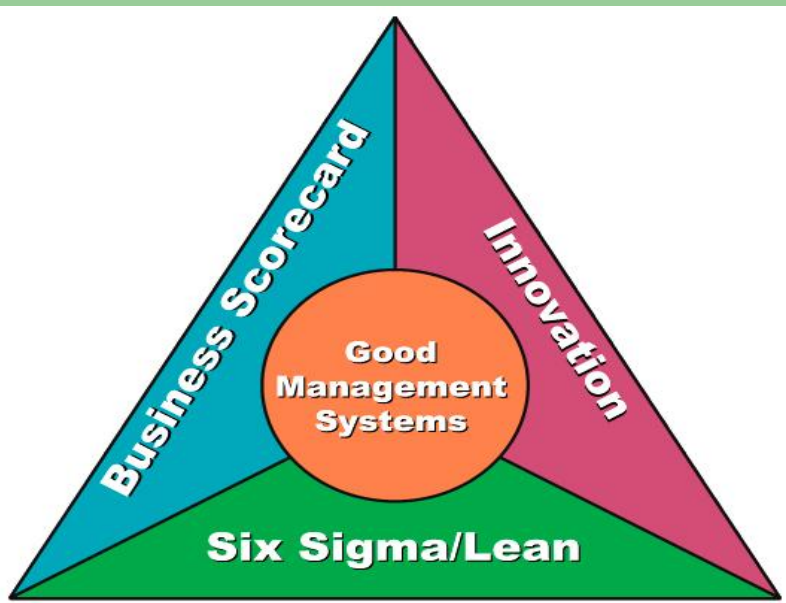




Achieving Process Excellence using the 4P Model



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A Recent Vacation?



