Product vs Process Control

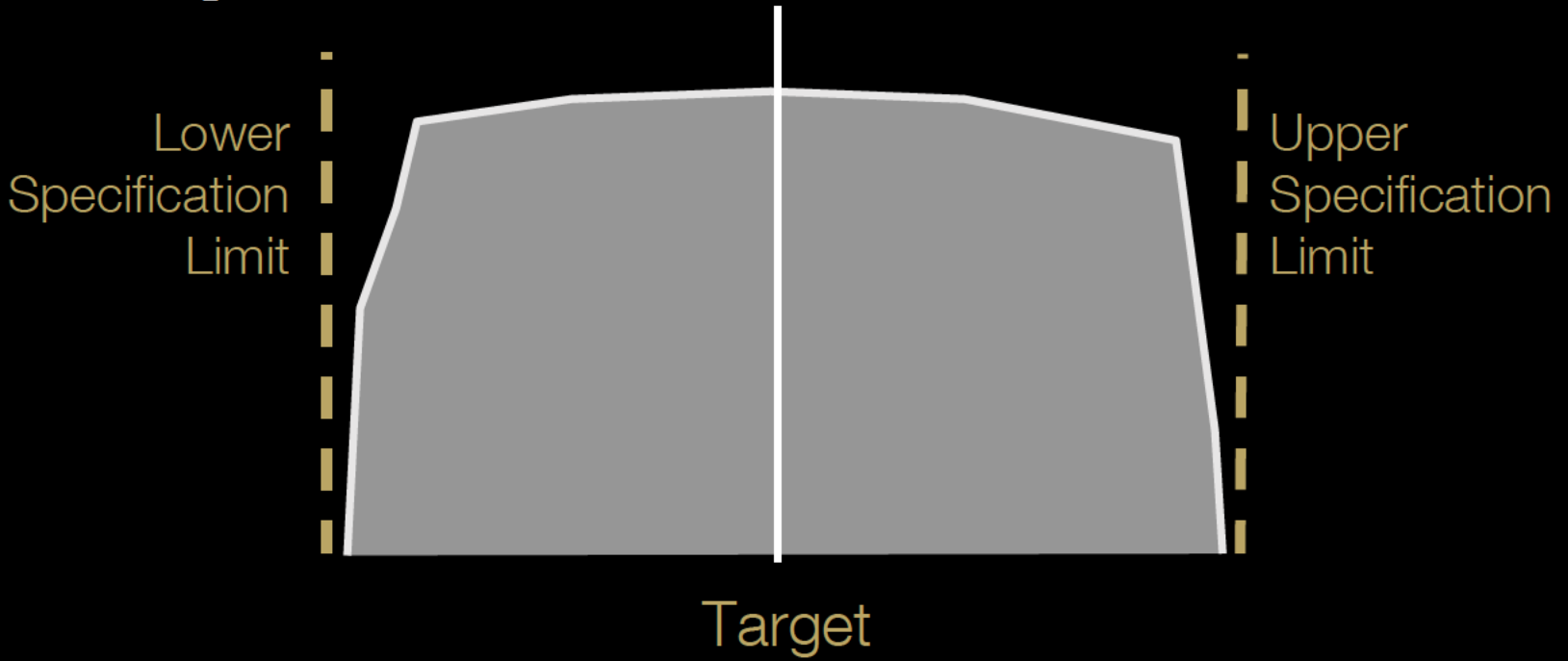
Data Science for Quality Management: Understanding Process Variation

