

Continual improvement methods with six sigma, lean, lean six sigma, and more

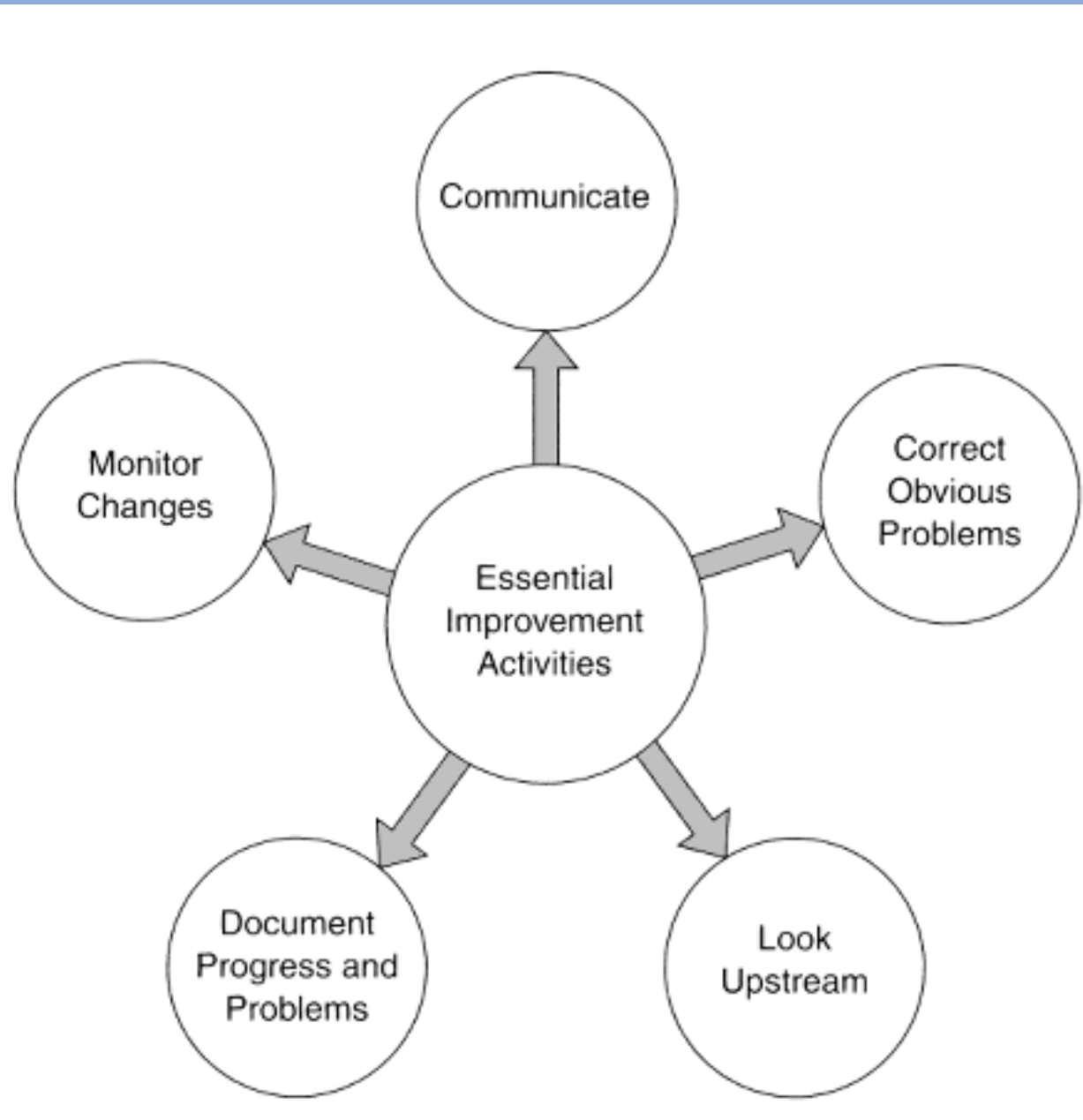
Lecture 8

Rationale for Continual Improvement

- Continual improvement is fundamental to success in the global marketplace. A company that is just maintaining the status quo in such key areas as quality, new product development, adoption of new technologies, and process performance is like a runner who is standing still in a race.
- Customer needs are not static; they change continually. A special product feature that is considered innovative today will be considered just routine tomorrow. A product cost that is considered a bargain today will be too high to compete tomorrow.

