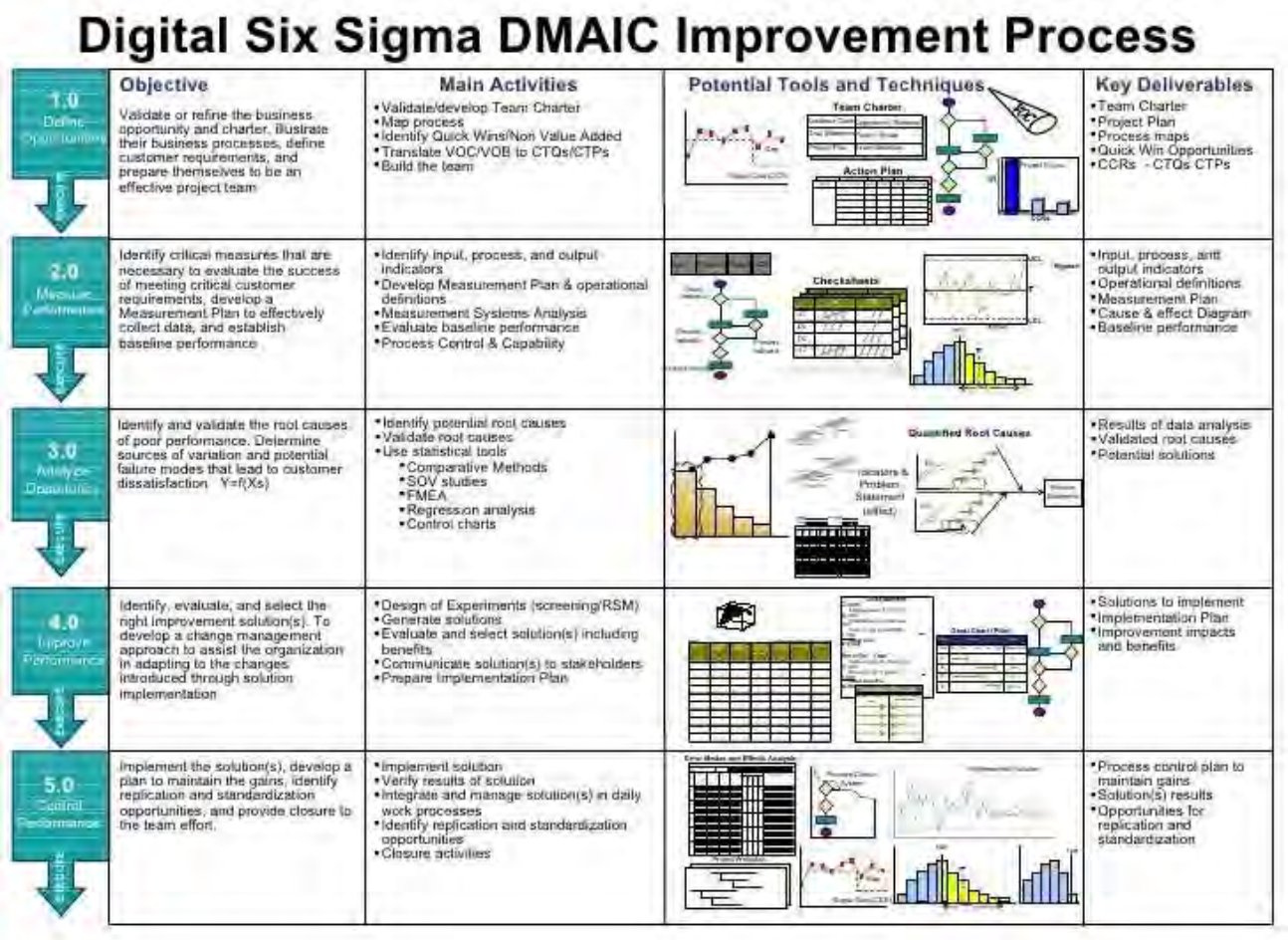
GABRIEL DANIELS FE

a Lean Six Sigma Consultant focus on Cost Savings & Process Improvement

GDF, SIX SIGMA

DMAIC PROCESS OF Lean Six Sigma Explained By Gabriel Daniels PE. Lean Six Sigma Master Black Belt



Six Sigma Master Black Belt How does Lean Six Sigma work? Lean Six Sigma is simply an effective methodology used to fix a problem. It is based on common sense practices and is

completed in five phases: DMAIC Lean Six Sigma Explained By Gabriel Daniels PE. Lean Six Sigma Master Black Belt Five Basic Phases Define: Define the problem and what is required to satisfy your customer. Measure: Map the current process to collect data. Analyze: Investigate and identify what causes the problem. Improve: Implement a fix that will solve the problem. Control: Sustain the improved results. Simply put, Lean Six Sigma helps you identify the cause of a problem and implement a fix based on facts, rather than assumptions. This produces improved results and success that you and your team, managers, and organization can be proud of.