with **Wendy Martin**

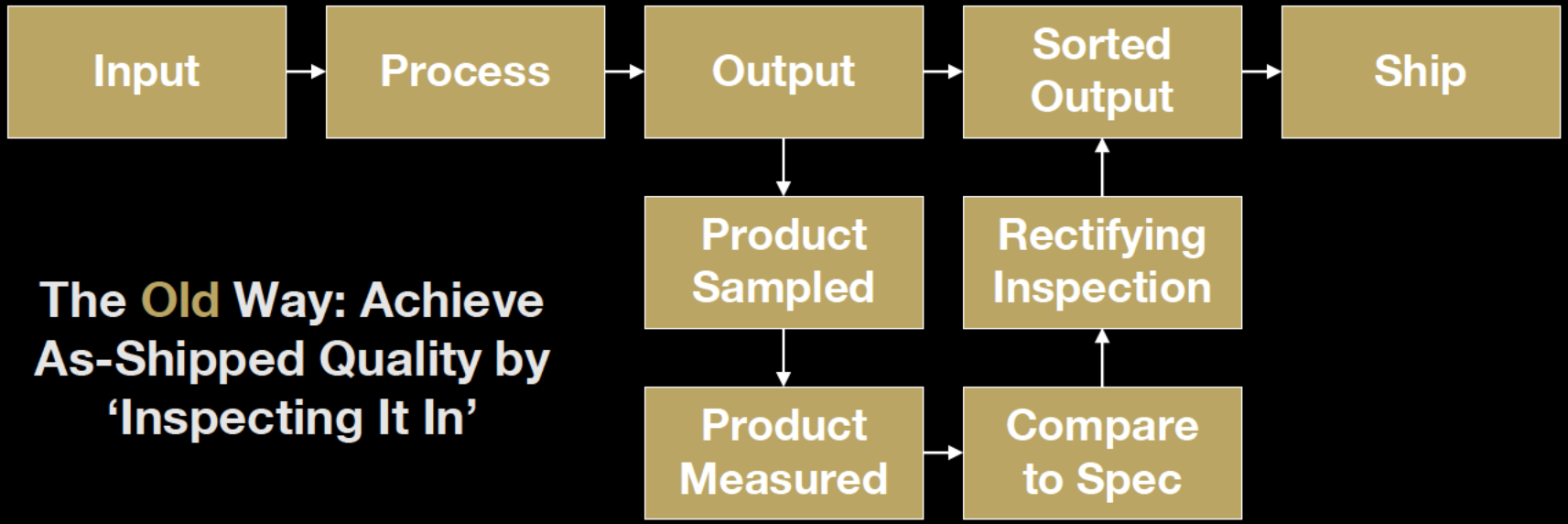
Learning objective:

Differentiate between the Product Control Cycle and Process Control Cycle

Quality Defined as Conformance to Specification



The Product Control Cycle

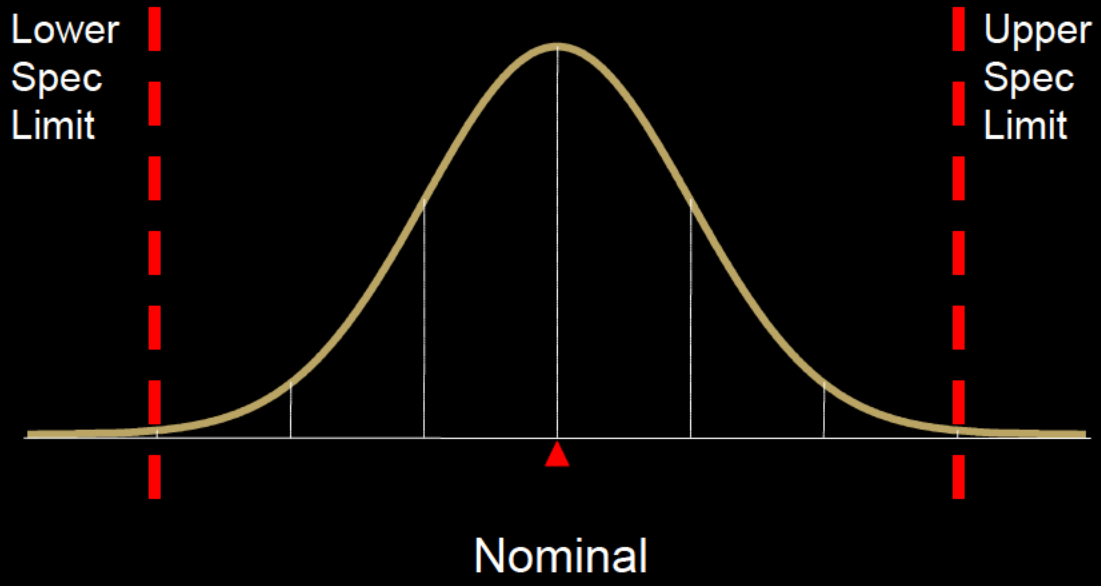


The Old Way: Achieve As-Shipped Quality by 'Inspecting It In'

