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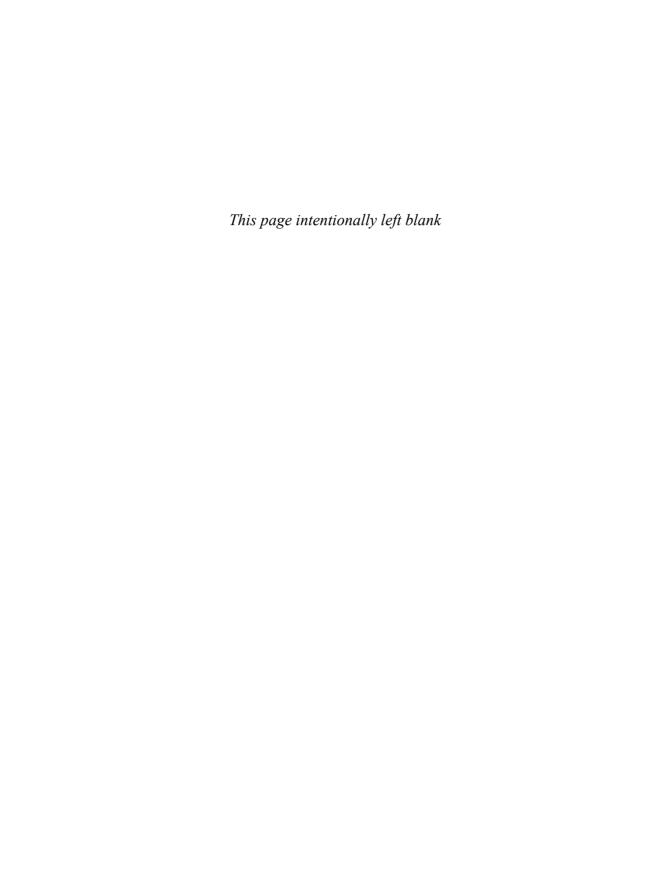




# Lean Sigma

A PRACTITIONER'S GUIDE

**SECOND EDITION** 



# Lean Sigma

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#### **SECOND EDITION**

Ian Wedgwood, Ph.D.



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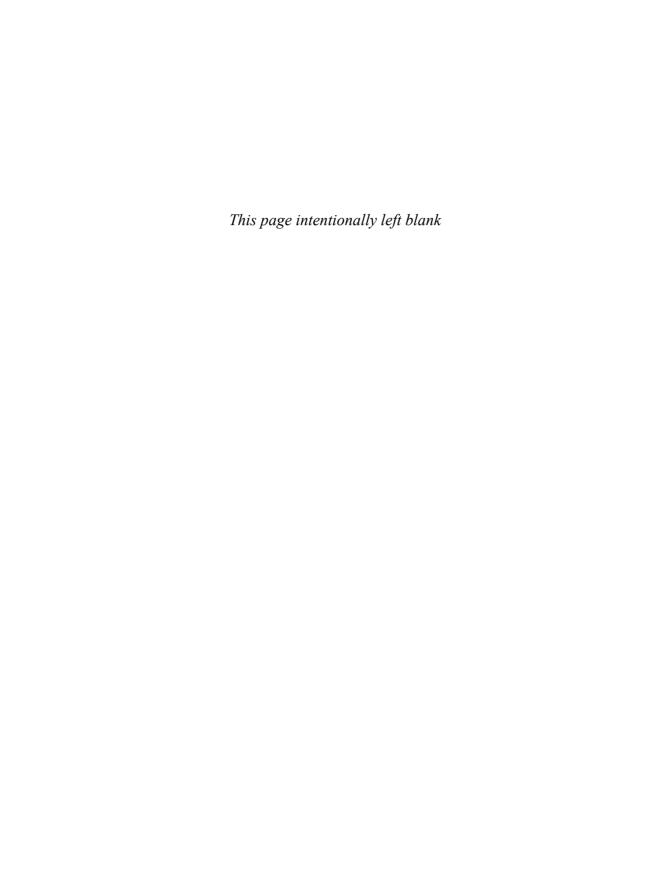
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This book is dedicated to my wonderful wife, Veronica, for relentlessly urging me to write this book, but also for her tireless patience and support when I finally did.