Objectives

1. Background
2. PDCA
3. Excellence Defined
4. 4P Model
5. Impact on Cost of Poor Quality
6. Field Implementations

Background

- 8 hours to Cut the Tree
- Root Cause Analysis
- FMEA

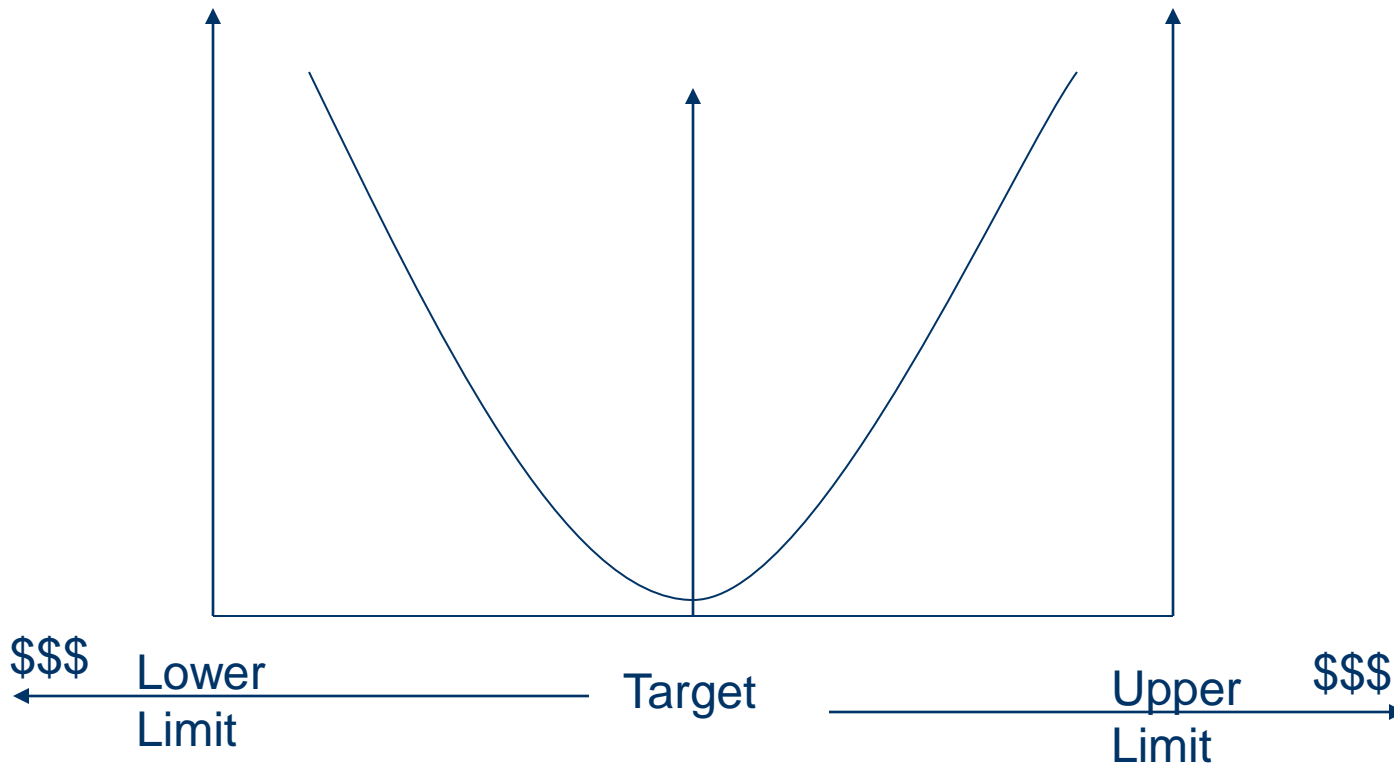
PDCA

- Implementation Challenges
- Our Experiences As A Customer

Excellence Defined

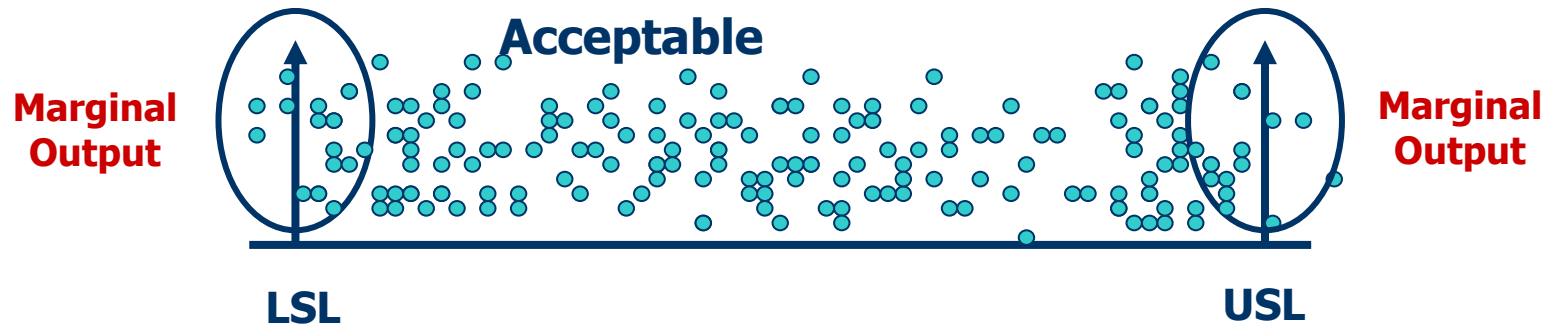
- What does it mean?

Taguchi's Loss Function

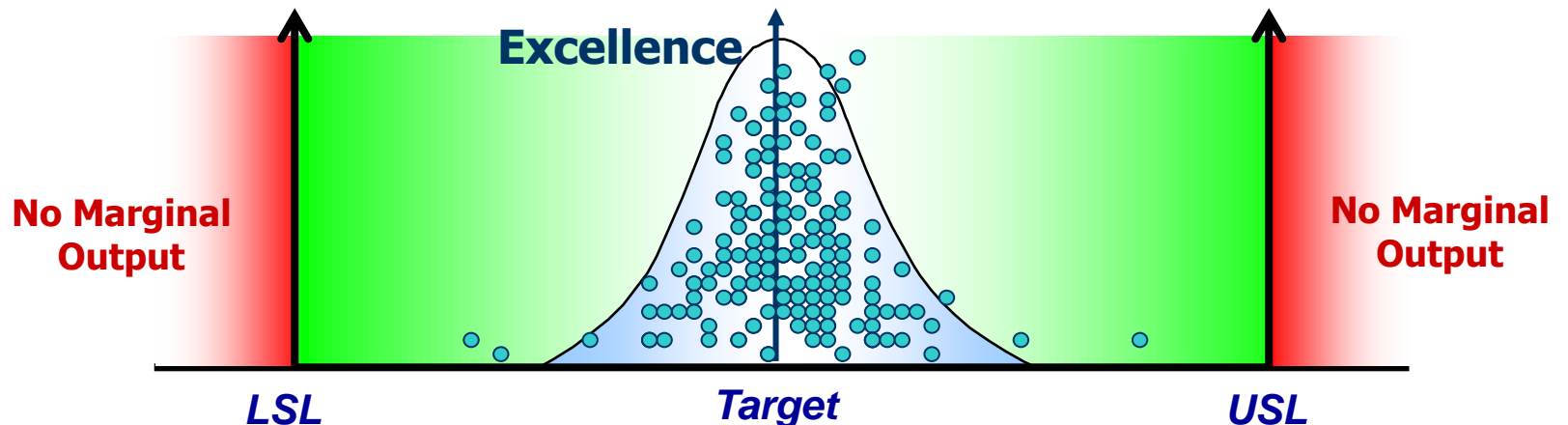


Target performance is the least expensive.