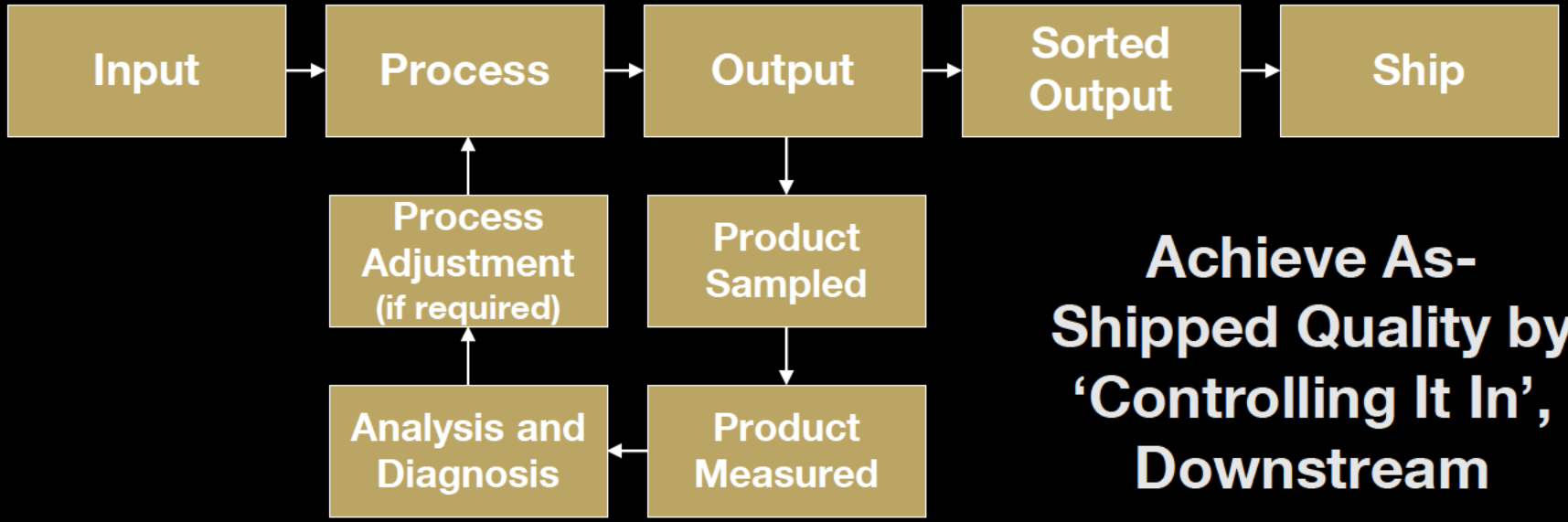
The Product Control Cycle

This is the methodology used by most firms and industries to try to ship quality product during the 1950’s, 60’s, and 70’s; and represents the least economical and effective approach to achieving this objective.