Essential Improvement Activities

- Continual improvement is not about solving isolated problems as they occur. Such an approach is viewed as “putting out fires” by advocates of total quality. Solving a problem without correcting the fault that caused it—in other words, simply putting out the fire—just means the problem will occur again.
- Quality expert Peter R. Scholtes and his colleagues recommend the following five activities, which he sees as crucial to continual improvement.



Structure for quality improvement

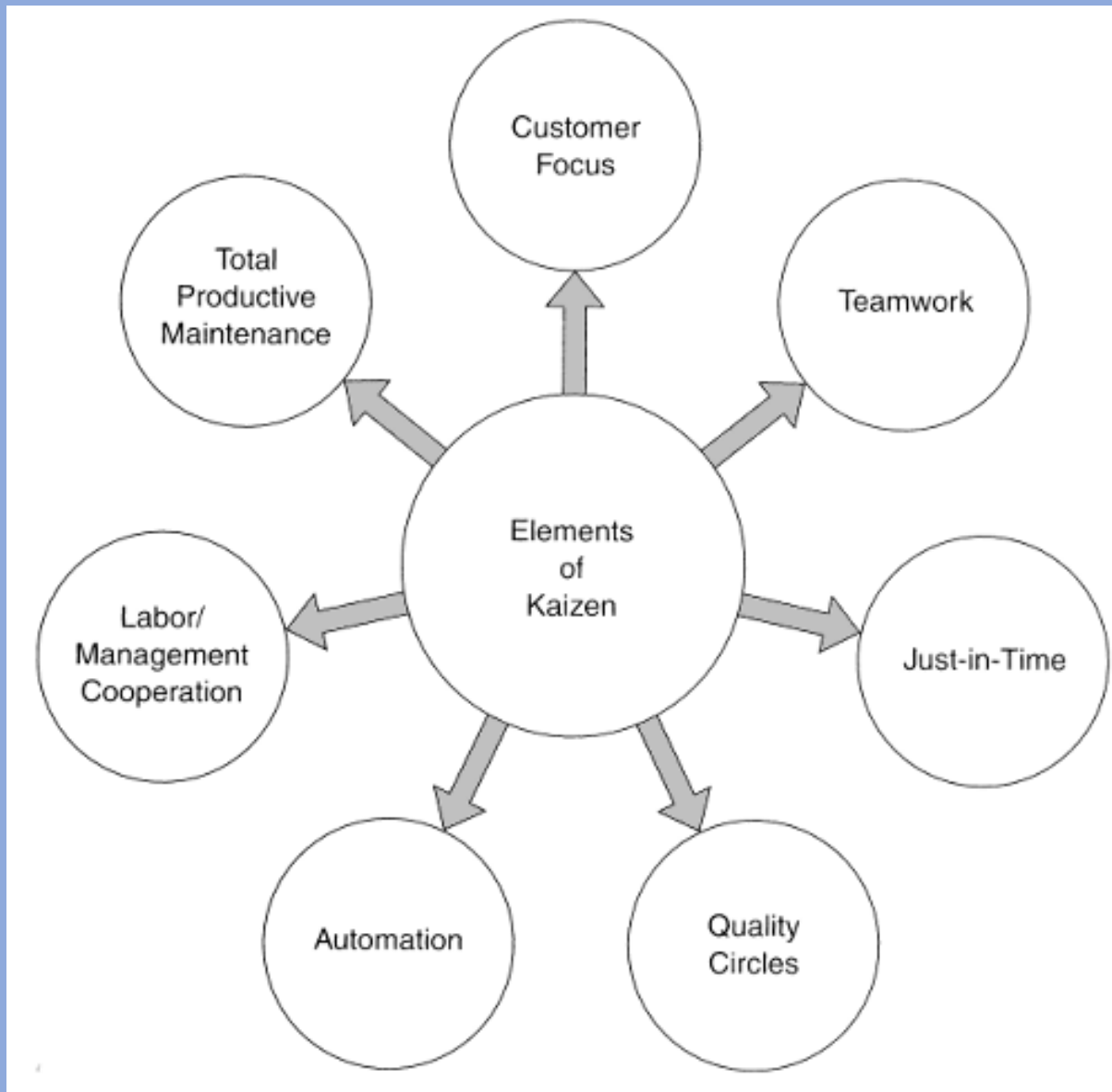
- It must be undertaken in a systematic, step-by-step manner. For an organization to make continual improvements, it must be structured appropriately and Quality pioneer Juran calls this “mobilizing for quality improvement.” It involves the following three steps:
 - Establish a quality council (The quality council has overall responsibility for continual improvement.)
 - Develop a statement of responsibilities (All members of the quality council, as well as employees who are not currently members, must understand the council’s responsibilities.)
 - Establish the necessary infrastructure (The quality council constitutes the foundation of an organization’s quality effort)

