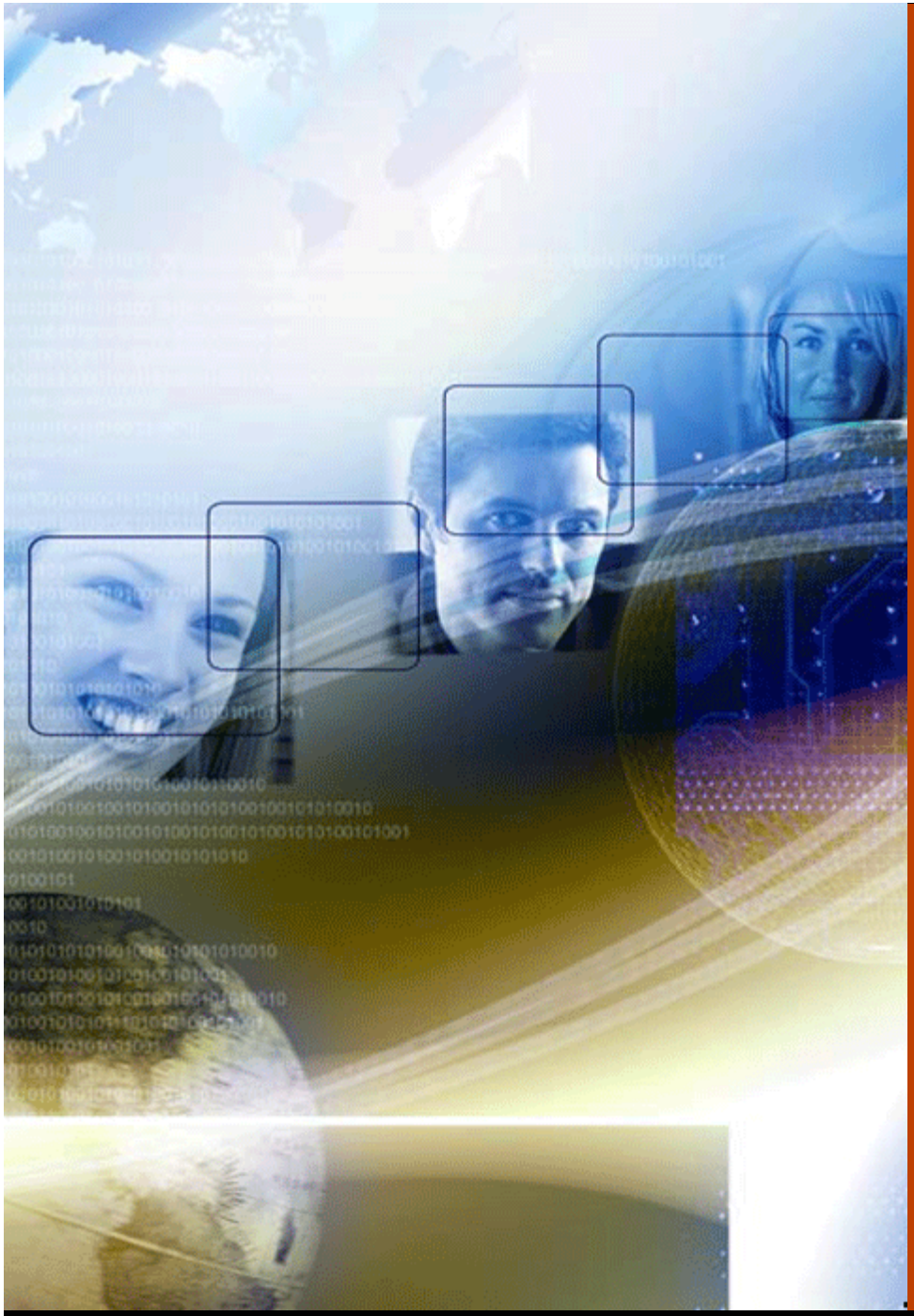

Six Sigma: Principles of Disciplined Problem Solving

John Krupar
Executive Consultant
Six Sigma Academy

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Objectives And Approach – Executive Awareness

Understand the history and application of sigma lean (six sigma).