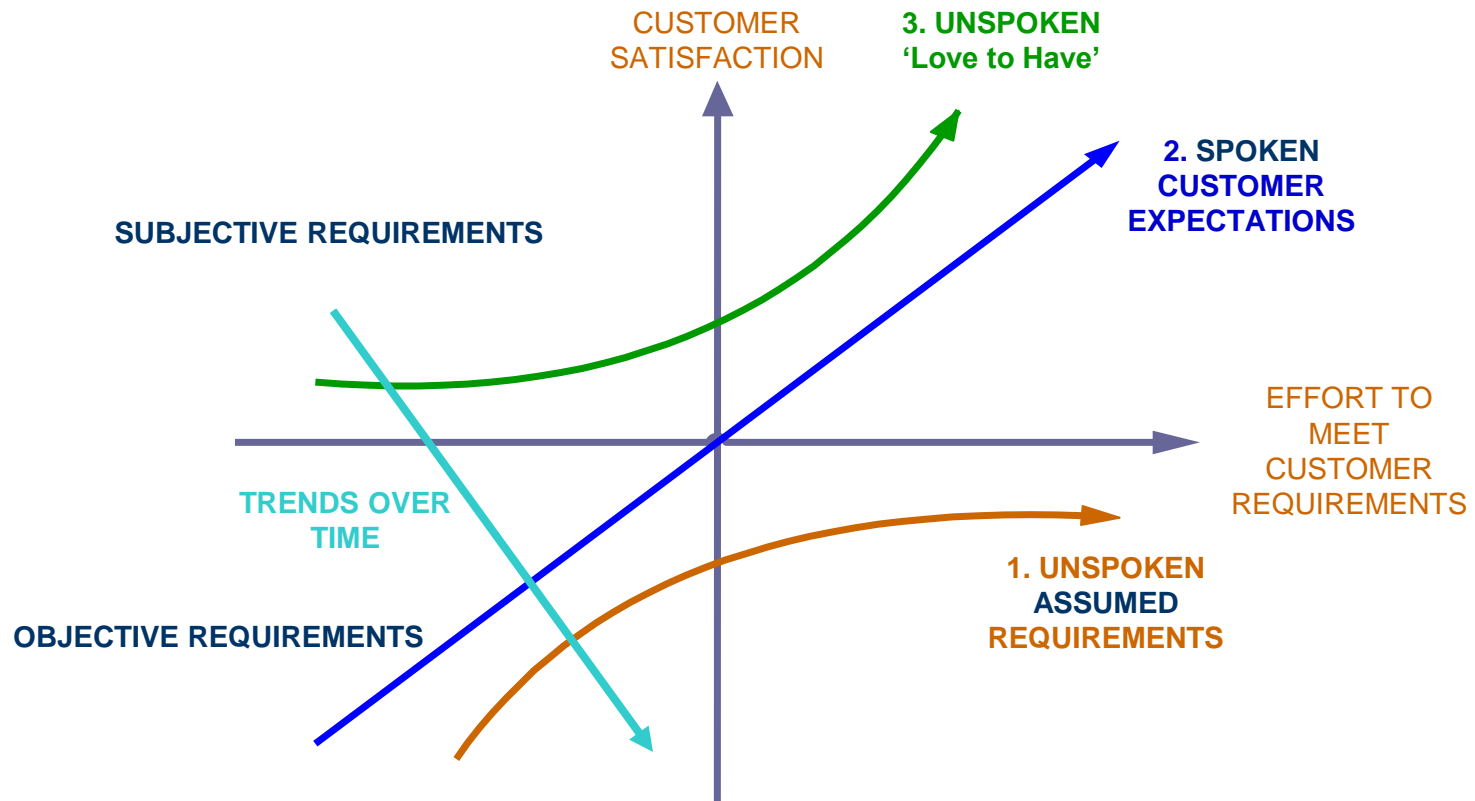
Acceptability vs. Excellence (ASME Y14.5)



