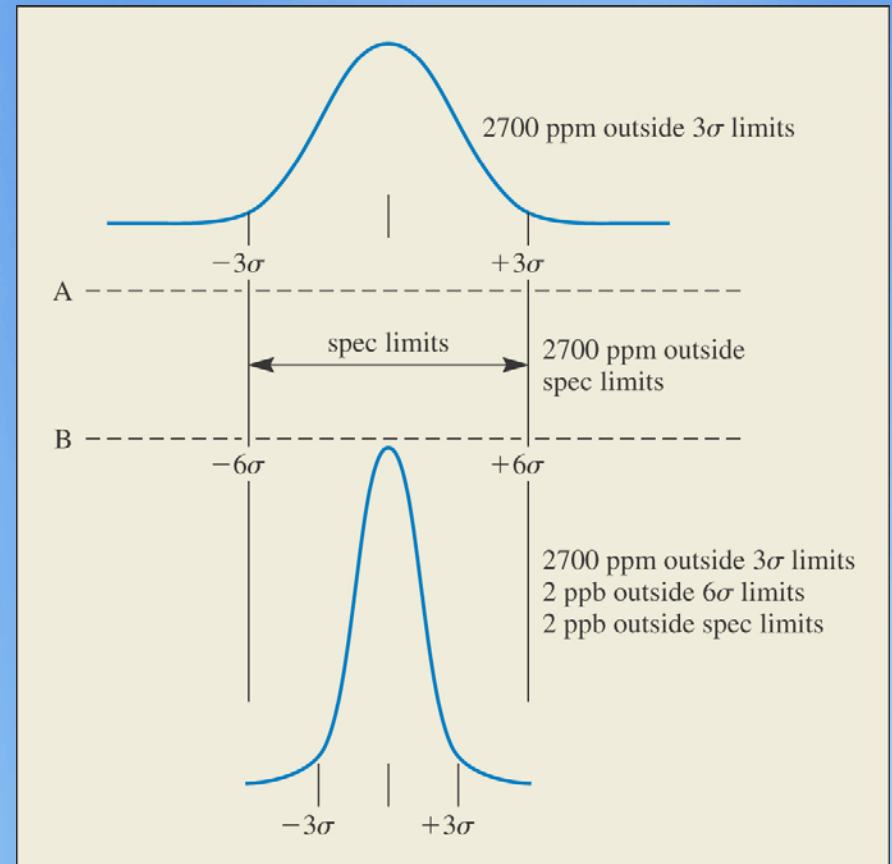
P: (509) 358-2005

Email: frankh@sirti.org

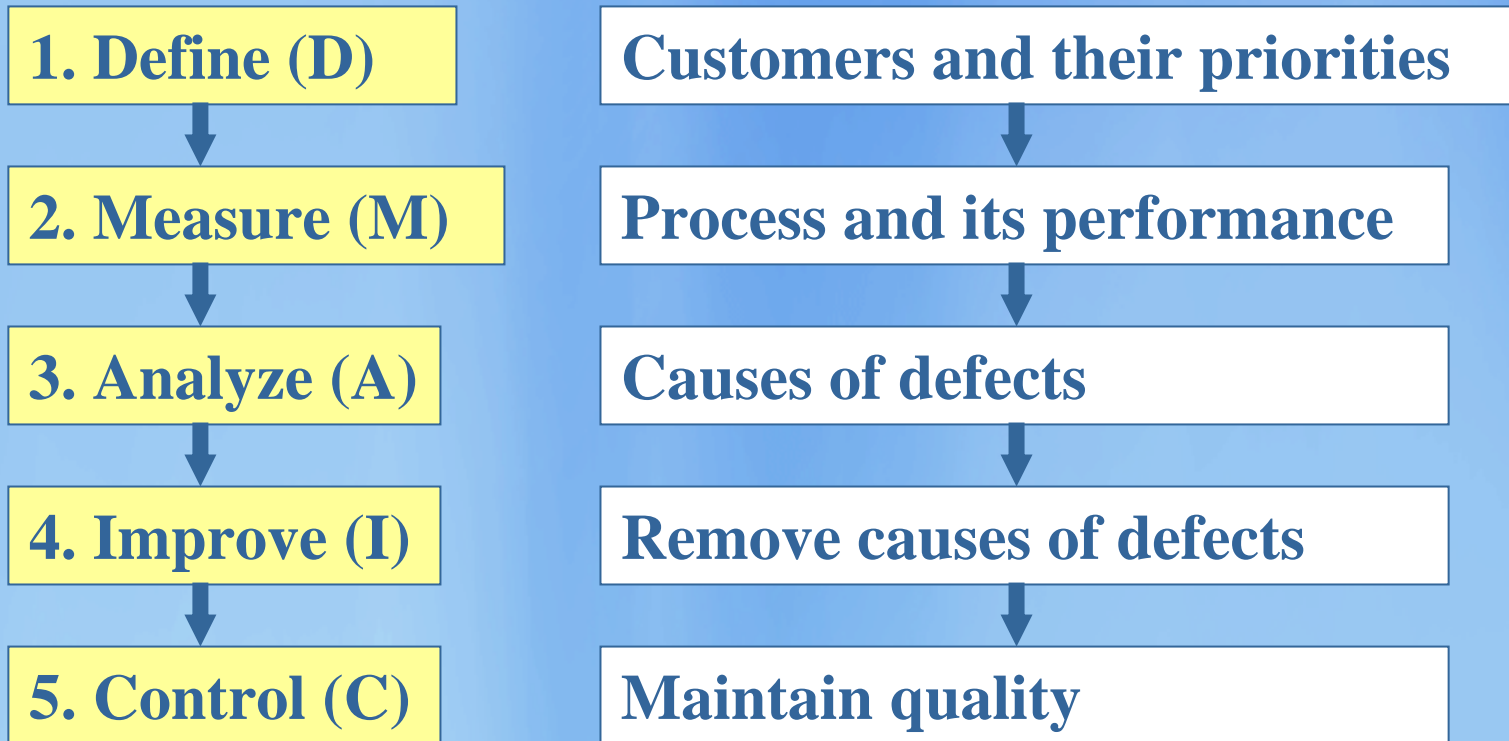
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Six Sigma Quality

- A philosophy and set of methods companies use to eliminate defects in their products and processes
- Seeks to reduce variation in the processes that lead to product defects
- The name, "six sigma" refers to the variation that exists within plus or minus six standard deviations of the process mean outputs



Six Sigma Quality: DMAIC Cycle



Step 1 - Define

- What is the critical-to-quality characteristic?
 - The weight of the cereal in the box
 - Time waiting in line
 - Cost to customer
 - User-friendly interfaces on the web

2 - Measure

- How would we measure to evaluate the extent of the problem?
- What are acceptable limits on this measure?