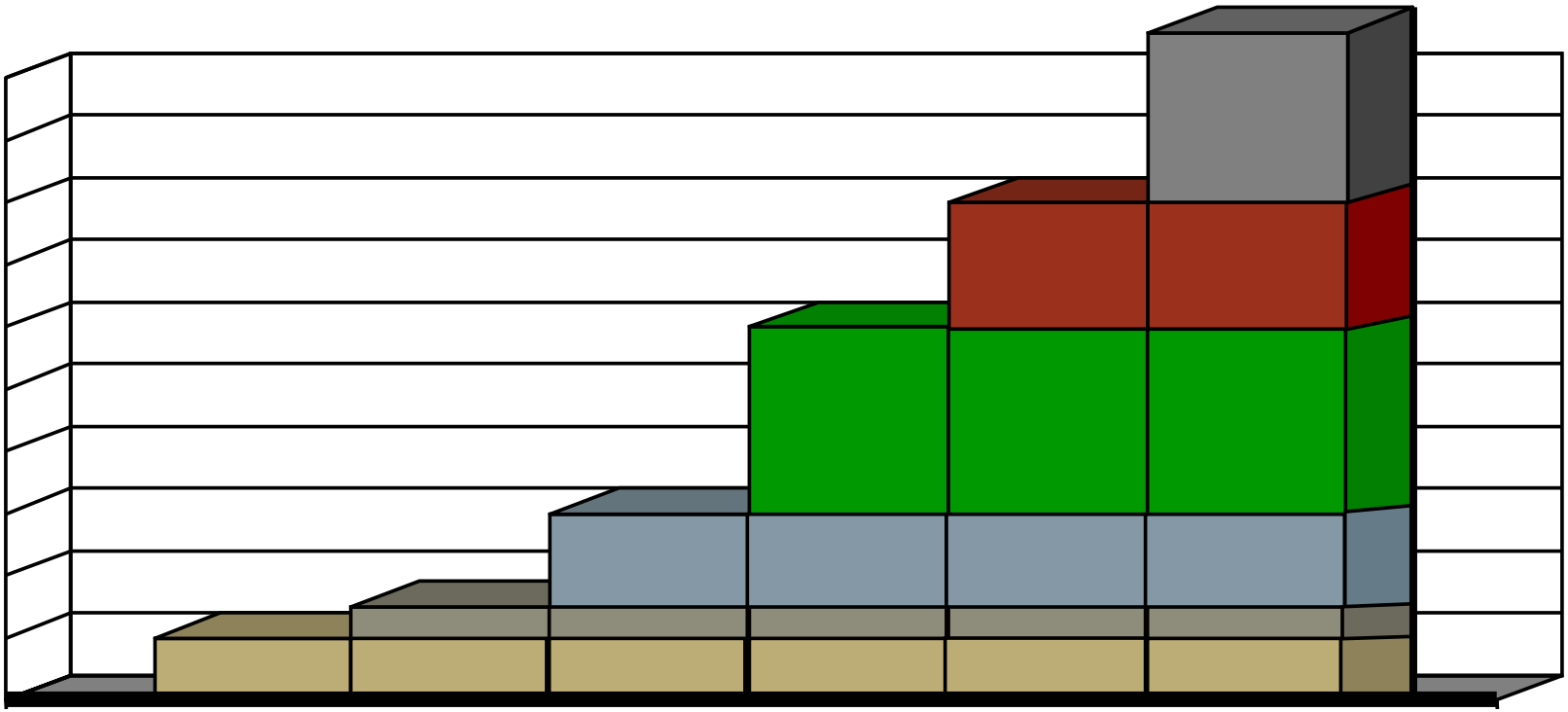
Describe the key concepts that management teams have discovered while implementing sigma lean.

Review the critical success factors for deploying sigma lean in your organization.

What Is Sigma Lean?

A customer-centric, fact-based, problem solving approach that eliminates waste, defects, variation, and costs.

The Evolution Of Sigma Lean



Manufacturing Tool Set
- Reduce variation
- Improve yields
- Statistical rigor

Transactions Based
- Accounts receivables
- Delivery of products

Strategy for Transformation
- Top-driven
- Common language
- Leadership developmental tool

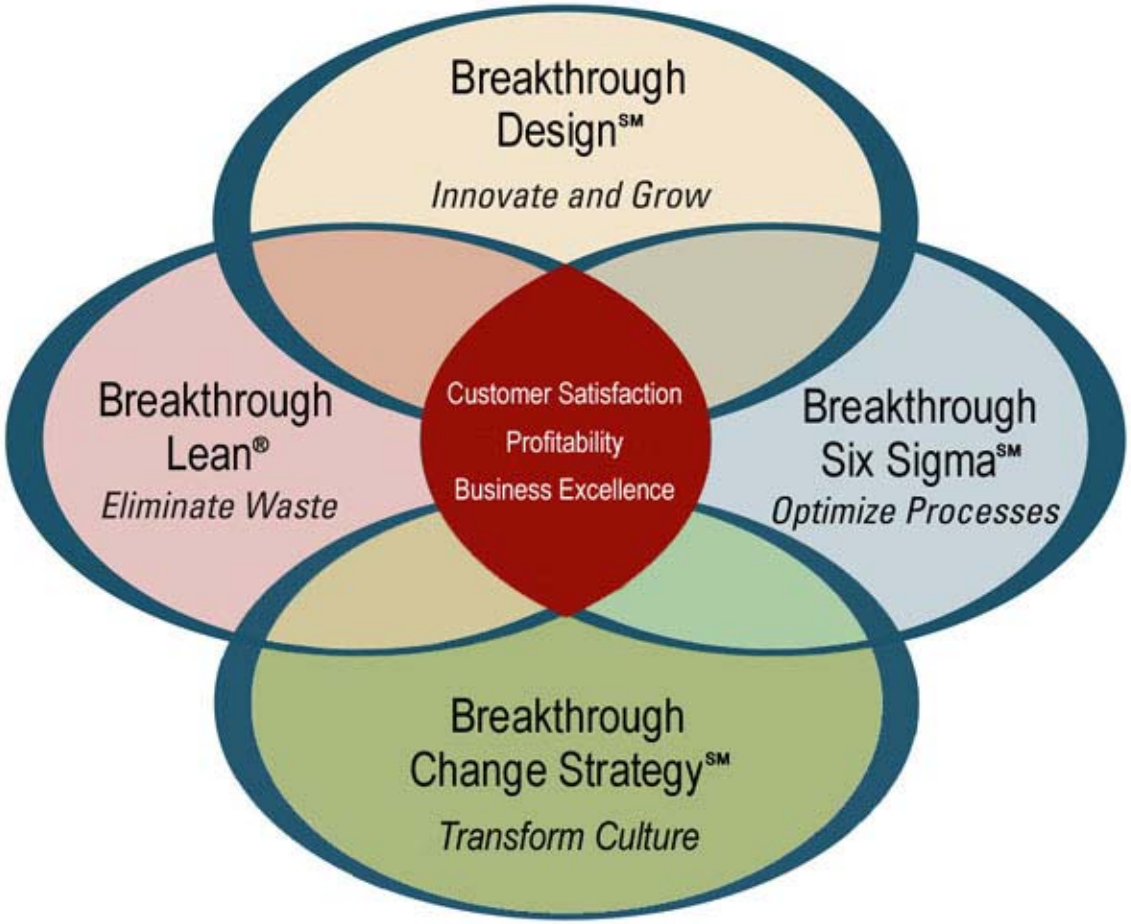
Customer Focused
- Voice Of Customer
- Design For Six Sigma

