

# DMAIC and project plans

Define, measure, analyze, improve and control your project planning.

Six Sigma's magic doesn't lie in statistical or high-tech razzle-dazzle. Six Sigma relies on tried-and-true methods that have been around for decades. In fact, Six Sigma discards a great deal of the complexity that characterizes total quality management (TQM). By one expert's count, there are more than 400 TQM tools and techniques. Six Sigma takes a handful of these methods and trains a small cadre of in-house technical leaders, known as Six Sigma Black Belts, to a high level of proficiency in the application of these techniques. To be sure, some of the methods used by Black Belts, including up-to-date

computer technology, are highly advanced. But the tools are applied within a simple performance-improvement framework known as DMAIC, or define-measure-

analyze-improve-control, which is analogous to the older TQM model known as plan-do-study-act. Anyone with more than the most cursory exposure to Six Sigma is familiar with the DMAIC cycle (see Table 1.)

DMAIC is almost universally used to guide Six Sigma process-improvement projects. Although truly dramatic improvement in quality requires transforming the management philosophy and organizational culture, the fact is that projects must be undertaken sooner or later to make things happen. Projects are the means through which processes are systematically changed; they are the bridge between the planning and the doing. However, DMAIC is not a method of planning projects. Project planning is a subject in its own right. Although projects and plans are closely related, they also differ in many respects.

The dictionary defines the word "project" as "a plan or proposal, a scheme, or an undertaking requiring concerted effort." Under the synonym "plan," we find "a

scheme, program or method worked out beforehand for the accomplishment of an objective: a plan of attack; a proposed or tentative project or course of action; or a systematic arrangement of important parts."

In other words, the project describes *what* will be done while the plan describes, in advance and in detail, *how* it will be done. Both elements can be integrated under the DMAIC umbrella. (A graphic representation of the DMAIC cycle can be found in the online version of my column in this month's issue at [www.qualitydigest.com](http://www.qualitydigest.com) or at [www.pyzdek.com](http://www.pyzdek.com).)

I use the DMAIC cycle when training Black Belts, Green Belts and management. The complete approach integrates Six Sigma tools, financial analysis, project schedule development and many other topics all vital to ultimate success. However,

I have observed that many trainees copy and carry around this single page from the 240-page Six Sigma Project Planners I give them. They use it for initial project planning, to be sure their projects are on track, to explain projects to others and for other day-to-day project activities. In short, my clients have found it useful in helping themselves and others understand the overall structure of a Six Sigma project. I hope you will also.

### About the author

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Table 1: DMAIC Framework

<b>D</b>	<i>Define</i> improvement activity goals. At the top level, the goals will be the organization's strategic objectives, such as a higher return on investment or market share. At the operations level, a goal might be to increase the throughput of a production department. At the project level, goals might be to reduce the defect level and increase the yield of a process or machine. Apply data-mining methods to identify potential improvement opportunities.
<b>M</b>	<i>Measure</i> the existing system. Establish valid and reliable metrics to help monitor progress toward the goal(s) defined in the previous step. Begin by determining the current baseline. Use exploratory and descriptive data analysis to help you understand the data.
<b>A</b>	<i>Analyze</i> the system to identify ways to eliminate the gap between the current performance of the system or process and the desired goal. Apply statistical tools to guide the analysis.
<b>I</b>	<i>Improve</i> the system. Be creative in finding new ways to do things safer, better, cheaper or faster. Use project management and other planning and management tools to implement the new approach. Use statistical methods to validate the improvement.
<b>C</b>	<i>Control</i> the new system. Institutionalize the improved system by modifying compensation and incentive systems, policies, procedures, MRP, budgets, operating instructions and other management systems. You may wish to utilize systems such as ISO 9000 to ensure that documentation is correct.