Quality Defined as Conformance to Nominal



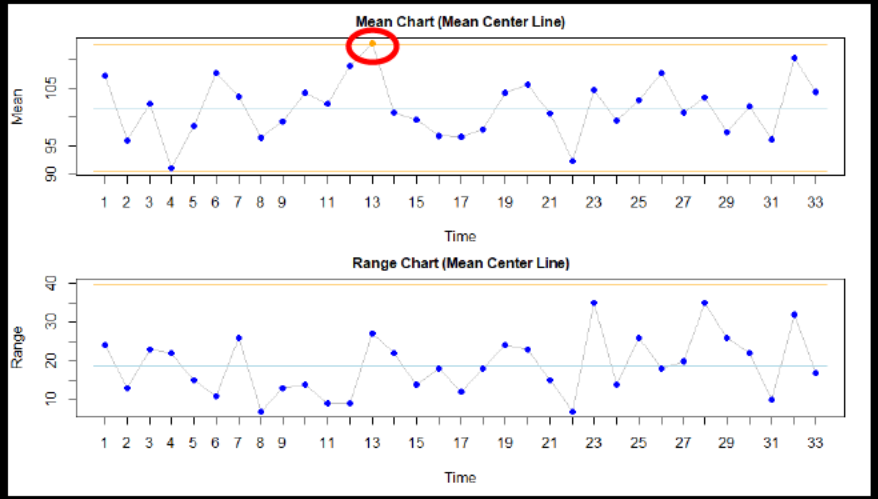
The Process Control Cycle – Phase 1



Achieve As-Shipped Quality by 'Controlling It In', Downstream

Process Control in Traditional (Phase I) SPC

- Processes are said to be “in-control” or “out-of-control” based upon observed patterns on a control chart
- This is a narrow view of process control