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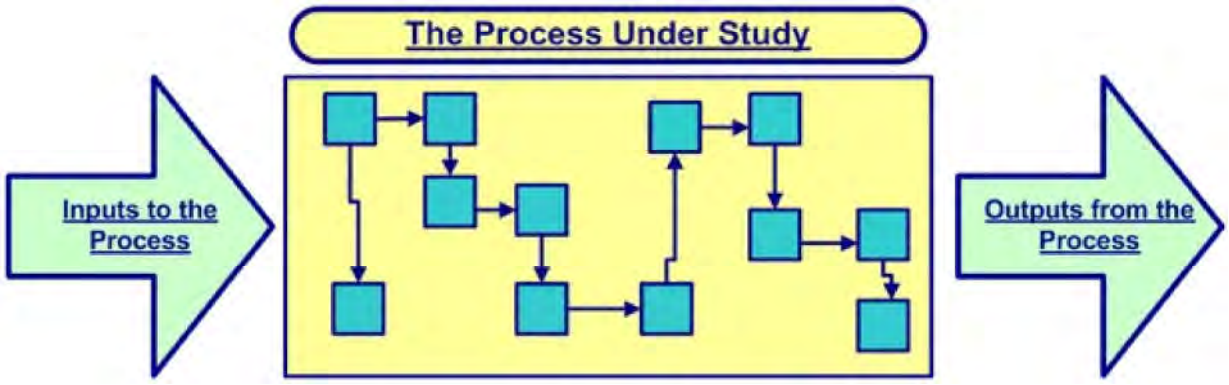
"Define, Measure, Analyze, Improve, Control" is the Roadmap to Improving Processes

Project managers, in just about any industry, are faced with the challenge of improving the efficiency and productivity of their businesses. To do this, they need to understand the best methodology and tools to study and analyze processes correctly. After all, to improve results, the best approach is to improve the process that gives you those results.



So, it is imperative for project managers to have a rudimentary understanding of process thinking when managing improvement efforts. As shown in the graph above, a process can be broken down into three basic elements: the inputs to the process, the process under study and the outputs from the process. The concept of improvement is quite simple; to improve the outputs of a process, you simply improve the inputs and the process itself. To improve the output (also called the "Y" or the "Key Measure"), identify, measure and improve the inputs and process metrics (also known as the "X's"). Focusing

on the results, the output Y measures instead of the X's is an after-the-fact, reactive, expensive and inefficient approach to improving results. The concept that Y is a function of X ($Y=f(X_1, X_2, \ldots X_n)$) is at the core of the: Define, Measure, Analyze, Improve and Control; also known as DMAIC, steps.

The roadmap for improving processes and key measures of a business is a straightforward, easy to understand set of those five steps. DMAIC is an iterative process that gives structure and guidance to improving processes and productivity in the workplace. Project managers and Six Sigma practitioners apply the DMAIC steps and appropriate analysis tools under each step, to analyze and improve key metrics of a business. Metrics are established, variation is studied and reduced and processes are improved and optimized. The result is improved performance, fewer errors and increased efficiency and productivity.