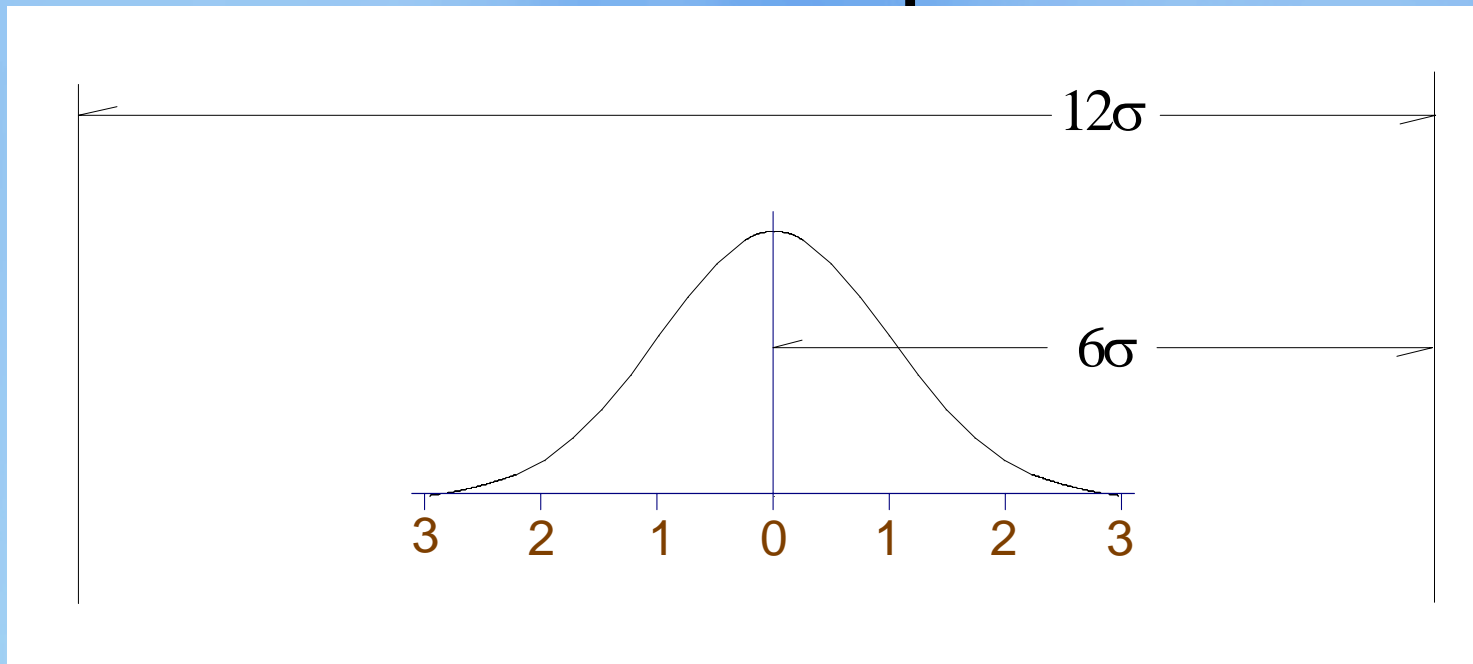
Step 3 – Analyze

(How can we improve the capability of our process?)

- Decrease Variation
- Center Process
- Increase Specifications

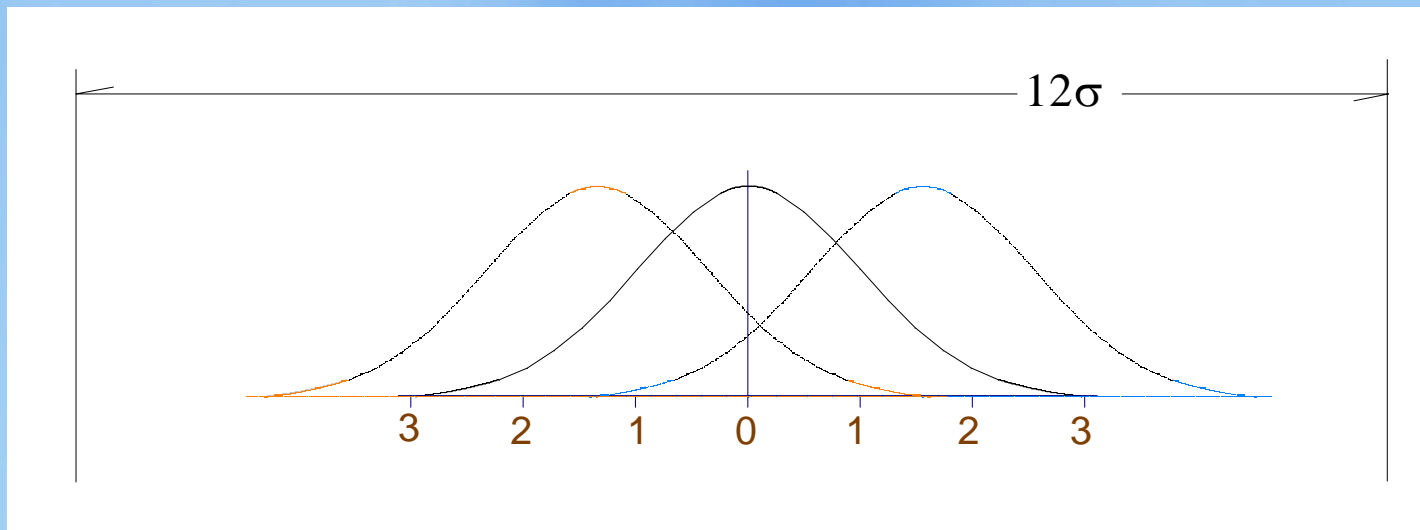
Step 4 – Improve (How good is good enough?)