We build to limits, and check for acceptability through inspection within limits



Requirements for Excellence



Kano's Model for Voice of the Customer

4-P Model

1. Conceptualized by Praveen Gupta, Author and the First Practitioner of Six Sigma
2. Published in Quality Digest (March 2005) and Quality Progress (July, 2006)
3. 4-Ps: Prepare, Perform, Perfect, & Progress



The 4 P's of Process Excellence

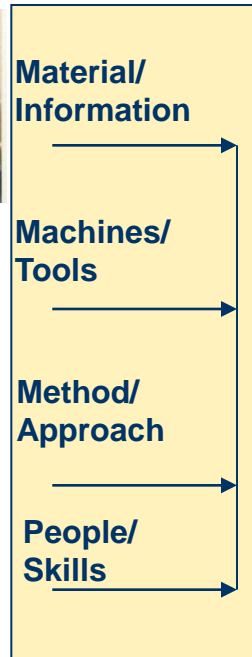
Prepare
(To do well) **Ishikawa**



Juran



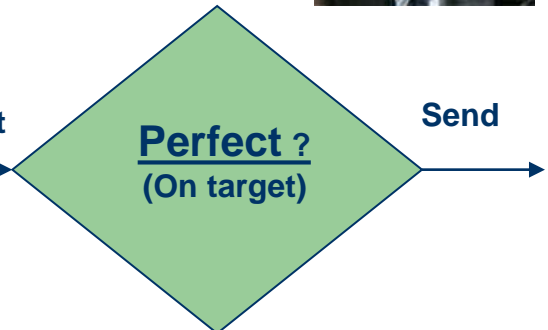
Taguchi



Input



Output



Send



Deming

Progress
(Reduce Variability)

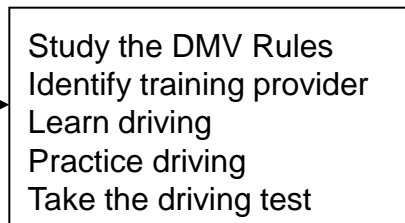


An Example of 4-P Model

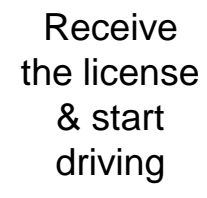
Prepare (To do well)



Perform (Do well)



Perfect?
(Pass the test first time)



Progress
(Learn/ practice more)

Input

Output

Yes

No

Impact on Cost of Poor Quality

Perfect → Reduced Appraisal Costs

+

Prepare → Reduced Failure Costs

Reduced Cost of Poor Quality

The Process Thinking

- PDCA is the recommended model to practice Process Thinking in implementing ISO 9001 management systems.
- 4-P Model creates a practical framework for implementing the PDCA.
- For each process we need to set target and tolerance, build to target, and ship to limits. Let's call it 'aim and shoot.'
- All the procedures follow the structure of Prepare, Perform, Perfect and Progress.

Achieving Process Excellence

1. Define the process performance targets
2. Understand process constraints
3. Understand supplier/partner constraints

Field Implementation

1. Quality Progress Reader
2. Ferris State University in Michigan
3. University of Military Intelligence
4. Six Sigma Black Belt
5. Business Unit Manager
6. Quality Director
7. ISO 9001 Management Representatives

Presented to US TAG to ISO/TC 176, February 2006

General

- “The 4P's methodology is clearly a successor to the brilliant developments of Shewhart, Deming, Ishikawa, Juran and Taguchi. **I am particularly persuaded by the emphasis on excellence** obtained by meeting a target as proposed by Taguchi's loss function as one of the characteristics outlined by you so well in Table 2 of that article (page 51). Mere compliance or conformity to specifications is no substitute for true excellence.”
 - *Scott Tonk, Consultant, A reader of Quality Progress 9/26/06*
- **MMBA 760: Process and Value Stream Management Systems**
 - The 4P – New Process Management Model is being **taught at Ferris State University**, MI

The University of Military Intelligence

- “As an example, the organization currently uses the Automated System Approach to Training (ASAT) to capture training resources. The system is unnecessarily complicated and user unfriendly, which leads to inefficiency.
- The organizational ASAT procedures for data capture and data entry required a complete review. Specifically, comparing the organization's ASAT value stream to the **4P concept was valuable in retooling and/or eliminating inefficient ASAT business processes.**
- In this case our man-power requirements were **decreased approximately 2124 WIP hours or 1.22 man-years.** The time saved was applied to more productive endeavors (other than ASAT processes).
- The government/military, despite public perception, constantly looks for savings in time, money, personnel and process. Therefore, forward thinking individuals with concepts/processes ultimately saving the tax payer money are welcome.” - Univ. of Mil. Intelligence, USA”

