



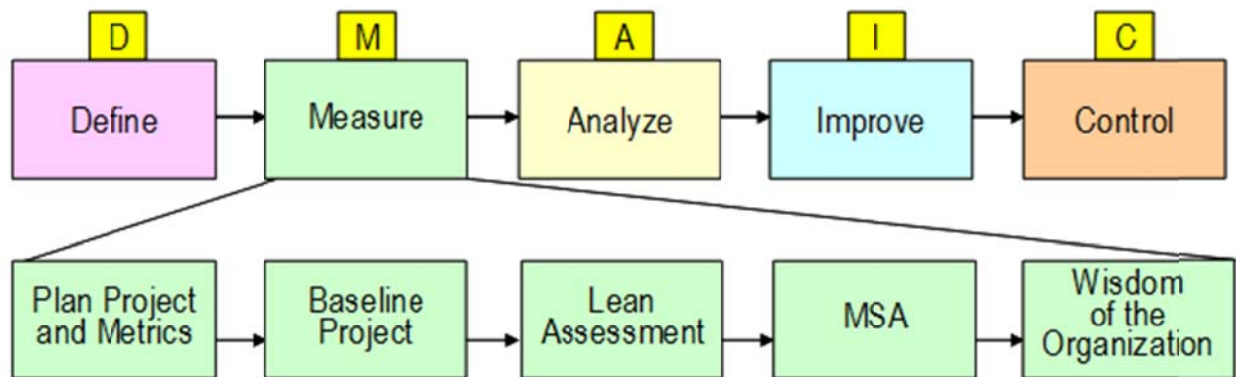
Lean Six Sigma DMAIC Process Improvement Roadmap

By Forrest W. Breyfogle III

In Lean Six Sigma, the Define-Measure-Analyze-Improve-Control (DMAIC) roadmap is to be followed for the execution of process improvement projects; however there can be very great differences in how this roadmap is executed.

The Integrated Enterprise Excellence (IEE) system provides a very detailed DMAIC project execution roadmap, which also provides enhancements to traditional Lean Six Sigma project execution techniques. Figure 1 shows the high-level steps, which have very detailed drill downs and documented executed steps in:

- [*Integrated Enterprise Excellence Volume III - Improvement Project Execution: A Management and Black Belt Guide for Going Beyond Lean Six Sigma and the Balanced Scorecard*](#), Forrest W. Breyfogle III, Bridgeway Books/Citius Publishing, Austin, TX, 2008.¹
- [*Lean Six Sigma Project Execution Guide: The Integrated Enterprise Excellence \(IEE\) Process Improvement Project Roadmap*](#), Forrest W. Breyfogle III, Bridgeway Books/Citius Publishing, Austin, TX, 2010.²



From *Integrated Enterprise Excellence, Volume III - Improvement Project Execution: A Management and Black Belt Guide for Going Beyond Lean Six Sigma and the Balanced Scorecard*, Forrest W. Breyfogle III Citius Publishing, copyright 2008, Figure 2.1.

Figure 1: IEE DMAIC Project Execution Roadmap

The measure phase has additional drill downs added for a specific reason. In 1999, the first edition of *Implementing Six Sigma* was published.³ At that point in time, the attempt was made to put Six Sigma tools in the phase that GE did. Many tools such as flowcharting, cause and effect diagram, and failure mode and effects analysis (FMEA) were included in the GE DMAIC measure phase. These tools and some others did not seem to be closely related to the word “measure.” Because of this, the decision was made to add a drill down to the measure phase when I was described in *Implementing Six Sigma*. Lean Assessment was added to this drill down in the 2nd edition which was published in 2003.

The IEE system is a business management system that leads to Lean Six Sigma improvement projects that benefit the enterprise as a whole, as described in the article [Project Selection with Whole-enterprise](#)

[Benefit](#). Included also in the IEE business management system is how many of the tools used within Lean Six Sigma can be applied at the business level as well, including a predictive scorecard system. This methodology is described in [*Integrated Enterprise Excellence Volume II - Business Deployment: A Leaders' Guide for Going Beyond Lean Six Sigma and the Balanced Scorecard*](#), Forrest W. Breyfogle III, Bridgeway Books/Citius Publishing, Austin, TX, 2008.⁴

[Lean Six Sigma remote blended and stand-up training](#) is available, where there is a alignment and referencing of the concepts described in these books, which can be used long after the training.