Sales and Mktg. Based
- Pricing
- Sales force effectiveness
- Projects at the Customer

How to Run Your Business
- Managers asking the right question
- Transfer functions
- Customer-focused, Data-driven
- Entire organization understands their role

1980s ***2005***

Sigma Lean – Application Of The Right Tools

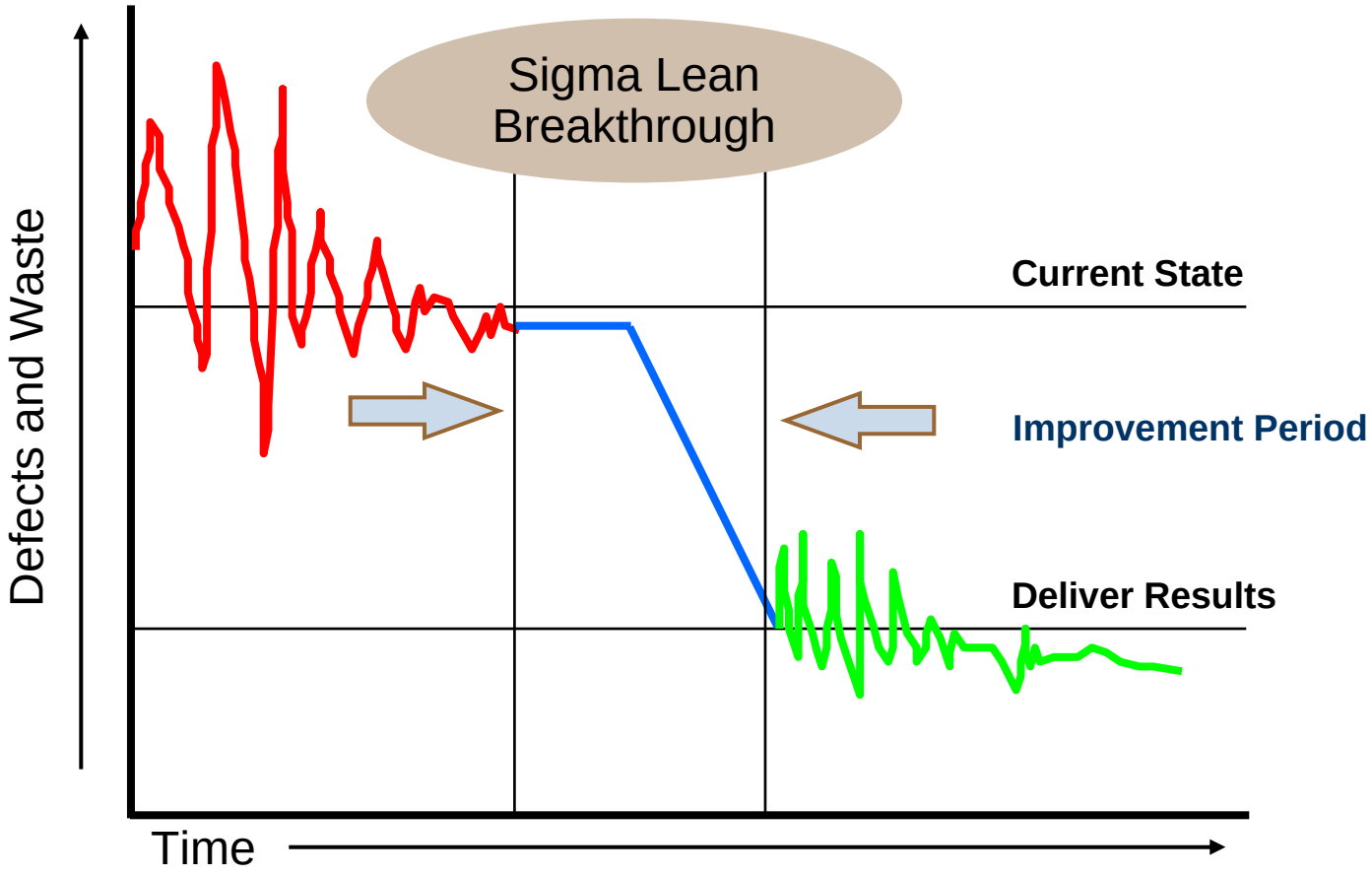


Apply the right tool set to solve the business problem.

What Do Companies Get With Sigma Lean Deployment?

- Knowledge…
  - Transfer Sigma Lean DNA into the company
  - Deliver right tools and technique to solve business problems… for the last time
  - Train with and leave behind best-in-class intellectual property as reference material
- Self-sustenance…
  - Create Master Black Belt Trainers, Champions, Infrastructure
  - Build and leave proven the company Deployment Strategy in place
  - Establish foundation of Black Belts for project execution and mentoring
- Culture of Excellence…
  - Shape a data-driven employee base…Every discussion, meeting, decision
  - Produce a process-focus mentality…Everything is a process
  - Institute a common language…
    - p-value
    - "Statistically significant"
    - Standard variation
    - Defect
    - VOC…Voice Of the Customer
    - MSA…Measurement System Analysis
- Results…Results…Results

The Goal: Breakthrough Performance Focused On Things That Matter



… Sigma Lean is a project-by-project approach.

Definition Of A Black Belt

A Black Belt is “someone who, with their team, solves a *difficult business problem* for the *last time*.”

Control… The Key Differentiator of Sigma Lean.

Sigma Lean Is About
"Leaders Asking The Right Questions"

"We don't know what we don't know
We can't act on what we don't know
We won't know until we search
We won't search for what we don't question
We don't question what we don't measure
Hence, we just don't know."