Identification of improvement needs & Development Of Improvement Plans

- Identifying improvement needs:
 - Apply multivoting.
 - Identify customer needs
 - Study the use of time.
 - Localize problems.
- Scholtes and his colleagues recommend five stages for developing the plan:
 - Understand the process.
 - Eliminate errors.
 - Remove slack
 - Reduce variation

The KAIZEN approach

- *Kaizen is the name given by the Japanese to the concept of continual incremental improvement. Kai means “change” and zen means “good.” Kaizen, therefore, means making changes for the better on a continual, never-ending basis. The improvement aspect of Kaizen refers to people, processes, and products.*
- If the Kaizen philosophy is in place, all aspects of an organization should be improving all the time. People, processes, management practices, and products should improve continually: “good enough” is never good enough.



Kaizen Five-Step Plan

- Step 1: Straighten up.
 - (This step involves separating the necessary from the unnecessary)
- Step 2: Put things in order.
 - (This step involves putting such things as tools and material in their proper place)
- Step 3: Clean up.
 - (This step involves keeping the workplace clean so that work can proceed in an efficient manner)
- Step 4: Standardize.
 - This step was originally aimed at standardizing how the first three of the Five-S's
- Step 5: Discipline.
 - (This step involves careful adherence to standardized work procedures. This requires discipline)

The LEAN approach

- Lean was originally developed as a manufacturing concept and, as such, is often referred to as *lean manufacturing*. The purpose of adopting Lean as a business improvement method is to produce better products or deliver better services using fewer resources. If the concept had a motto, it would be this: *doing more with less and doing it better*.
- A Lean operation is one in which a better product is developed or a better service is delivered using *less of everything required* (i.e., *human, financial, technological, and physical resources*).

The LEAN approach

- The reduction of waste approach to Lean implementation grew out of Toyota's desire to eliminate waste in manufacturing processes.
- Lean focuses on reducing and, ideally, eliminating the following types of waste:
 - *Overproduction waste.*
 - *Inventory waste.*
 - *Motion waste.*
 - *Transportation waste*
 - *Over-processing waste.*
 - *Defects waste.*
 - *Waiting waste.*
 - *Underutilization waste.*

The SIX SIGMA approach

- Six Sigma is one of the most innovative developments to emerge out of the total quality movement. Its purpose is to improve processes to the point where the defect rate is 3.4 per million or less, thereby making the company more competitive, profitable, and successful. Its benefits include the following:
 - Cost reduction
 - Productivity improvement
 - Market-share growth
 - Customer retention
 - Cycle-time reduction
 - Culture change
 - Product/service development