– 6σ minimum from process



Motorola's "Six Sigma"

- Implies 2 ppB "bad" with no process shift
- With 1.5σ shift in either direction from center (process will move), implies 3.4 ppm "bad".



Step 5 – Control

- Statistical Process Control (SPC)
 - Use data from the actual process
 - Estimate distributions
 - Look at capability - is good quality possible?
 - Statistically monitor the process over time

Six Sigma Roles and Responsibilities

1. Executive leaders must champion the process of improvement
2. Corporation-wide training in Six Sigma concepts and tools
3. Setting stretch objectives for improvement
4. Continuous reinforcement and rewards

What's missing?

Answers to some perplexing questions:

- Why a culture of innovation must start at the top
- The strategic need for corporations to innovate in their management practices
- Rooting out the jerks and bullies who undermine innovation
- Strategies that benefit both companies and society
- The art of crafting a memorable message

Quality Management (QM)

QUALITY MANAGEMENT is defined as managing the entire organization so that it excels on all dimensions of products and services that are important to the customer

Total Quality Management (TQM)

- First coined by the U.S. Naval Air Systems Command
- Methods come from Philip B. Crosby, W. Edwards Deming, Armand V. Feigenbaum, Kaoru Ishikawa, Joseph M. Juran and others.
- The term “Total Quality Management” has lost favor in the United States in recent years: “Quality management” is commonly substituted. “Total Quality Management,” however, is still used extensively in Europe.

ISO 9000

- Series of standards agreed upon by the International Organization for Standardization (ISO)
- Adopted in 1987
- More than 100 countries
- A prerequisite for global competition
- ISO 9000 directs you to "document what you do and then do as you documented"
- **Institutionalized TQM**

Deming's 14 Points

1. Create constancy of purpose for improving products and services.
2. Adopt the new philosophy.
3. Cease dependence on inspection to achieve quality.
4. End the practice of awarding business on price alone; instead, minimize total cost by working with a single supplier.
5. Improve constantly and forever every process for planning, production and service.
6. Institute training on the job.
7. Adopt and institute leadership.
8. Drive out fear.
9. Break down barriers between staff areas.
10. Eliminate slogans, exhortations and targets for the workforce.
11. Eliminate numerical quotas for the workforce and numerical goals for management.
12. Remove barriers that rob people of pride of workmanship, and eliminate the annual rating or merit system.
13. Institute a vigorous program of education and self-improvement for everyone.
14. Put everybody in the company to work accomplishing the transformation.

What's Required for Quality Management?

- Leadership
- Strategic Planning
- Management Elements and Methods
- Quality Management Tools
- Customer-Focused Organizations
- Supply-Chain Management
- Training and Development

**Basis of ASQ Certified
Manager of Quality/Organizational Excellence**

Leadership

- Organizational Structures and Culture
- Leadership Challenges
- Teams and Team Processes
- ASQ Code of Ethics

Strategic Plan Development and Deployment

- Strategic Planning Models
- Business Environment Analysis
- Strategic Plan Deployment

Management Elements and Methods

- Management Skills and Abilities
- Communication Skills and Abilities
- Project Management
- Quality System
- Quality Models and Theories

Quality Management Tools

- Problem-Solving Tools
- Process Management
- Measurement: Assessment and Metrics

Customer-Focused Organizations

- Customer Identification and Segmentation
- Customer Relationship Management

Supply Chain Management

- Supplier Selection
- Supplier Communications
- Supplier Performance
- Supplier Improvement
- Supplier Certification, Partnerships, and Alliances
- Supplier Logistics

Training and Development

- Training Plans
- Needs Analysis
- Training Materials/Curriculum Development and Delivery
- Training Effectiveness and Evaluation

For more information

- www.asq.org
- www.QIMAcros.com
- www.asq.org/qm/
- www.inlandnwlmc.com