Founder of Six Sigma Academy

New Metrics

Defects Per Million Opportunities

2 Sigma = 308,000

3 Sigma = 66,000

4 Sigma = 6,210

5 Sigma = 233

6 Sigma = 3.4

Who Needs Sigma Lean?

Not all processes need to reach Six Sigma, while others demand perfection.

Understanding The Differences

If you played 100 rounds of golf per year, and played at:

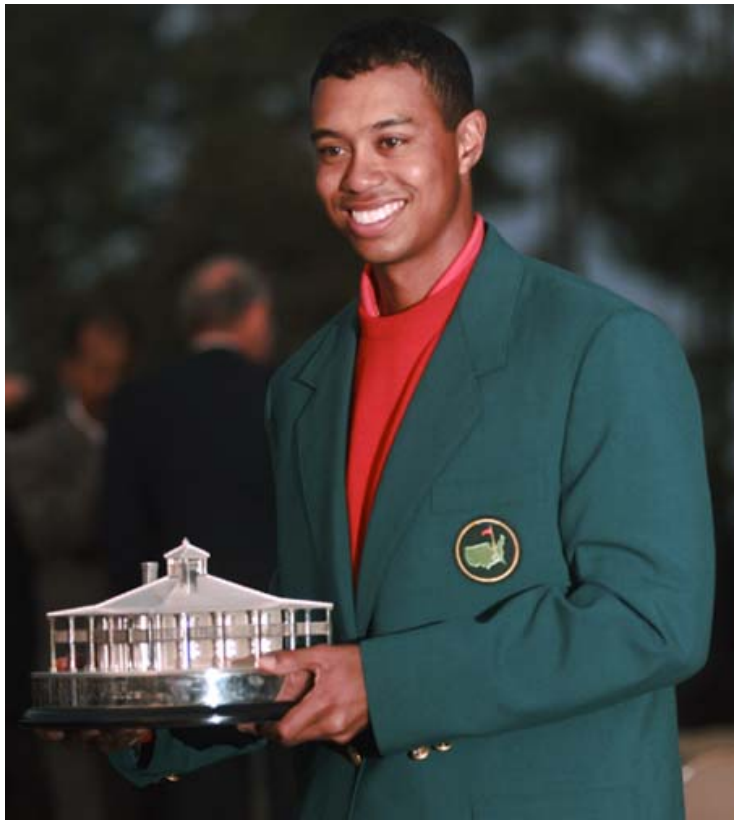
2 Sigma – You'd 3-putt 6 times per round

3 Sigma – You'd 3-putt 1 time per round

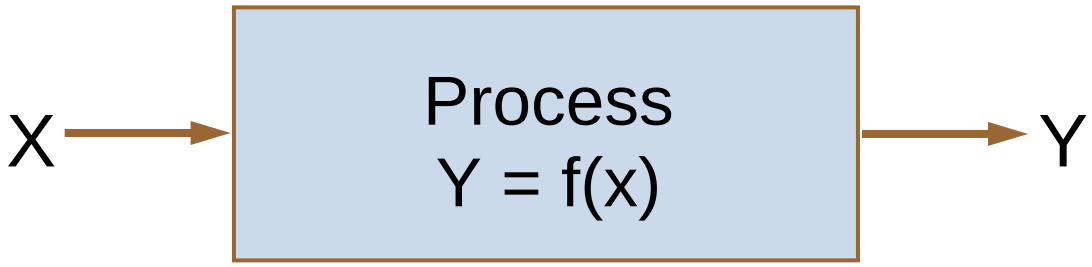
4 Sigma – You'd 3-putt 1 time every 9 rounds

5 Sigma – You'd 3-putt 1 time every 2.33 years

6 Sigma – You'd 3-putt 1 time every 163 years!



Process Focus Of Sigma Lean



Inputs (X_1, X_2 . . X_n)
Independent
Cause
Control

Output
Dependent on input
Effect
Monitor

Determining the critical Xs and controlling the Xs to guarantee the Ys.

The 5 Key Concepts

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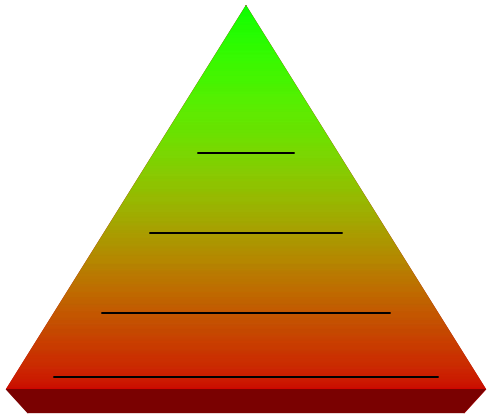
Maslow's Hierarchy Of Needs



SA = Self-Actualization
E = Esteem
L = Belongingness and Love
S = Safety
P = Physiological

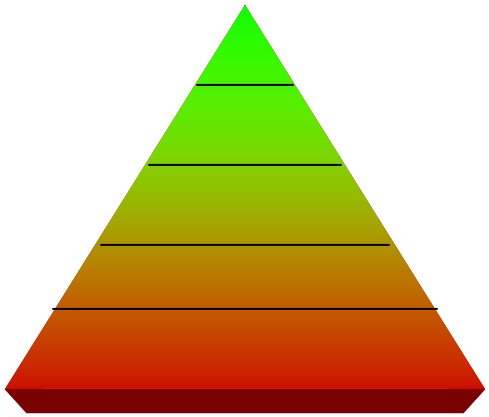
Maslow believed that an individual must substantially satisfy the needs at the lowest level before he or she could begin to satisfy the needs at the next higher level. Only when the needs of all lower levels were satisfied could Self-actualization Needs begin to be satisfied. Self-actualization is the fulfilment of one's human potential, and is often the point at which an individual becomes truly creative.