The references and links below provide more information about these enhanced methods.

Enhancements to Traditional Business Practices

The following articles provide information about enhancements to traditional strategic planning and its execution:

- [Business Management System: Issues and Resolution](#)
- [Enhanced Business Management System: Descriptive Videos](#)
- [Project Selection with Whole-enterprise Benefit](#)
- [Performance Reporting \(KPI Reporting\): Issues and Resolution](#)

References

1. Forrest W. Breyfogle III, [*Integrated Enterprise Excellence Volume III - Improvement Project Execution: A Management and Black Belt Guide for Going Beyond Lean Six Sigma and the Balanced Scorecard*](#), Bridgeway Books/Citius Publishing, 2008
2. Forrest W. Breyfogle III, [*Lean Six Sigma Project Execution Guide: The Integrated Enterprise Excellence \(IEE\) Process Improvement Project Roadmap*](#), Citius Publishing, Austin, TX, 2010.
3. Forrest W. Breyfogle III, *Implementing Six Sigma: Smarter Solutions® Using Statistical Methods*, 2nd edition, Wiley, Hoboken, NJ, 2003.
4. Forrest W. Breyfogle III, [*Integrated Enterprise Excellence Volume II - Business Deployment: A Leaders' Guide for Going Beyond Lean Six Sigma and the Balanced Scorecard*](#), Bridgeway Books/Citius Publishing, 2008

About the Author
Forrest Breyfogle, III
Integrated Enterprise Excellence



In a professional career spanning over a quarter century, Forrest Breyfogle has established himself as a leading edge thinker, a prolific author, an innovative consultant, a world-class educator, and a successful business executive. His work is documented in eleven books and over ninety articles on the topic of quality improvement.

A professional engineer, Forrest is also a member of the board of advisors for the University of Texas Center for Performance Excellence. He is the founder and CEO of Smarter Solutions, Inc., an Austin, Texas based consulting firm offering business measurement and improvement consultation and education to a distinguished list of clients worldwide, including BAMA, CIGNA, Dell, HP, IBM, Oracle Packaging, Sherwin Williams, Cameron, TIMET, and TATA. He served his country on active

duty in the US Army for 2 years, and has played an active leadership role in professional and educational organizations. Forrest received the prestigious Crosby Medal from the American Society for Quality (ASQ) in 2004 for his book, *Implementing Six Sigma* (second edition). This award is presented annually by the American Society for Quality to the individual who has authored a distinguished book contributing significantly to the extension of the philosophy and application of the principles, methods, or techniques of quality management. Mr. Breyfogle was named Quality Professional of the Year for 2011 by Quality Magazine and in 2012 was awarded alumni of the year by Missouri University of Science and Technology.

He is a widely recognized authority in the field of management improvement and is a frequent speaker before professional associations and businesses. His earlier work in the field of management science has been widely acclaimed. A previous book, *Implementing Six Sigma*, sold over 40,000 copies and still ranks among the top Amazon books in Applied Mathematics/Engineering Statistics and Industrial Engineering /Quality Control.

He founded Smarter Solutions in 1992 after a 24-year career at IBM. The associates of Smarter Solutions specialize in helping companies throughout the world improve their bottom line and customer satisfaction through the implementation of techniques that are beyond traditional Lean Six Sigma and the balanced scorecard methodologies. His latest and most extensive work has been in the documentation of a new system of enterprise management, the Integrated Enterprise Excellence (IEE) system, in a series of four books. IEE provides a detailed roadmap that builds on and integrates the best practices of earlier disciplines like Six Sigma, Lean, TQM, PDCA, DOE, and TPS combined with innovative analytical tools to produce improvements at the highest level of an enterprise.

In addition to assisting hundreds of major clients in the wise implementation of improvement systems worldwide, Forrest has also developed over 300 hours of classroom instruction used to train executives, managers, and Black Belt practitioners to plan for, implement, and manage IEE systems. He also leads formal seminars and workshops worldwide.

Forrest Breyfogle
forrest@smartersolutions.com
512-918-0280 x401
www.smartersolutions.com