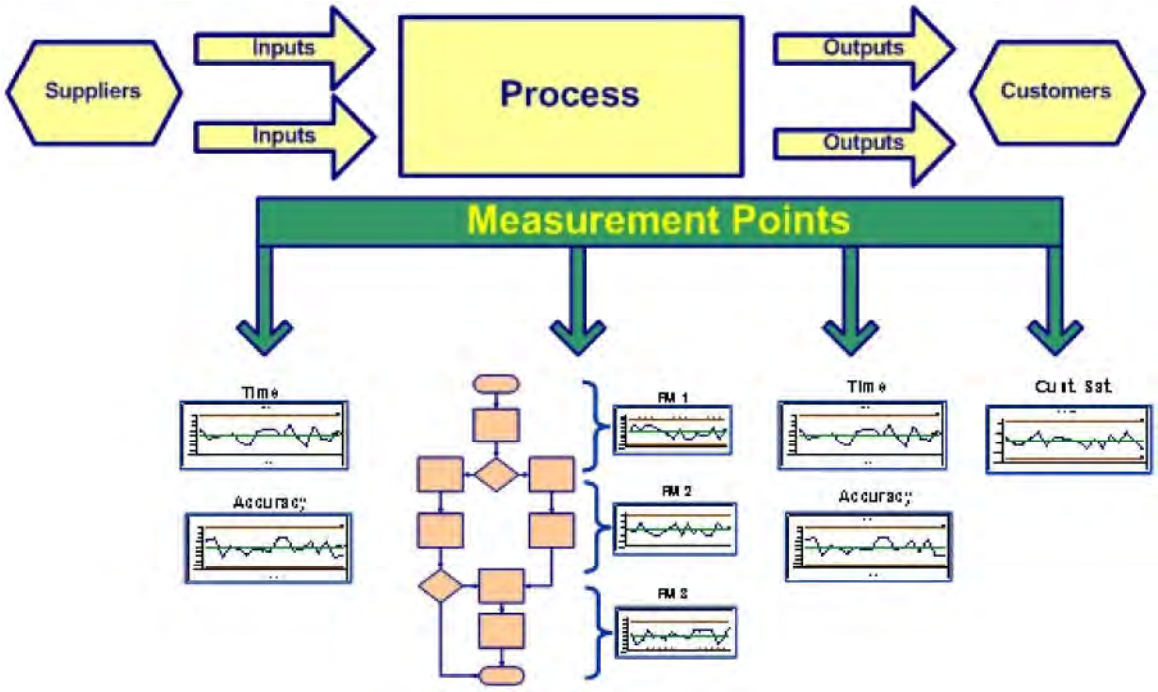
The DMAIC steps are the true backbone of any process improvement initiative. The steps make sense, they are easy to understand and they are logical in their sequence. The steps allow a team to adequately scope the problem, measure the current performance, analyze the root causes of problems and inefficiency, test and verify improvement recommendations and then implement changes for sustainability over the long haul. Process improvement projects are the norm these days. Improving key measures is something every project manager is going to be faced with sooner or later; therefore, a project manager should be skilled in the art of applying the DMAIC steps to improve results.

Related Courses:

Understand the Process and then Measure the Process!

The DMAIC steps work because they are understandable and make sense. These steps can be applied to any process, any industry, any company to help guide a process improvement team. Before they can be applied, however, the project leader should lead his or her team to scope the problem, perhaps using a Supplier, Input, Process, Output,

and Customer or SIPOC diagram as shown below. Using the SIPOC tool can help project managers scope the problem, think in terms of processes, and help the team pinpoint what and where to measure. The SIPOC tool helps link metrics to the inputs, the process, and the outputs thus allowing for the Y=f(X) thinking.

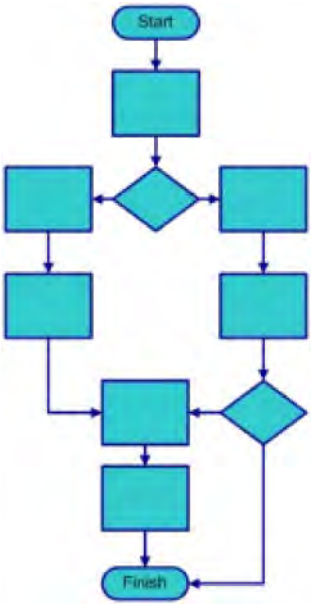


The SIPOC tool is something that can be done in the Define step of the DMAIC steps.

DEFINE

Essentially the purpose of the Define step is to set your project up for success. Project managers are familiar with the things that need to be done when starting off a project. Essential project elements are accomplished in this step, such as:

- Attaining sponsorship for the project
- Establishing the project charter and appropriate scope
- Identifying stakeholders and team members
- Establishing team ground rules
- Planning and conducting a successful kickoff meeting



In addition to the normal project deliverables listed above, for a process improvement effort, the project manager would facilitate his or her team in developing an “As-Is” process map. This will help the team not only get on the same page in terms

of the process but also will help the team identify problematic steps in the process. Process maps, or Deployment maps (a.k.a. Swim-lanes), can also be useful in identifying non-value added steps and can be vital in determining process measures.

Lastly, the team may require some basic training on the application of the DMAIC steps so that everyone knows what to do and when to do it.

