

LEAN Continuous Improvement

DMAIC – Define, Measure, Analyze, Improve, Control



DEFINE



MEASURE



ANALYZE



IMPROVE



CONTROL



DEFINE

Define the problem.

DEFINE –

What problem would you like to fix? The Define Phase is the first phase in the improvement process. Begin by creating a high level view of the process and to understand the needs of the process customers. Teams define the outline of their efforts for and the role of leadership within the organization.

Craft the problem statement including:

- *Severity* – How big is the problem? This can consist of % of time there are errors, number of late orders per month, etc. Be specific to put data into perspective.
- *Business Impact* – What is the pain felt by the organization or why should anyone care about solving the issue? Will solving the problem result in cost savings or time savings? Increase efficiency?
- *Specific Area* – What department or units are involved?

Confirm resources are available. Who will participate? It is critical to have a team leader, as well as someone in a leadership position within the organization involved in the project. Team members can come from different areas but should all have a connection to the project.



MEASURE

Map out the current process.

MEASURE –

How does the process currently perform? Measurement is critical throughout the life of the project and as the team collects initial data they have two focuses: 1.) determining the start point or baseline of the process and 2.) looking for clues to understand the root cause of the process. Data collection takes time and considerable effort, it is best to consider both focuses at the start of the project.

- Create a plan to collect the data – where to collect, how much and who will do the collecting?
- Ensure data is reliable. Define, test and refine throughout the project.
- Once the team has conducted their initial data collection they will have more details around process performance, potential causes and potential goals. Finally update problem/goal statements to reflect what has been learned from the data.

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Identify the cause of the problem.

ANALYZE –

What does your data tell you? The Analyze Phase is often intertwined with the Measure Phase.

Closely examine the process, collectively list concerns or pain points within.

Complete “Process Analysis”:

- *Time Analysis*: focus on the actual time work is being done in the process versus the time spent waiting.
- *Value Added Analysis*: another dimension of discovery by looking at the process through the eyes of the customer to uncover the cost of doing business.
- *Process Mapping*: combine data with the maps to identify value add versus waste that can be removed.

Verify the cause(s) of the problem. Confirm proposed root cause by verifying data through process analysis, data analysis, process observation and comparative analysis.



IMPROVE

Implement and verify the solution.

IMPROVE –

How will you fix the problem? Once the project teams are satisfied with their data, it is time to move on to solution development. The team is most likely collecting improvement ideas throughout the project, but a structured improvement effort can lead to innovative solutions.

1. Brainstorm solutions.
2. Select the practical solutions – utilize decision aids (matrix) to choose between options.
3. Develop maps based on processes based on different solutions – reduce rework, waste and wait times. “To-Be Maps” of the improved process are helpful in guiding the efforts and can be used as training aids.
4. Test cycles– Plan Do Act Check (PDCA), find out if small improvements are viable in a fast, low impact way.
5. Implement the solution through careful planning. Includes logistics, training, documentation and communication plans.
6. Measure improvement – once the team is able to show that the solution has resulted in measurable improvement, then move onto Control Phase.

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Maintain the solution.

CONTROL –

How do you sustain the newly achieved improvement? The team has been building a form of infrastructure throughout the life of the project; during the Control Phase begin documenting exactly how to pass that structure on to the employees who work within the process (process management.)

Continuously improve the process through Lean principles.

- *Value*: Determine what steps are of “Value” to the customer
- *Flow*: Remove waste in the process to optimize and achieve a smoother pace
- *Pull*: Ensure the process responds to customer demand (“Pull”=want)
- *Continuous Improvement*: consistently pursue improvements within the process.

Manage and maintain the improvements throughout the organization.

Share and celebrate success!