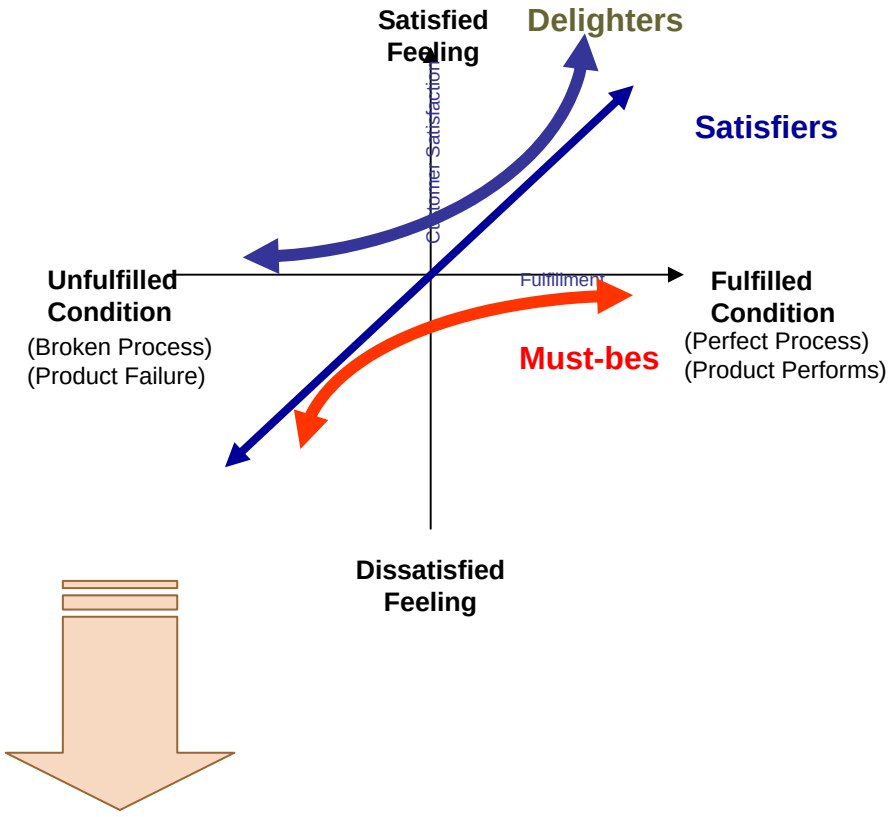
Reference: http://www.wynja.com/personality/needs.html

What Is Kano Model

- First taught to Center for Quality Management companies by Shoji Shiba of Japan in l990
- Relates the Voice Of the Customer to Product or Service
- Categorizes CTSs into “Must-be’s,” “Satisfiers,” and “Delighters”

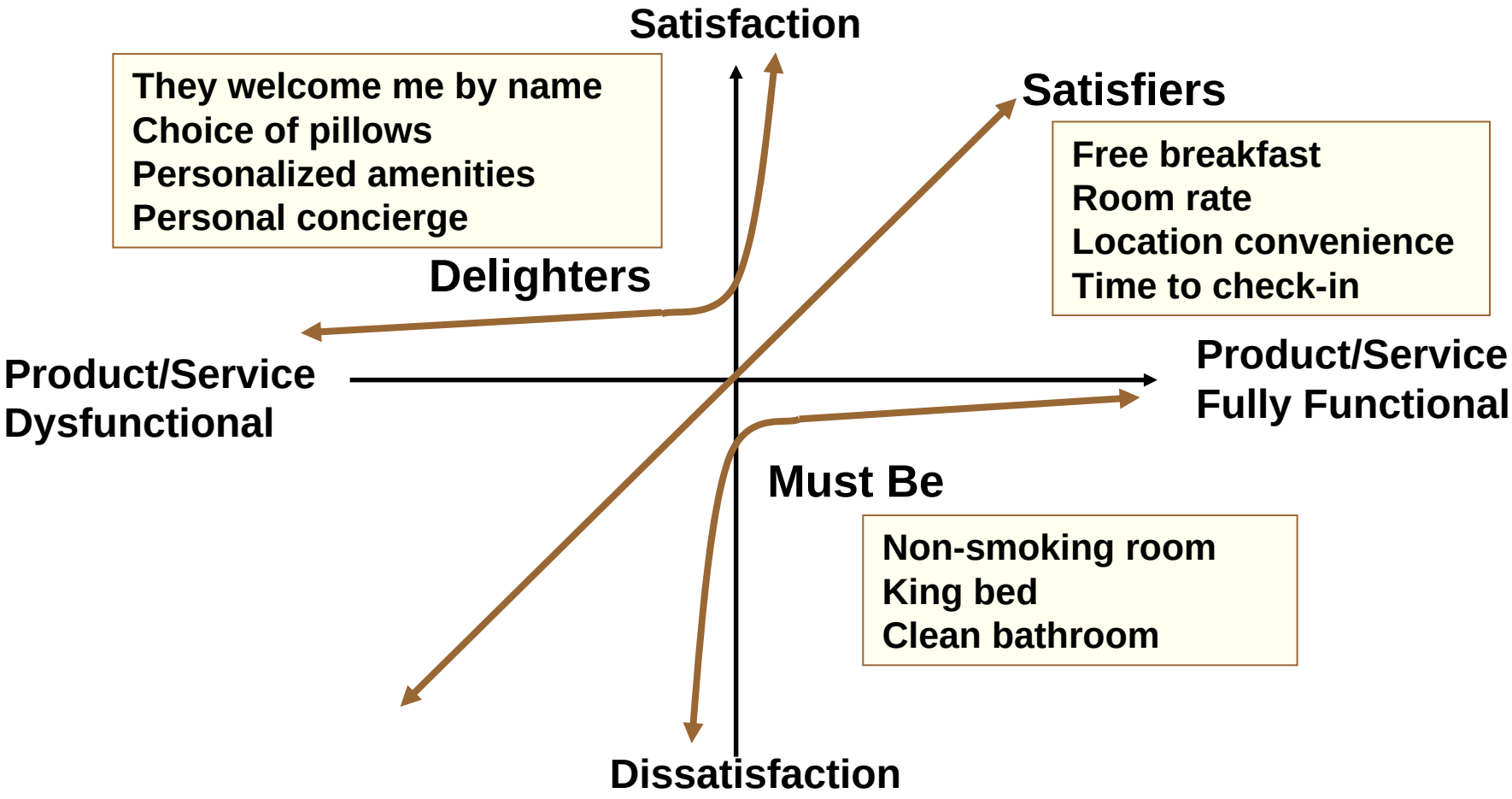
The Integration Of Maslow And Kano





Mechanism/explanation used to segment customer needs.