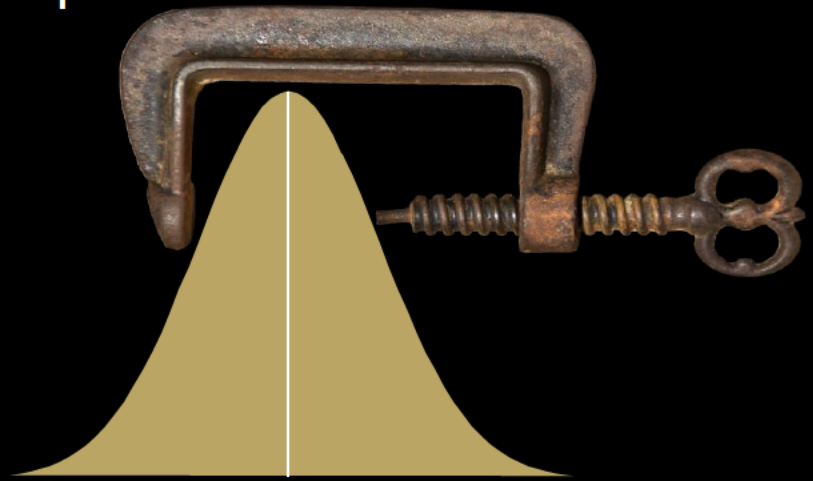


Random House Webster's Definitions of Control

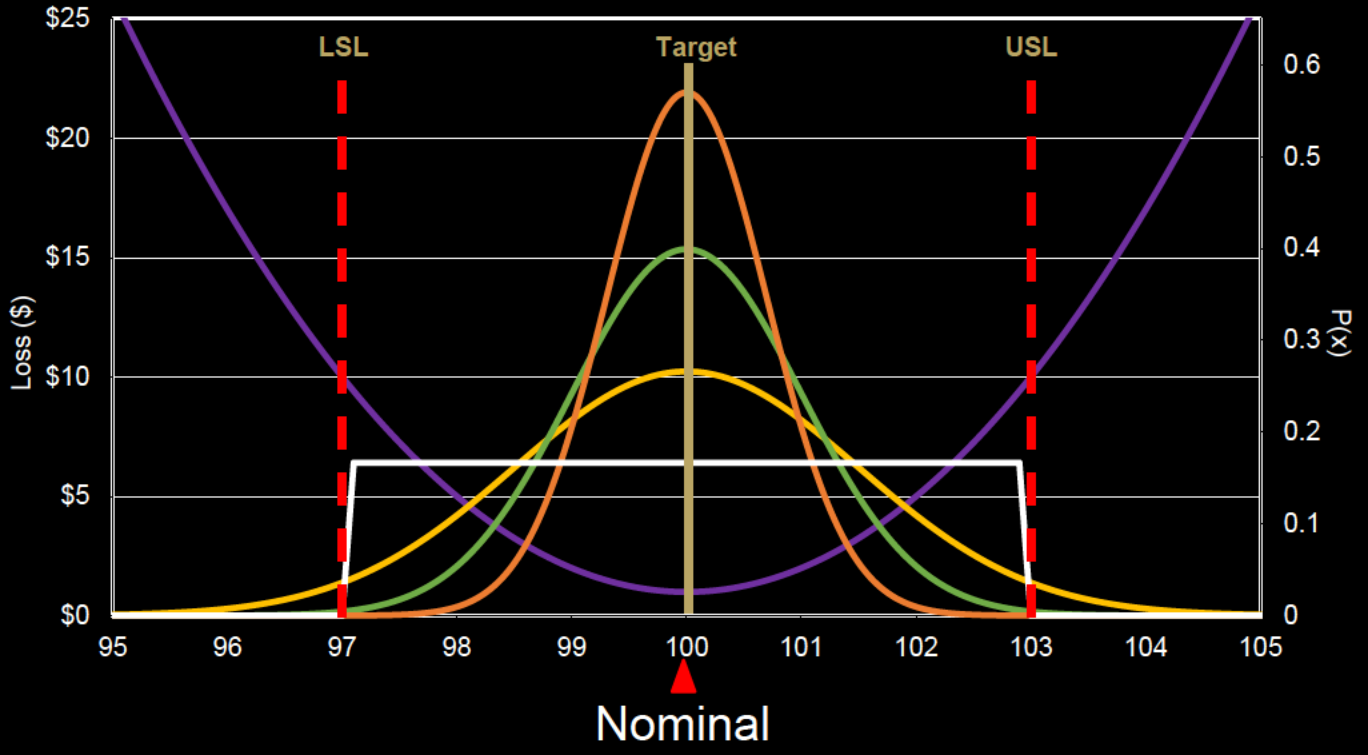
1. To exercise restraint or direction over; dominate, regulate, or command;
2. To hold in check; curb
3. To prevent the flourishing or spread of
4. Check or restraint
5. Prevention of the flourishing or spread of something undesirable

A Newer Definition for Process Control (Phase II)

Process control is the ability to constrain variation and prevent nonconformance over time