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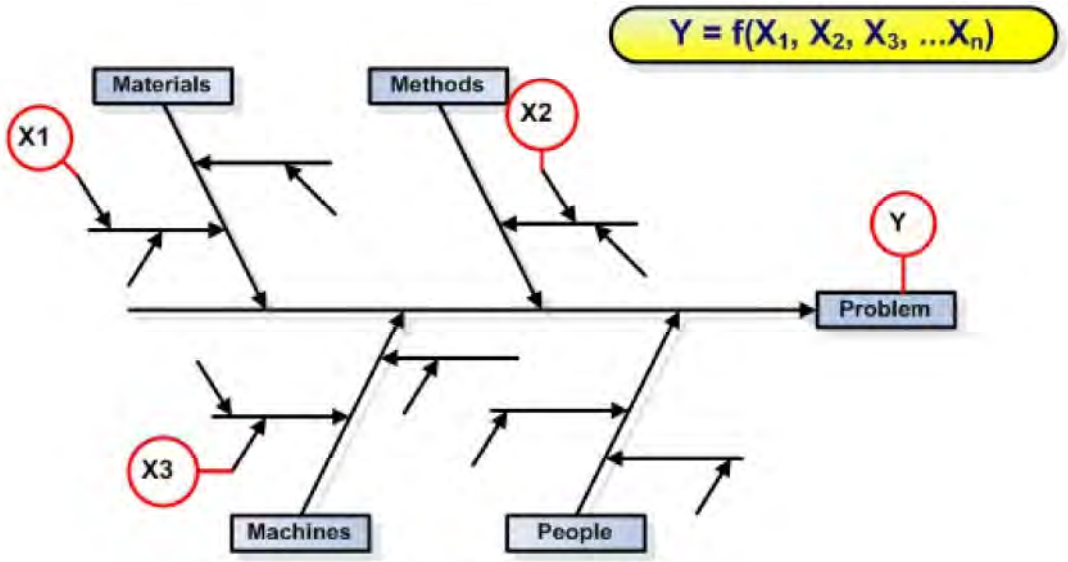
MEASURE

The Measure step is often a step which, unfortunately, is skimmed over by most teams. One of the biggest mistakes made when trying to improve results is to make decisions based on "gut" feeling, intuition or anecdotal information. Instead, what is imperative is to base decisions on facts and data and that is the main goal of the measuring step. In the Measure step, the team should:

- Identify and operationally define key metrics
- Develop a data collection plan
- Conduct a measurement system analysis to verify that the data is accurate
- Stratify the data
- Establish baseline charts
- Make charts and graphs to help the team better understand what the process is currently delivering in terms of processing times, errors or defects

ANALYZE

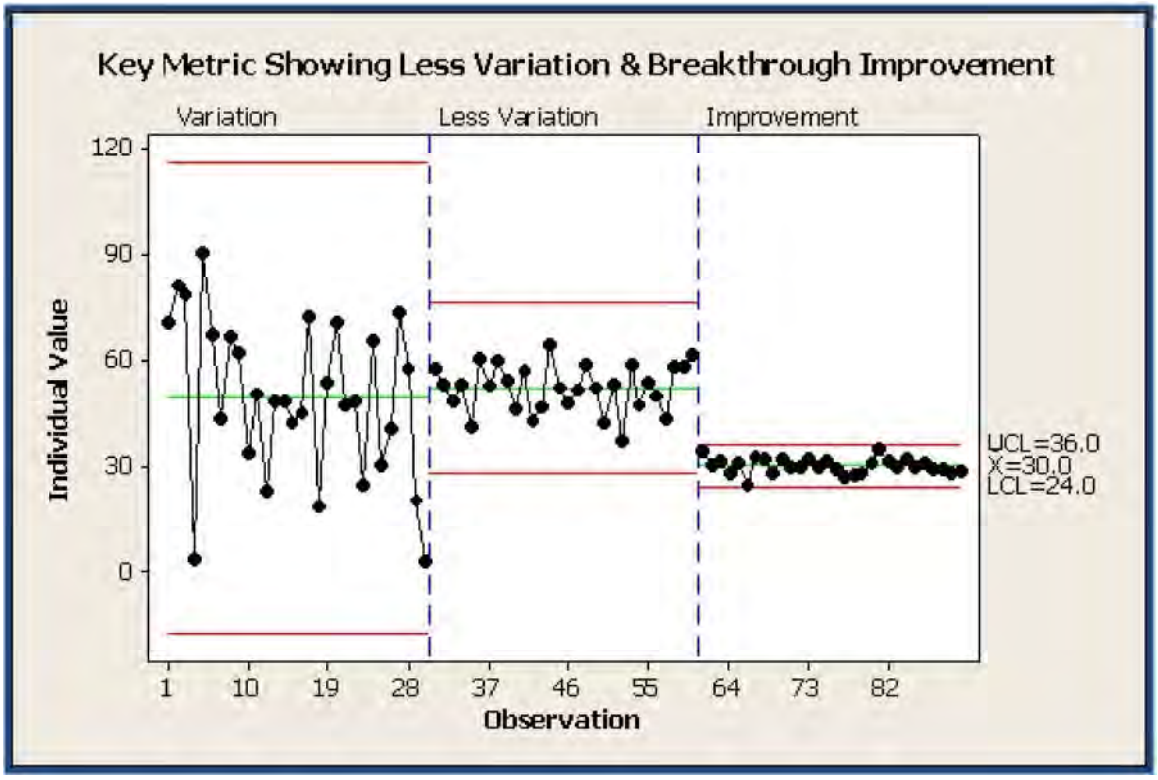
The Analyze step is all about getting to the root cause of the problem. Too often when trying to solve a problem, people or teams tend to focus on a symptom as opposed to the true root cause of the problem. The tools and techniques in the Analyze step lead project teams to gather clues for improvement and ascertain what the root cause, or causes, are that are the most important drivers.