– *George Stemler, University of Military Intelligence, Jan 07*

Service

- “In my mind PDCA was the closest thing to a methodology that people had in the first half of the 20th Century, but it is arcane by our current standards as we move into the 21st Century.
- Your QP article actually helped me crystallize an issue that I have always had with PDCA, namely that I have always viewed **PDCA as a conceptual representation for quality control and not as a deployable methodology**. Yet, even on the recent CQE exam and in your article you reference ISO 9000 presenting PDCA in a way that sets that expectation that you should "do" something with PDCA, as if someone would actually say, "Hey, that's a problem. We need to PDCA that thing." I've always found that type of use of the PDCA cycle to be rather silly, or even dangerous. By dangerous I mean that PDCA could be misinterpreted to justify the random "tweaking" of the process in order to "fix" something, as in Deming's demo where he drops the ball bearing and then continues to adjust, the process gets worse rather than better.”

- Business Project Manager, Six Sigma Black Belt, Major Insurance Company, Jan 07, USA

Manufacturing

- “Target driven manufacturing resulted in over 70% reduction in defect rate. Problem solving **became a science instead of being an art.**”
– *Business Unit Manager, Dentsply International, USA*
- “The '4P' model is truly a breakthrough in the continuing drive for process-based excellence. Conceptually simple yet effective, the **4P integrates target-driven mentality into the improvement tool, which Darwin would have called the natural evolution of PDCA.**”
– *Quality Director, Essex Group, Inc., USA*

Quality – ISO 9001 Implementation

“The 4P model has helped our Service Delivery area in creating and defining our procedures. Although we are still evolving the approach, the **4P model forces us to determine the skills/materials to execute the step**; define the necessary steps from an established beginning and end (scope); and set the required measurements to identify success (performance measurements). Answering all of these questions/needs provides us with an efficient process. **We envision the benefits will continue through FY08** in reducing questions from users unfamiliar with a certain procedure and continuous process improvement as we’re capturing metrics on critical points of the process.”

– ISO 9001 Management Representative, A Marketing Services Company, USA

ISO 9001/4P Benefits

1. Almost 9% improvement in **productivity** in one year.
2. **On-time delivery** improved from 75% to 100%.
3. Reduction by 90% to almost '0' in **credits to the customer** for returns.
4. **Cost of quality** has been continually declining.
5. Other intangible benefits have improved the **future of the company**.

- Vice President Manufacturing, Management Representative, Electronic Manufacturing, Elgin, IL

Summary

1. The 4Ps are: Prepare, Perform, Perfect and Progress.
2. A good preparation leads to reduced cost of failures, and focus on target results in reduced appraisal costs (The two components of the cost of poor quality)
3. The 4P model updates the PDCA concept with appropriate tools in order to make it actionable. A *very helpful adaptation that applies our modern understanding to a classical concept* in order to upgrade it to actually be useful as a methodology.

Thank you!

Arvind Srivastava

- Arvind is Vice President at Accelper Consulting. He has trained and guided a number of professionals on Six Sigma, Innovation and Excellence across the industry. He has co-authored Stat Free Six Sigma book published by BookSurge (An Amazon.com Company) and is a contributing author of The Six Sigma Performance Handbook and Six Sigma for Transactions and Service, both published by McGraw Hill. Arvind has more than 20 years' experience in multiple industries, in India and the USA, as planner, buyer, supplier and consultant. Prior to joining Accelper, Arvind worked in various Supply Chain functions in leading global companies and quickly achieved dramatic improvements.
- Arvind is a Certified **Six Sigma Black Belt** (Accelper Consulting), **Master Business Innovator** (Illinois Institute of Technology), **Master in Business Administration** (Benedictine University), **Master in Industrial Engineering** (NITIE, Mumbai, India) and **Bachelor in Mechanical Engineering** (Indian Institute of Technology, Roorkee, India). He is a **Board Member of ASQ's Chicago Section**. He may be reached at Arvin@accelper.com.
- *Accelper stands for accelerating performance. Accelper realizes the strategy of sustained profitable growth through right measurements, enough profit, significant growth through innovation, and process excellence.*