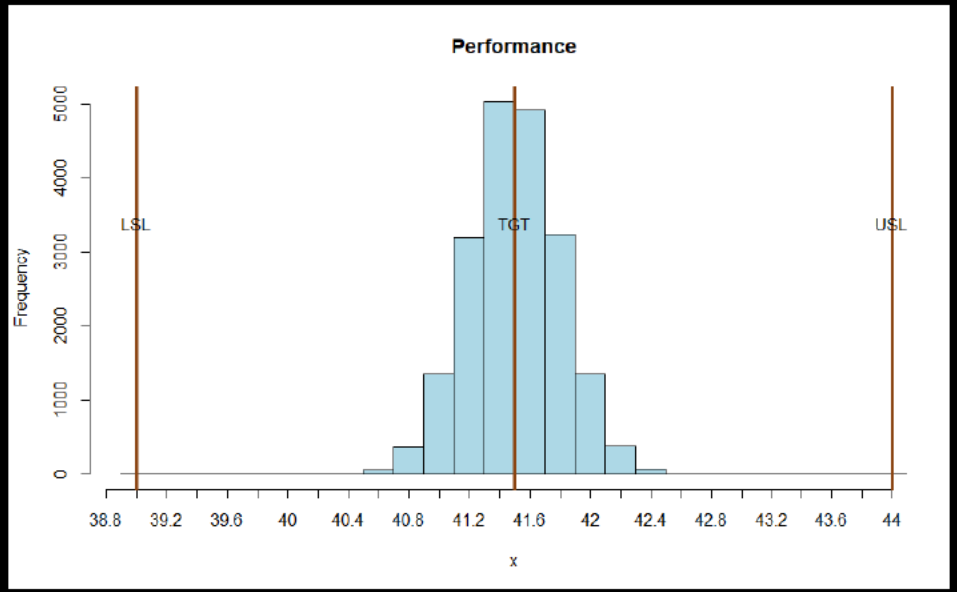


Quality Defined as the Reduction of Common Variation

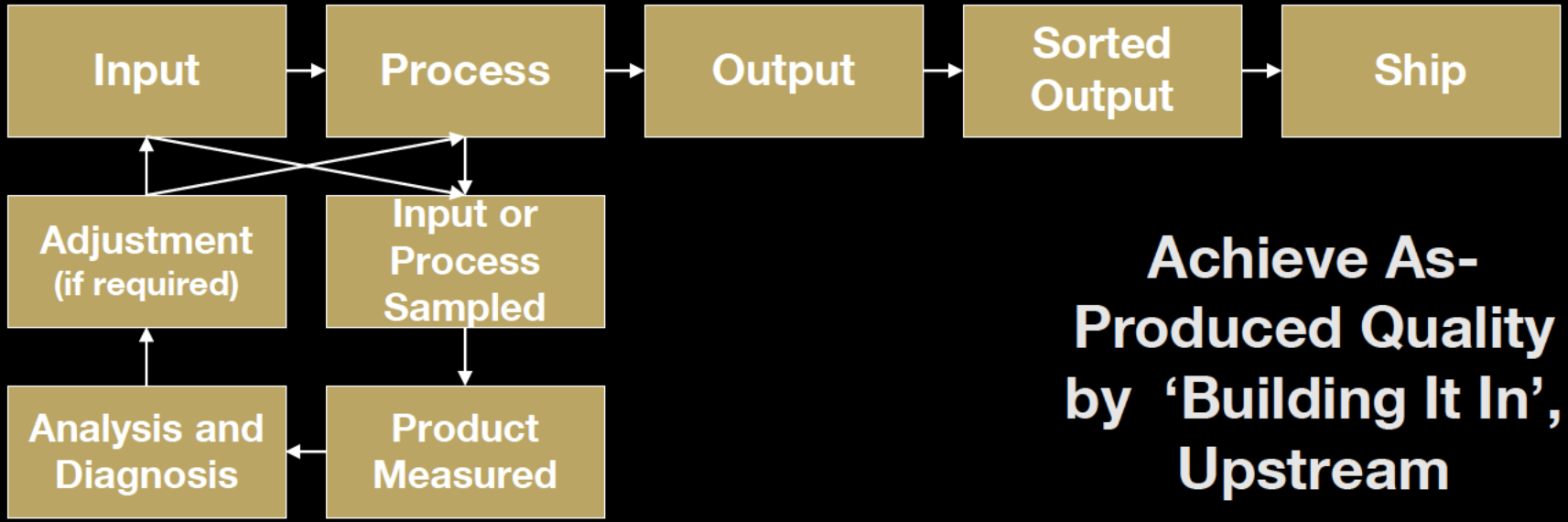


Process Control

- The level of control is demonstrated through the evaluation of long-term process performance



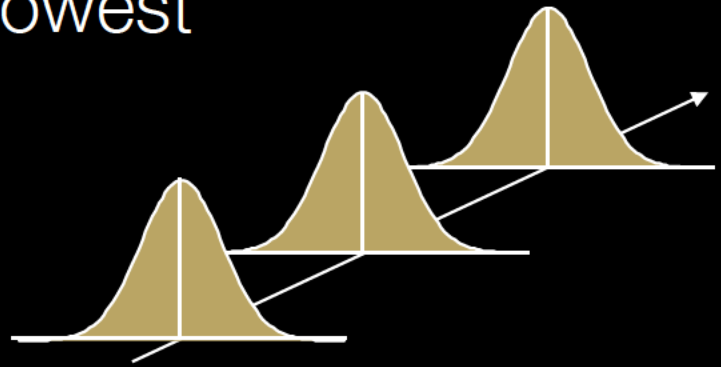
The Process Control Cycle – Phase 2



Achieve As-Produced Quality by 'Building It In', Upstream

Process Control in Phase II Applications

- Simple statistical control is not the goal: achieving 100% conformance as produced, in the absence of nonconformities, with minimal variation over time, at the lowest possible cost, is the goal.



Sources

The material used in the PowerPoint presentations associated with this course was drawn from a number of sources. Specifically, much of the content included was adopted or adapted from the following previously-published material:

- Luftig, J. An Introduction to Statistical Process Control & Capability. Luftig & Associates, Inc. Farmington Hills, MI, 1982
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