

Making Everything Easier!™

2nd Edition

# Six Sigma

FOR  
DUMMIES®

## Learn to:

- Grasp what Six Sigma is and how it works
- Achieve quantum leaps in performance and impact the bottom line
- Utilize the DMAIC problem-solving method

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*Foreword by Stephen R. Covey, Author,  
The 7 Habits of Highly Effective People  
and The Leader in Me*



# Six Sigma For Dummies<sup>®</sup>, 2nd Edition

Visit [www.dummies.com/cheatsheet/sixsigma](http://www.dummies.com/cheatsheet/sixsigma)  
to view this book's cheat sheet.

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***Six Sigma For Dummies<sup>®</sup>, 2nd  
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**by Craig Gygi and Bruce Williams  
with Neil DeCarlo**

**Foreword by Stephen R. Covey**

*Author, The 7 Habits of Highly Effective People and The Leader in  
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Greatness, One Child at a Time*



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# About the Authors of the Revised Edition

**Craig Gygi** began studying and applying the elements of Six Sigma and Lean before they were formalized into today's renowned improvement methodologies. As a graduate student in Mechanical Engineering at Brigham Young University, he integrated these cutting-edge improvement techniques into his coaching of student product development teams. Upon beginning his career at Motorola, he was formally introduced to the emerging Six Sigma method. It resonated deeply with his previous findings. From that time, Craig has applied, taught, and led Six Sigma in all his endeavors, including technical, management, and executive capacities at Iomega, General Atomics, ES3, and Fiji Water.

Craig now serves as Executive VP of Global Operations for MasterControl. MasterControl produces software solutions that enable regulated companies to manage their critical quality procedures and get their products to market faster, while reducing overall costs and increasing internal efficiency.

A Master Black Belt, Craig has wielded Six Sigma and Lean techniques now for over 18 years, spanning projects from design to manufacturing to business process management, and at companies as varied as Abbott Labs, American Express, and the US Air Force. He is also an expert teacher, having instructed and mentored at all levels.

Craig lives in Utah with his wife and children, where they enjoy its varied landscape and outdoor activities.

**Bruce David Williams** has been fascinated with complex systems since the launch of Sputnik on his birthday. With



degrees from the University of Colorado in physics and astrophysics, he embarked on a career in aerospace systems, where he first encountered Six Sigma after Motorola won the inaugural Baldrige Award in 1988. Later, with graduate degrees from Johns Hopkins and Colorado in computer science and technical management, and as a member of the Hubble Telescope development team, he became intrigued with how large system failures could result from the breakdown of small components. He entered the Six Sigma industry in the late-1990s when he co-founded a software company to develop products for life-cycle traceability.

Bruce has since been the co-founder of two Six Sigma research and technology firms, including the Six Sigma Management Institute. He was co-founder and CEO of Savvi International, a provider of solutions for business performance improvement. He joined webMethods in 2006 to integrate enterprise-class information technologies with business process management and now is the Vice President of Pegasystems, the world leader in business process management.

Bruce resides in the desert foothills of north Scottsdale, Arizona, with his wife and assortment of dogs, cats, birds, horses, and varied native wildlife.

# Dedication

**Craig Gygi:** To Esti, my unexpected joy.

**Bruce Williams:** To Hannah and Evan, my remarkable children, as they transition into independent adulthood and put the concept of variance reduction to practical use.

## About the Co-Author of the First Edition

**Neil John DeCarlo** was a professional communicator in the continuous improvement, Lean, Six Sigma, sales and marketing, innovation, and corporate finance fields for nearly 25 years, beginning with his work at Florida Power & Light Company when it won the coveted Deming Prize for quality. Following that time, he authored, ghostwrote, or edited more than 150 articles and eight books in association with such companies as General Electric, DuPont, Bose Corporation, BMGI, McKinsey & Company, UPS, AT&T, the Six Sigma Academy, and many others. Neil also worked with several CEOs and consultants, including Japanese quality expert Dr. Noriaki Kano and the original co-architect of Six Sigma, Dr. Mikel Harry.

In addition to his writing accomplishments, Neil managed communication and publishing campaigns for a variety of companies, most notably BMGI, an international consulting firm that teaches and deploys Lean Six Sigma, innovation, and such other methods as Hoshin strategic planning. While not working, Neil enjoyed most all outdoor sports, reading, questioning everything, and practicing yoga. He lived in a small town called Fountain Hills, just outside Scottsdale, Arizona, with Jeannie — his lovely wife and best friend.

# Dedication

To Wanda Texon, who helped me believe in myself a long time ago, and who has been a constant source of support and intellectual stimulation for many years.

# Authors' Acknowledgments to the 2nd Edition

We're grateful for those who contributed their efforts and support to this 2nd edition of *Six Sigma For Dummies*.

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Thank you also to Natalie Sayer, co-author of both the 1st and 2nd editions of *Lean For Dummies* (Wiley), for her expert collaboration and assistance.

## **Publisher's Acknowledgments**

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# Foreword

The world is on the verge of a new economic era. For the past century, the Industrial Age has been defined by tools and skills targeted at control, efficiency, specialization, delegation, scalability, and replicability. Accounting makes people an expense, a piece of equipment, an investment, and people are motivated by the great jackass theory of the carrot and stick. But although this paradigm has led to a 50-fold increase in productivity over the previous farming mindset, it has also led to a control paradigm, an entrenchment of a “leadership by position” mentality, with organizational hallmarks of lack of clarity regarding high priorities, lack of commitment or emotional connection by the workforce, lack of line-of-sight translation to specific action, disabling systems and processes, no synergy — interpersonally and interdepartmentally — and a lack of accountability.

Studies show that the vast majority of employees possess far more talent, more intelligence, more capability, more creativity, and more ability than their jobs require or even allow. Their deep potential remains dormant, untapped, and unused. Today, the Industrial Age is ending, and the Information Age or Knowledge Worker Age is opening. This new, emerging age is defined by “leadership is a choice” with an empowerment or unleashing-potential mentality; choices guided by values in the light of unchanging principles. In the new paradigm, the greatest asset in any organization is its people — whole people — with their bodies, minds, hearts, and consciences all engaged and contributing, and all receiving benefit in the progress of the organization. A trim tab is a small rudder on a boat or airplane that, through its relatively small motion, allows the bigger rudder to achieve the greater effect and leverage. The leaders of the Information Age act as trim tabs within organizations. Their