Key Concepts Of Sigma Lean
Voice Of The Customer



Kano Analysis…Understanding the customer.

Key Concepts Of Sigma Lean
Definition Of Value

"Any activity or task that transforms the "deliverables" of a process in such a way that the customer is both aware of it, and willing to pay for it, is <u>Value-Added</u>."

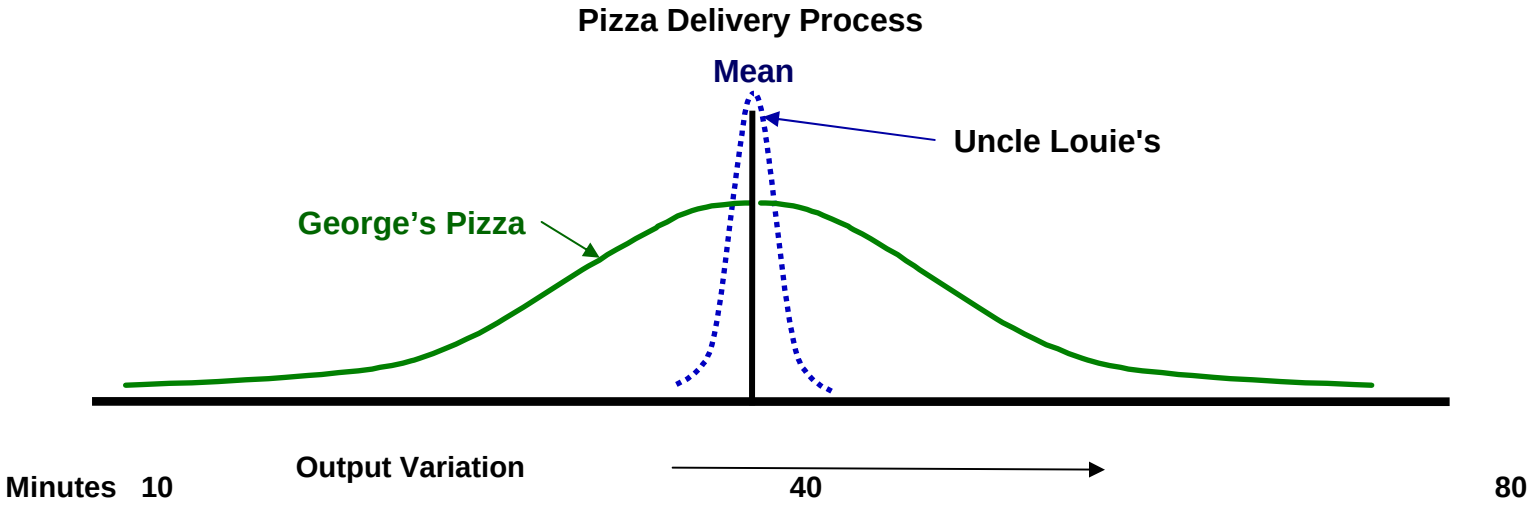
– Womack & Jones

Based on this (strict) definition of value, we can divide the tasks and activities of any process into three categories:

- Value-Added (essential) tasks
- Type 1 Waste – Business-Value-Added (BVA), currently necessary
- Type 2 Waste – Non-Value-Added (NVA), not necessary

Our goal is to eliminate Type 2 activities wherever possible, and minimize the waste in Type 1s through the use of Lean methods.

Key Concepts Of Sigma Lean Variation



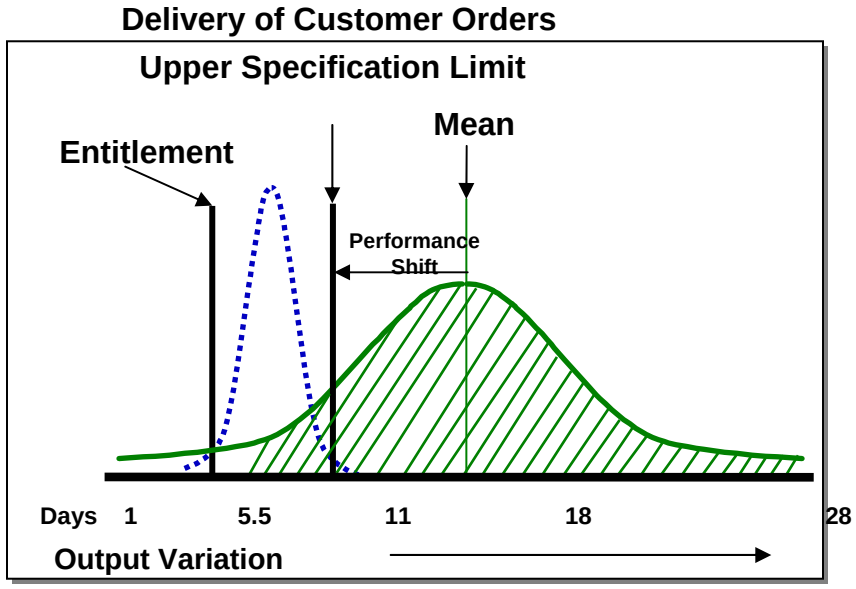
Average vs. Variation

- Average tells little about customer experience
- To drive dramatic improvements in performance, the variance in a process must first be minimized

Customers remember the extremes (variation), not the average.