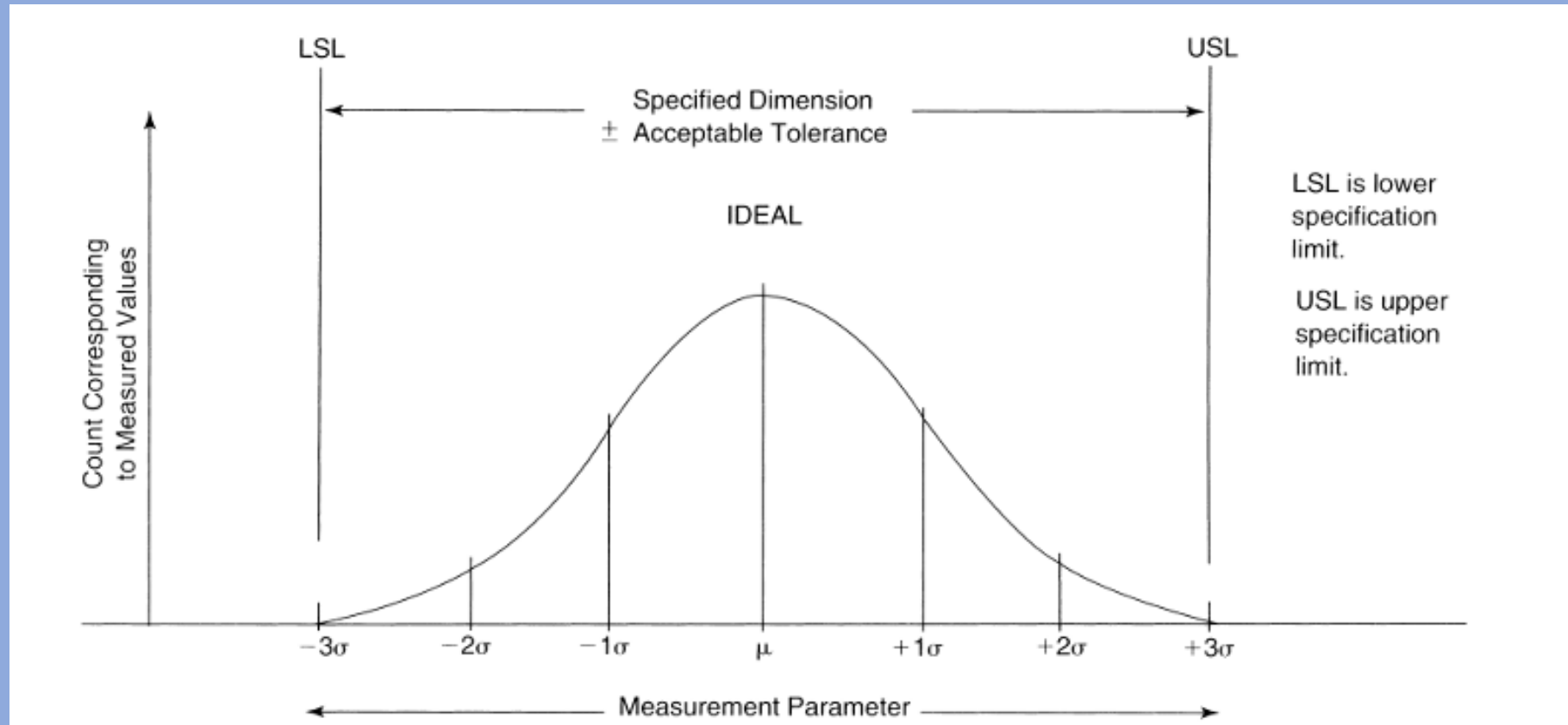
Six Sigma Belts, Champions and Executives

- Unlike Total Quality Management (TQM), the Toyota Production System and Lean, Six Sigma has a defined organizational hierarchy of Six Sigma expertise and experience for the organization implementing practices and operating Six Sigma projects. These hierarchical levels are named as follows:
 - *Executive*
 - *Champion*
 - *Master Black Belt*
 - *Black Belt*
 - *Green Belt*

