shortcut

Six Sigma for Innovation and Growth Series

What Is Six Sigma for Technical Processes?

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This Shortcut is an adaptation of Chapter 1 from the forthcoming book ***Six Sigma for Technical Processes*** by Clyde M. Creveling (www.prenhallprofessional.com/titles/0132382326, Prentice Hall).

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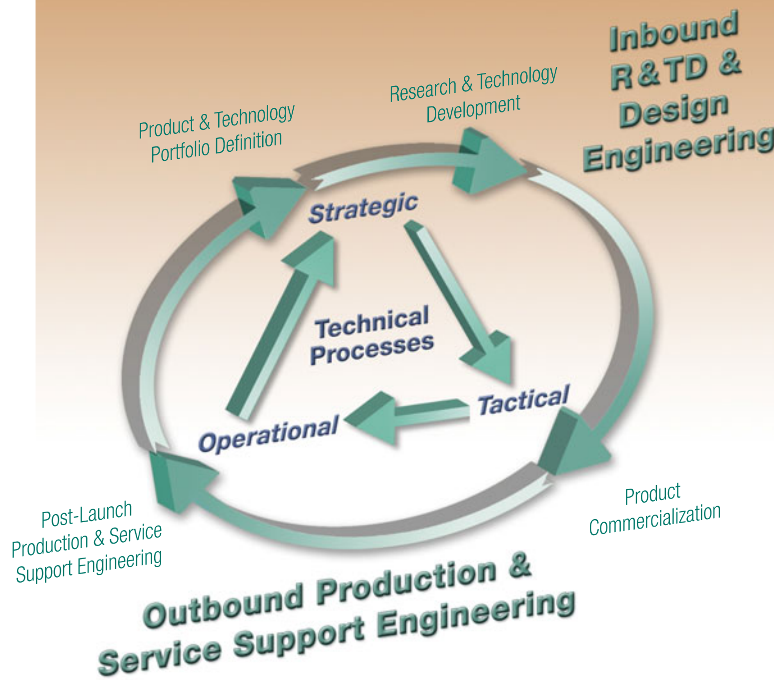

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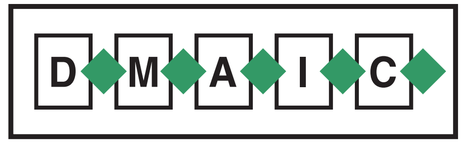
numbers promised in the business cases that were supposed to support the long-term financial targets of the company.

Outbound post-launch engineering creates problems and waste by failing to develop the right data to make key decisions about managing, adapting, and discontinuing the various technical elements of the existing product or processing lines (manufacturing, assembly, packaging, and servicing). They also fail to get the right information back upstream to the product portfolio and technology renewal teams so those teams can renew the portfolios based on real, up-to-date data and lessons learned from customer feedback and the technical support experts in the field.

Before we look to the future of growth-oriented Six Sigma for technical processes, let's look at how Six Sigma corrects problems and thus reduces costs. A broken or inefficient technical process needs to be corrected before that process can be enabled to focus on business growth by the tasks we choose to do (and not do) on a day-to-day basis.

Six Sigma began as a problem-solving process. It was built primarily on the foundations of Walter Shewhart's statistical process control steps and Total Quality Management tools and methodologies. The steps Six Sigma practitioners use to solve problems are called **DMAIC**.

Lean Six Sigma: Process Improvement



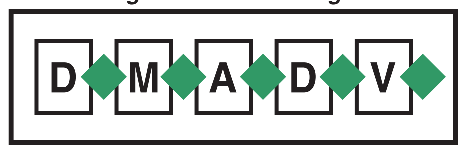
1. **Define** the problem.
2. **Measure** the process and gather the data that is associated with the problem.
3. **Analyze** the data to identify a cause-and-effect relationship between key variables.
4. **Improve** the process so the problem is eliminated; what is being measured in the design's performance is compared to the required performance.
5. **Control** the process so the problem does not return, or if it does it is controllable.

The **DMAIC** process is easy to learn and apply, and it provides significant benefits to those who follow its simple steps using a small, focused set of tools, methods, and best practices. Companies are successful using this approach because they train small teams to stick to this approach without wavering in their completion of specific tasks within projects that typically last six to nine months. The teams learn the **DMAIC** process and its vocabulary, and they apply the tools much like a well-trained surgical team conducting an operation. They are focused, enabled by their project sponsors, and deliver on their documented requirements and specific goals.

The key elements in a **DMAIC** project are team discipline, structured metrics, tool sets, and execution to a well-designed project plan that has clear goals and objectives. When many people across a multinational company use the simple steps of **DMAIC** Six Sigma to solve problems the same way using a common vocabulary, objectives and result targets are harder to miss. If everyone solves problems differently, nonsystematic, global process improvement initiatives break down. Without process discipline, cost and waste reduction are often haphazard and impossible to integrate and report at the corporate level. In an undisciplined environment, cost reduction and control is unsustainable and unpredictable. Sometimes it works, but usually the projects fizzle.

If a process cannot be improved as it is currently designed, then another well-known reactive Six Sigma approach can be applied: The **DMADV** process can be used to fundamentally redesign a process when the existing process cannot be improved using the standard **DMAIC** process and tools.

Lean Six Sigma: Process Design



DMADV stands for

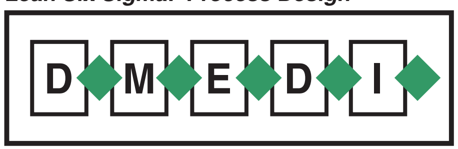
1. **Define** the problem and the opportunity a new process represents.
2. **Measure** the process and gather the data that is associated with the problem as well as voice of customer (VOC) data associated with the opportunity to design a new process.
3. **Analyze** the data to identify a cause-and-effect relationship between key variables, generate new

process concepts, and select a new process architecture from numerous alternatives.

4. **Design** new, detailed process elements and integrate them so the problem is eliminated and the new requirements are met.
5. **Validate** the new process to ensure that it is capable of meeting the new process requirements.

Some have defined another set of steps for this reactive, process redesign approach, called the **DMEDI** approach. This is essentially the same approach as **DMADV**, but it uses a little different terminology and adds tools from Lean methodology. **DMEDI** stands for

Lean Six Sigma: Process Design



1. **Define** the problem or opportunity.
2. **Measure** the process and gather the data that is associated with the problem or opportunity (VOC and requirements).
3. **Explore** the data to identify a cause-and-effect relationship between key variables, requirements, and conceptual alternatives, thereby arriving at one concept to take into detailed design.
4. **Design** a new process so the problem is eliminated; what is being measured in the design's performance is compared to the required performance.
5. **Implement** the new process under a control plan.

Whether you use **DMADV** or **DMEDI**, the goal is to design a new process to replace the existing process that isn't working. This is still classic "old style" Six Sigma for problem solving. (We mean no disrespect when using the term "old style"—we are trying to define the future of Six Sigma and by necessity have to make a distinction between what is old and what is new.)

Six Sigma discipline, tool-task linkage, project structure, and, most importantly, result metrics are migrating away from problem solving. The new frontier for Six Sigma is in problem prevention, as in the adage "an ounce of prevention is worth a pound of cure."