Key Concepts Of Sigma Lean

Entitlement -Doing The Best We Have Done – EVERY TIME

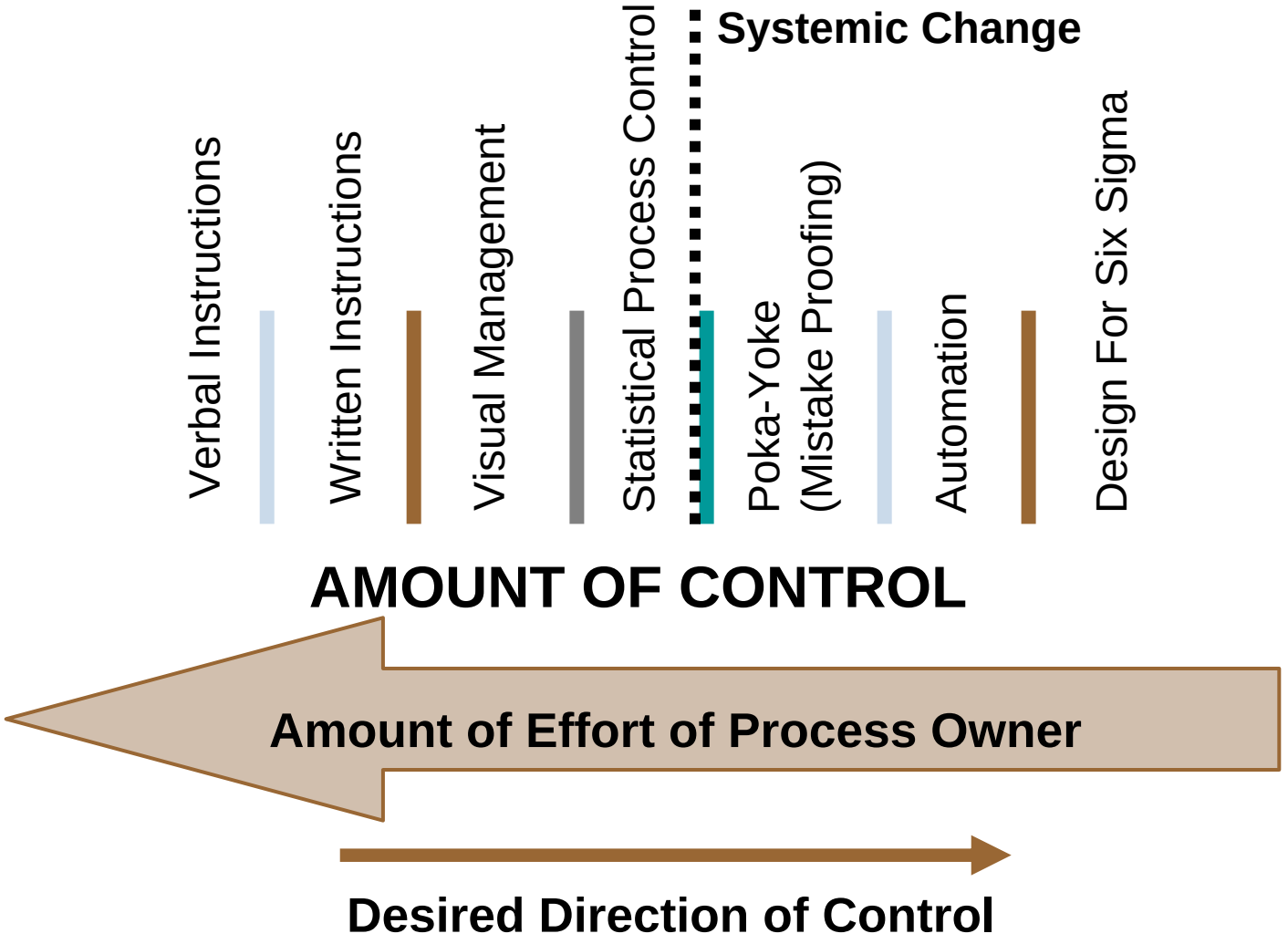


- The focus should be to shift the overall performance to the **Entitlement** level. This **drives dramatic short term improvements** in cost and quality with **minimal investment** in technology
- Only **after** the Entitlement level is achieved should an investment be made to **redesign/reengineer** the systems or infrastructure

The optimum level that a process currently performs is the Entitlement. This can be replicated once the variables are truly understood.

Avoid capital investment until entitlement is reached.

Key Concepts Of Sigma Lean
Aspects Of Control



12 Step Problem Solving Approach

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12 Steps Of The Breakthrough Strategy®

1. Select Output Characteristics
2. Define Performance Standards
3. Validate Measurement System
4. Establish Baseline Process Capability
5. Define Performance Objectives
6. Identify Variation Sources
7. Screen Potential Causes
8. Discover Variable Relationships
9. Establish Operating Tolerances – Implement Improvements
10. Validate Measurement System
11. Determine Final Process Capability
12. Implement Process Controls

Critical Success Factors

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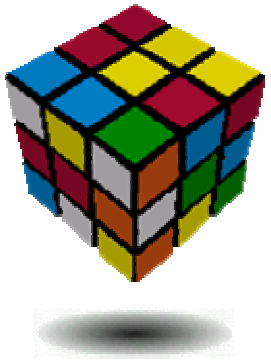
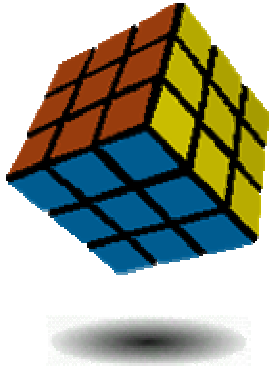
World-class Deployment Of Sigma Lean



Results are a function of:

- **Strategy**
- **Focus**
- **Project Selection**
- **Training**
- **Engagement**
- **People Development**



Ad Hoc attention leads to confusion and inefficiencies

Working all facets of the deployment – Drives order, speed and results

Critical Success Factor – Strategy

Strategy: Application of Sigma Lean in an organization.