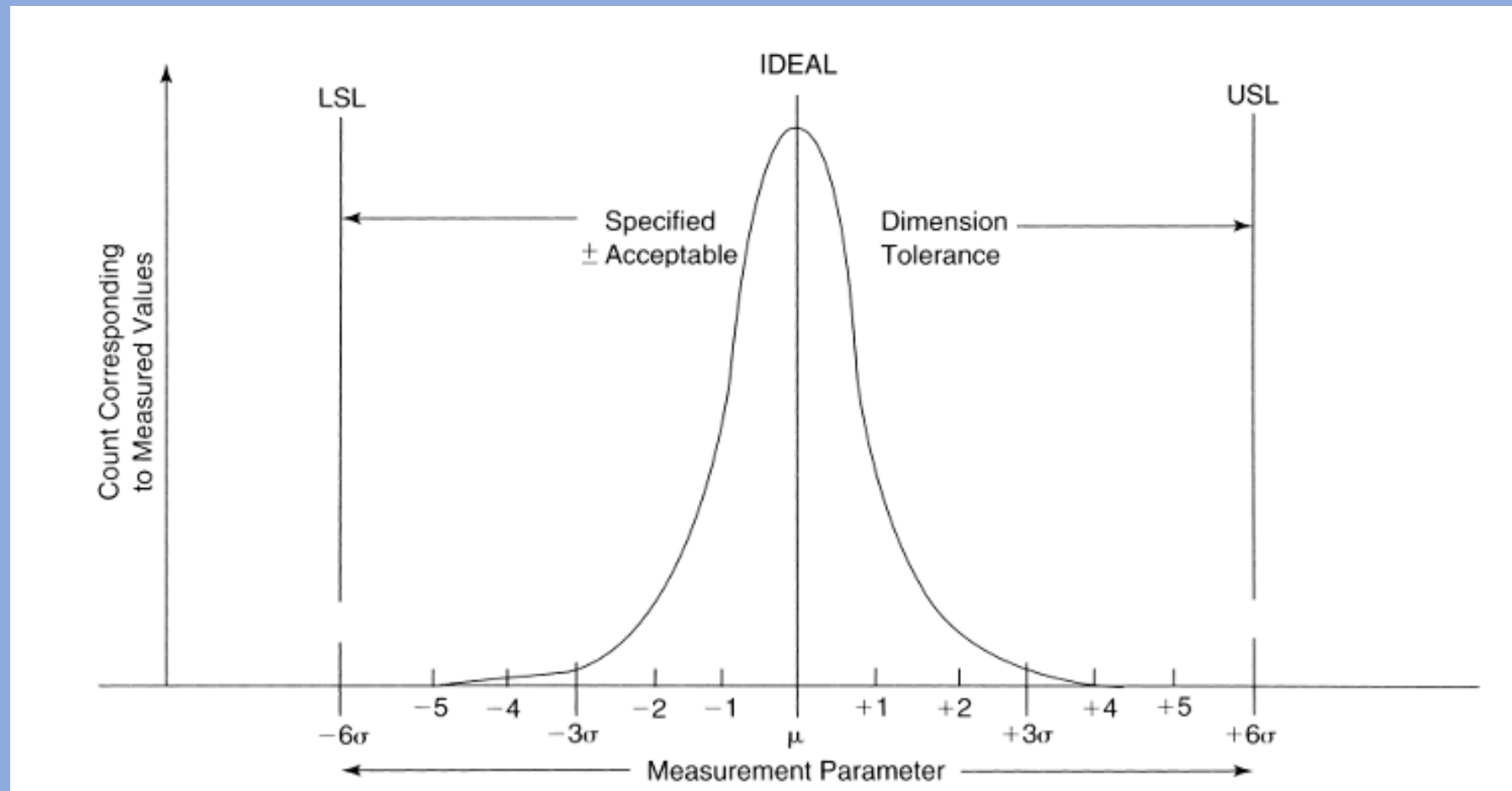
Six Sigma: The Name

- The name Six Sigma comes from the concept of standard deviation, a statistically derived value represented by the lowercase Greek letter sigma (σ). The variation of processes and their output products is typically measured in the number of standard deviations from the mean.
- The well-controlled processes of most good companies presently operate between 3 and 4 sigma. This means 99.73% of the output of a process will fall between plus and minus three standard deviations at 3 sigma, or 99.9937% at 4 sigma.