The Y is a function of X formula is at play in the Analyze step. A team will analyze the process, perhaps using value-added analysis, statistical analysis, or maybe a fishbone chart, a cause and effect diagram, to get to what they think are the root causes. Then the team would gather data on the root causes to determine if there is a cause and effect relationship with the problem. Verifying cause and effect is a crucial step in the Analyze phase; a step which many people, unfortunately, skip or simply take for granted based on their opinions.

IMPROVE

Once a team moves through the Define, Measure and Analyze steps, they are now ready to use what they've learned about the process to be innovative when solving the problem at hand. Improve is the step where creative solutions to existing problems can be developed and tested, using various experiment or piloting techniques. The key deliverable in the Improve step is verifiable improvement through measurement.



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The best ideas for improvement, based on what was learned in Measure and Analyze, are tested and implemented on a limited basis to determine if there is statistical evidence of sustained improvement. Once a team improves a process, the results should become quite clear on a control chart. When stakeholders can see the proof of improved performance, they will be more likely to accept and actually implement the team's recommendations. Improve is about taking the emotion out of decision making. Improve is about verification and validation of recommendations. Often times, teams make the mistake of thinking they "know" what will work. Thus, they blindly implement what they think is the best solution without proper testing. The result, more times than not, is that there is no measurable or sustainable improvement.

CONTROL

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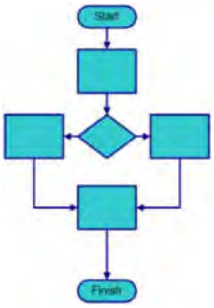
The real strength of the DMAIC steps is the Control step. Too often, teams do a lot of hard work, actually improve the process and results, and the implementation of the improved process doesn't go smoothly. There is pressure to move