- **Clear and measurable Strategic Goals:**
  Leadership Team reviews Strategic Goals to ensure each is measurable and can be cascaded to each level of the organization.
- **Employees understand their role in reaching the Strategic Goals:**
  Ensure all employees know the objectives of the business and the line of sight between their role and the successful completion of the Strategic Goals.
- **Six Sigma projects flow from the Strategic Goals:**
  Strategic Goals are the start point for the project selection process. Projects flow from the Strategic Goals – Ensuring Leadership attention.

Critical Success Factor – Focus

Focus: Method of resource concentration on a select few objectives.

- **Leadership prioritizes and clusters projects around key Strategic Goals:**
  Not all projects can be accomplished at the same time – Nor should the Leadership Team assign resources evenly. Concentrating resources on key Strategic Goals will provide the impact that the Leadership and customers require.
- **Systemic Process exists to update this concentration:**
  Each quarter the Leadership Team reviews the progress on the prioritized Strategic Goals and determines if the organization is ready to shift to the next priority.
- **Leadership reviews the application of all resources to maximize impact:**
  The project management discipline of Sigma Lean can be exported to all projects.

Critical Success Factor – Project Selection

Project Selection: Systemic approach to incorporate the Voice Of the Customer and the Voice Of the Business into a process to identify areas to apply Sigma Lean.

- **Project pipeline is measured for quantity, completeness, and relevance of the projects contained:**
  The project pipeline should be measured to ensure that a sufficient quantity of projects exist to fill the gap between current performance and the objective.
- **A systemic process exists to generate and capture project ideas, filter, and prioritize projects:**
  All leaders are responsible for identifying projects for metrics that are underachieving.
- **A process exists to leverage project results within and across the organization, and between organizations:**
  Search the project database for lessons learned on similar projects prior to execution.

Critical Success Factor – Training

Training: Preparing leaders to solve business problems.

- **Training materials and examples are relevant to your industry:**
  Sigma Lean curriculum is customized and appropriate for the business.
- **Deployment and Project Coaching is readily available for Leaders, Project Champions, Process Owners, and Belts:**
  Technical (tool) Coaching is available on-demand to ensure that the questions regarding the problem solving approach don't slow the project completion. Business coaching is available to ensure that the cultural and practical constraints are understood and included in
  the solution.
- **Plan exists to provide on-demand training for those responsible to lead Six Sigma Resources:**
  Mature deployments require short notice one-off training for newly hired and promoted Leaders.

Critical Success Factor – Engagement

Engagement: Both personal involvement in Sigma Lean and the integration into the business planning process.

- **Process Owners are actively involved in the project selection and review process:**
  Once the cascading of Strategic Goals is in place, the responsibility for identifying projects is left to the Process Owners. We must provide the Process Owners the required assistance to charter the projects needed to reach the business goal.
- **Process Owners own the control phase of the projects and sustain the gains:**
  The best Process Owner once said, "I owned the process before the arrival of the Belt, I owned the process while the Belt worked the project, and I will own the project after the Belt leaves." This is the desired effect.
- **Leadership Team is able to communicate the vision of how Sigma Lean supports the execution of the Strategic Goals of the organization:**
  A clear message of the goals of the business and how each employee has a role in the attainment of these goals is the recurring message of the Leadership Team.

Critical Success Factor – Engagement

Engagement: (Cont'd)

- **Leadership Team is actively involved in mentoring and coaching Project Champions, Process Owners, and Belts:**
  When critical projects are chosen, the Leadership must ensure the Execution Team has the support required for success.
- **Functional areas are engaged in maturing policies and procedures throughout the deployment process:**
  The learning curve on a maturing deployment is steep; the policies that guide the Leadership Team should be reviewed against these learnings and updated regularly.

Critical Success Factor – People Development

People Development: Leadership competencies gained through the application of the Sigma Lean problem solving approach and the requisite accountability for results.

- **Linkage exists between the talent development process and the selection, retention, and placement of Belts:**
  You should carefully choose the Belts ensuring that they wish to lead critical projects to closure. Those Belts that demonstrate the ability to lead without authority are ready for greater roles within the organization.
- **Individual Leadership assessments are conducted for Project Champions and Belts and actions are taken to mitigate gaps:**
  You will quickly learn that the Sigma Lean program is an effective Leadership development program; maximizing the development requires individualized planning.
- **Recognition and reward systems reinforce the goals of attracting, retaining and placing Belts:**
  Differentiation exists for those that drive the organization to successfully reach the Strategic Goals.
- **Membership on Teams is valued by the organization:**
  Encourage a culture within the company that places a value on associates improving the business.

Critical Success Factor – Results

Results: Benefits derived from application of Sigma Lean.

- **Leadership sets objectives and tracks financial, service, and employee satisfaction impact of projects:**
  Each project should be worthy of the investment – The results should capture the impact to each constituent group.
- **Leaders are held accountable for attainment of Strategic Goals:**
  There is differentiation between those that accomplish their goals and those that do not.
- **Results of projects and initiative are widely communicated:**
  Leadership Team celebrates the success of the organization.

Question & Answer Period

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Six Sigma Academy

www.6-sigma.com

US Tel: (480) 515-9501

US Fax: (480) 515-9507

International Tel: +44-1403-783456

International Fax: +44-1403-218788

8876 E. Pinnacle Peak Road, Suite 100

Scottsdale, AZ 85255