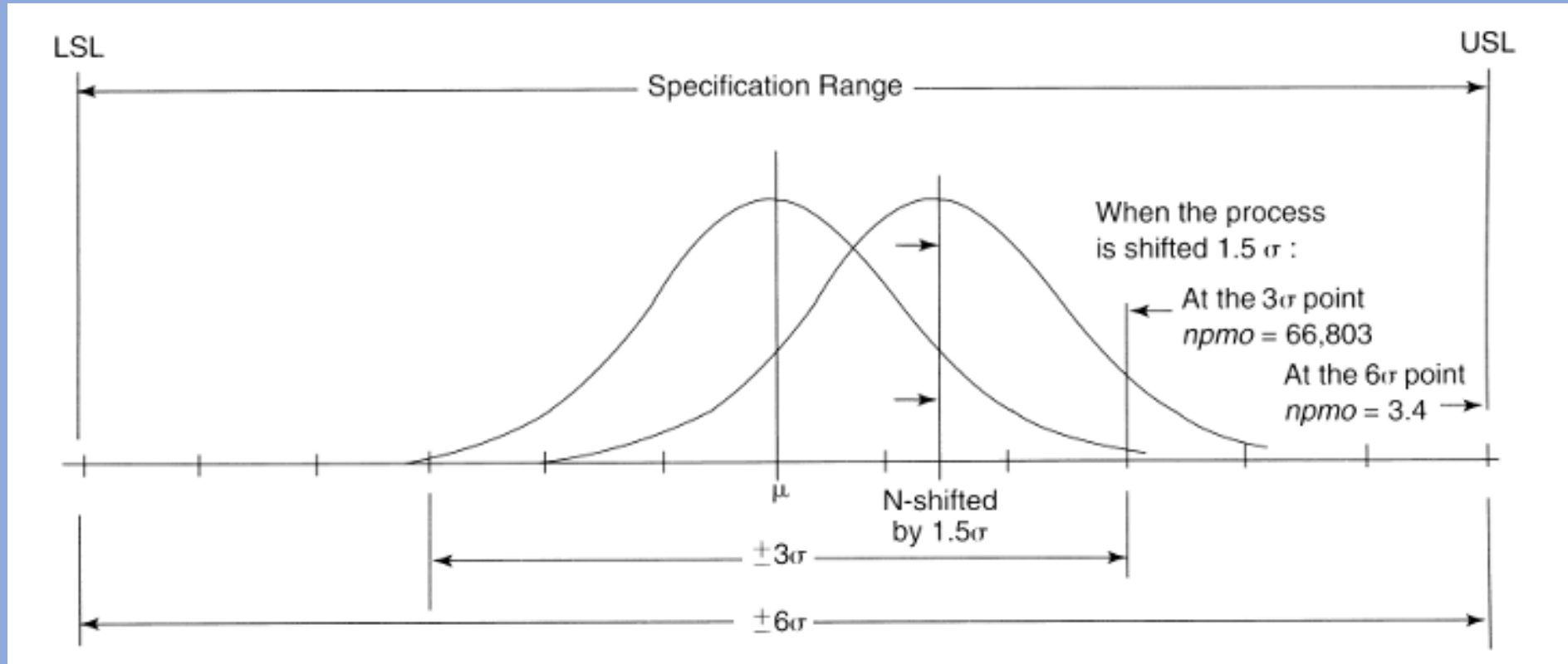
Histogram of a 3-Sigma Process



Histogram of a 6-Sigma Process



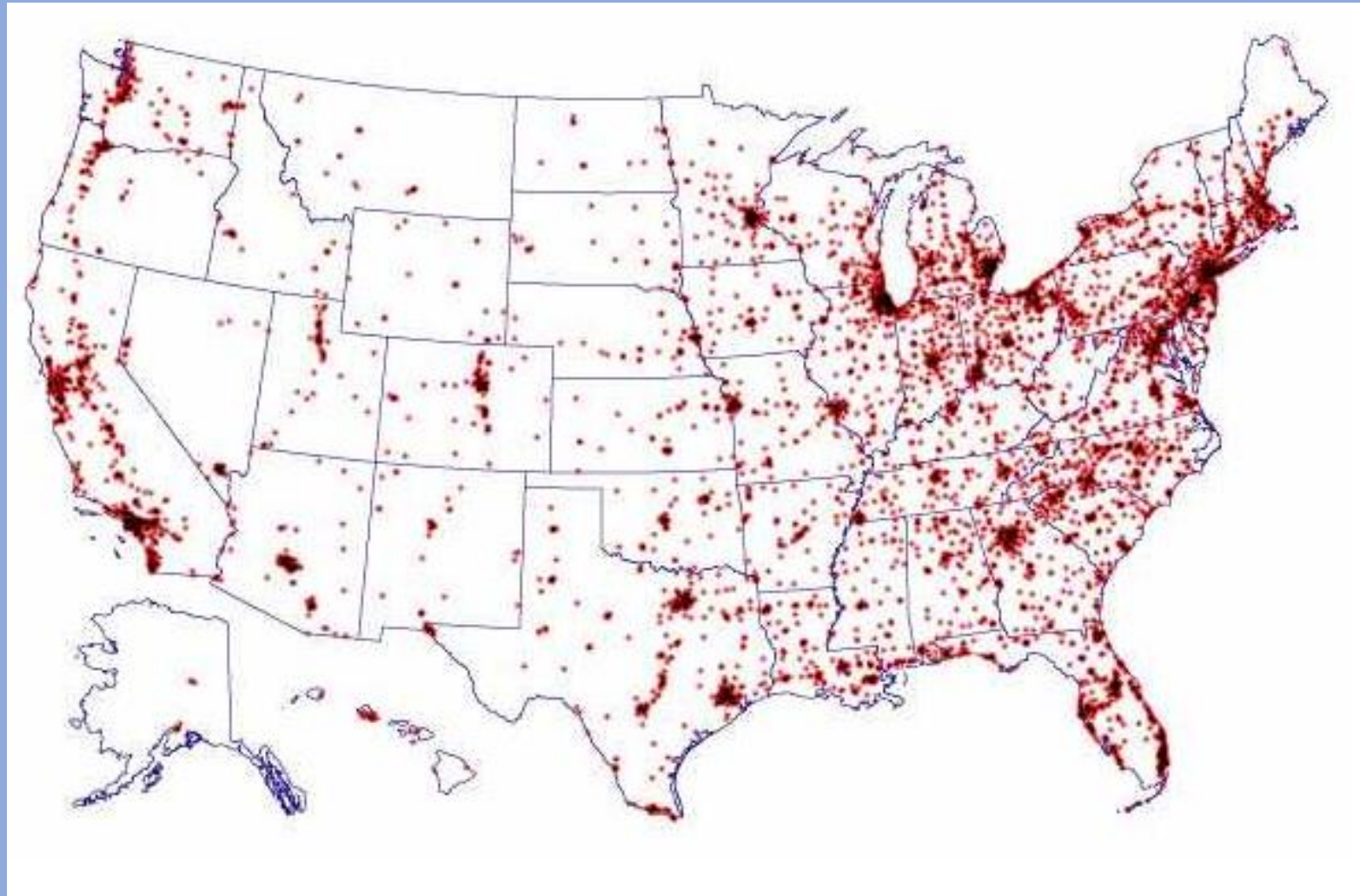
The 1 and 1/2 Sigma Shift



The LEAN SIX SIGMA approach

- What we have here is a wedding between two healthy, robust, powerful systems that stood alone in the two previous sections—Lean and Six Sigma.
- The objective of Lean Six Sigma is to make the organization superior in its day-to-day work and processes, its products and services, and its business results. This has also been the objective of many organizations that have found that Lean alone, or Six Sigma by itself, did not quite provide all the results needed in their quest for a better competitive posture.

Burger King System Restaurants



Pizza Hut System Restaurants

