

Six Sigma Basics - The Improve Phase Part 5

VERIFY THEN IMPROVE

In our previous issue, we focused on the “A” in the DMAIC cycle for Six Sigma. We laid out the processes and tools used to ANALYZE the output performance of the process. In this issue, we will focus on the “I” in the DMAIC cycle, which is the IMPROVE phase. In this phase, we should now be ready to develop, implement, and evaluate solutions targeted at our VERIFIED cause. The goal is to demonstrate with data that our solutions solve the problem and lead to an improvement. We must VERIFY the effectiveness of the solution. Failing to VERIFY the effectiveness of the solution will lead to false hope and busy-work trying to maintain the improvement. The first step in the IMPROVE phase is to test our solutions in the real world. This must be done on a small level to ensure the solution is correct. We are often pushed to implement the solution across the entire process or product line. This is not the best method of implementation. Be sure to follow the Plan, Try, Reflect and Standardize (PTRS) cycle during implementation.

RADICAL CHANGE PROCESS

PTRS is a powerful tool when used to implement changes in our process (see Figure 1 below). It ensures that all aspects have been considered. We first PLAN our changes being added to the process. Then, we TRY it on a small scale to see if we were correct in our assumptions. Many western companies do a very good job at planning (sometimes to the point of detriment by planning too long), but then implement and walk away. This leads to frustration and the inability to realize the full potential of the change. It is extremely important to REFLECT immediately after the TRY phase. This gives us the opportunity to see if the change is achieving the desired results. If the desired results are not achieved, we ADJUST and repeat the cycle. This cycle is repeated until the desired result is fully achieved. Once the result has been achieved in full, we can standardize across multiple products, product lines, and even plants in some cases.

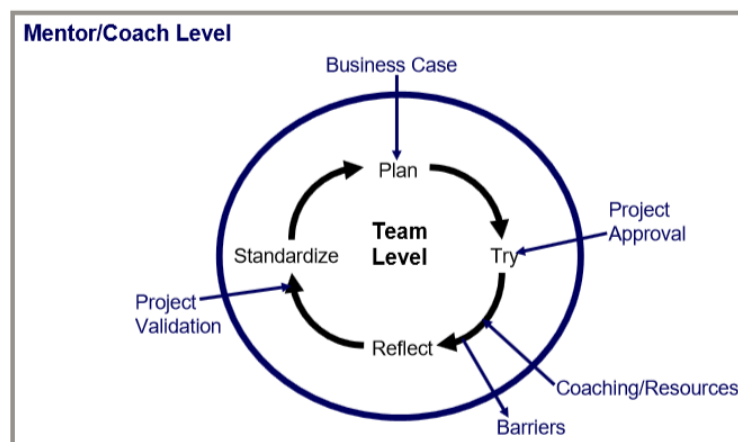


Figure 1: PTRS Cycle

[Click here for an animated detail of the P-T-R-S cycle](#)



Aligned for Results...

The Competitive Advantage in a Global Marketplace

P.O. Box 23031, Knoxville, TN 37933-1031

Phone 865.323.3491

Fax 865.288.3304

www.DriveInc.com

A quick method used to VERIFY results is called the New vs. Old Six Pack Test. We randomly run parts with the new process or dimension to verify the change.

We have 3 groups of New and 3 groups of Old. If we randomize our run between the groups and have a clear separation, we can conclude with 95% confidence that we have improved the process. See Figure 2.

VERIFY RESULTS

Group	Results
New	0.23%
New	0.10%
New	0.40%
Old	4.50%
Old	4.21%
Old	5.10%

Figure 2: Results Table

New Group: Process Change Implemented

Old Group: Process Change Not Implemented

Note: The size of the sample group should be determined based on the frequency of the defect.

Response: % Defects seen within the group.

Run Order: Old, New, New, Old, New, Old, Old

Results shown sorted by 'Group' to check for separation

The above example shows 100% separation, so we can conclude that our change is effective. Had there not been separation, we would have to conclude that we did not find the true root cause.

Other tools/approaches that can be used during the IMPROVE phase are:

- Solution Selection Matrix
- A-B Testing
- Error Proofing (Poka-Yoke)
- Pilot Runs/Evaluations

The IMPROVE phase of Six Sigma is not a glorious phase, but it is a vital phase to ensure long-lasting results that have read-across potential for the entire organization. We must put the same focus and importance on this phase as we do in all the other phases. Now that we have a solution implemented using the PTRS cycle and have VERIFIED its effectiveness, we need to sustain the improvement. We will cover sustainment in our next issue: CONTROL. CONTROL is the final stage of the DMAIC process used in Six Sigma.

Do you have long-standing problems that have not been fully resolved? Do you struggle with engaging all people in effective problem-solving? Are you struggling to fully satisfy customers due to quality issues and recurring problems? We offer foundational, intermediate and advanced level problem solving including practitioner certifications. For a no-obligation introduction meeting, please contact Paul Eakle at paul.eakle@driveinc.com or 865-323-3491.