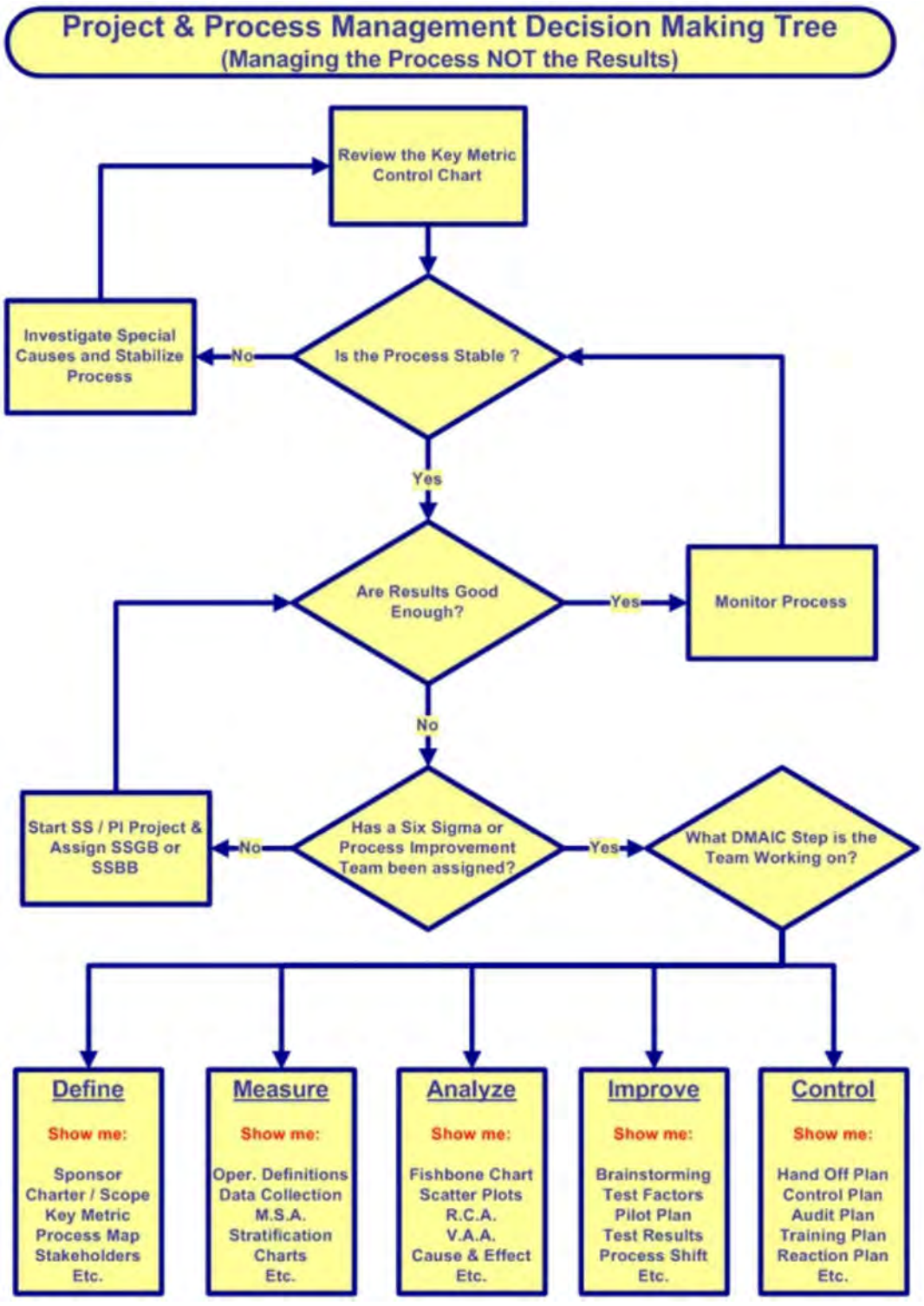


on; time isn't spent on having a smooth transition and the buy-in for full implementation just isn't quite there. The result is that sustaining the improvement realized in the Improve step becomes difficult.

The purpose of the Control step is to ensure a successful implementation of the team's recommendation so that long-term success will be attained. The new and improved process will be flowcharted and these new methods will become the new standard operating procedures. Results will continue to be tracked so that any "drift" back to previous results can be monitored and addressed in a proactive manner. The Control step is about the transfer of responsibilities and establishing plans for long-term process control.

Making Better Decisions

Once the DMAIC steps are understood, then managing the process of how to improve results becomes clear and straightforward. If used properly, the following decision tree can lead to better decision making by helping business leaders ask the right questions to avoid making knee-jerk reactions. Instead, it encourages an understanding of variation and reinforces the use of the DMAIC steps to address the roadmap to continuous improvement.



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In Conclusion

The DMAIC steps are a proven roadmap for any process improvement project. There are only five steps so they are relatively easy to remember. They offer a structured approach to solving problems and improving results. There are certain questions to be

addressed under each step and certain tools and techniques can be utilized to answer those questions through facts and data.

*Paramonos Research Labs, a cost savings & strategy consulting firm who partner with executives on solving complicated problems within their organization using the **latest** costs saving data collection tools and methodologies.*

AUTHOR: GABRIEL DANIELS P.E.,

Certification

Lean Six Sigma Master Black Belt

University of Alabama

Bachelors in Industrial Engineer

University of Alabama

Masters in Business Administration

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CONTACT

PO Box 423
Duncan SC 29334
1-980-297-3308
GabrielDaniels0407@gmail.com
Monday - Thursday: 9:00 a.m. - 5:00 p.m.
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