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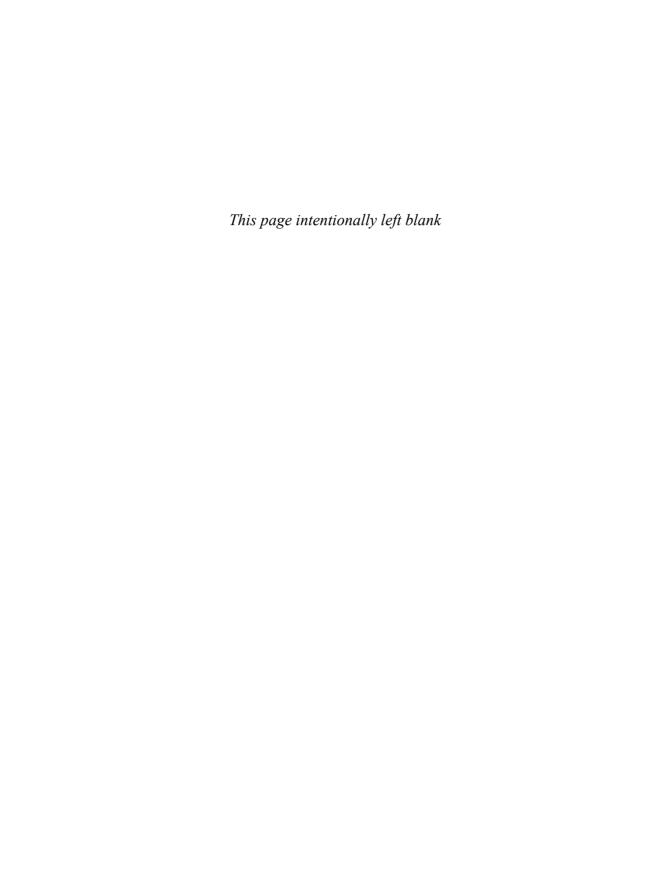
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## **Preface**

There is absolutely no doubt that Lean and Six Sigma as process improvement methodologies deliver results, as proven consistently, countless times, over literally thousands of projects across hundreds of businesses. What is inconsistent, however, is the efficiency with which the Project Leaders (Belts) and Teams reach the delivered solution, and sometimes the effectiveness of the solution itself. Typically, this is considered to be the territory of the Consultant or Master Black Belt (MBB), whose role it is to guide the steps of the Black Belt or Green Belt through the available tools depending on the problem.

Therefore, the best guide requires

- Deep enough experience of how to tackle a specific problem to reach the solution with an efficient approach (as a Belt, I want to know exactly what path to follow in my project)
- Broad enough experience to do this across multiple different types of problems that might be addressed in a business (as a Program Leader, I need my MBB to know what path to follow for all projects and to guide my Belts accordingly)
- Technical skills to be able to guide the Belts in specific tool use (as a Belt, I want to know the practical steps involved in applying each tool)

Interestingly, this expands the common perception of the role of a Master Black Belt as a technical resource and measures that individual in addition by the efficiency and effectiveness of projects he or she oversees (i.e., the rate of generation of business value from those projects).

Surprisingly (and fortunately), when asked the route to solution for a particular type of problem, the experienced guides give remarkably consistent answers—it seems that if you have a specific problem type, you should follow a specific route to solution. The intent of this book, therefore, is to capture those experiences and for multiple given project types to lay down the appropriate routes to solution.

Audiences who will find this book valuable are

- Process Improvement Project Leaders (Green Belts and Black Belts), across all industries—Leading projects to improve processes using tools and methodologies that come under the Lean or Six Sigma banners
- Project Champions or Sponsors—Wondering what questions to ask of their Project Leaders and what they should see in terms of activity, as well as seeking to improve their project selection and scoping skills
- Technical Mentors (Master Black Belts)—Looking to improve their project and tools-mentoring skills, and to better select and scope projects
- Deployment Leaders—Seeking to better select and scope projects to improve the return on investment of the program
- Consultants—Brushing up on skills as both a Technical Mentor and Deployment Lead

The book is a little unusual in that it is designed to be a practical tool, used day to day by readers to guide them through how to solve as many different types of business problems as possible using the Lean Sigma methodologies and tools. It is not meant to be a technical reference to take the place of the statistical tomes that are readily available. By analogy, this is how to drive the car, not how the car works.

The book is also unusual in that it is not designed to be read linearly from cover to cover, mainly due to the following few simple issues:

- There are a multitude of different problem types.
- Each problem type has a different route to solution.
- The same tools are used in the solution of multiple problem types.
- The application of each tool can vary subtly depending on the problem.

The book's structure is in a form that best helps the reader start with the problem in hand and quickly progress to the solution. To that end, following an introduction to the topic (Chapter 1), the book has three main parts:

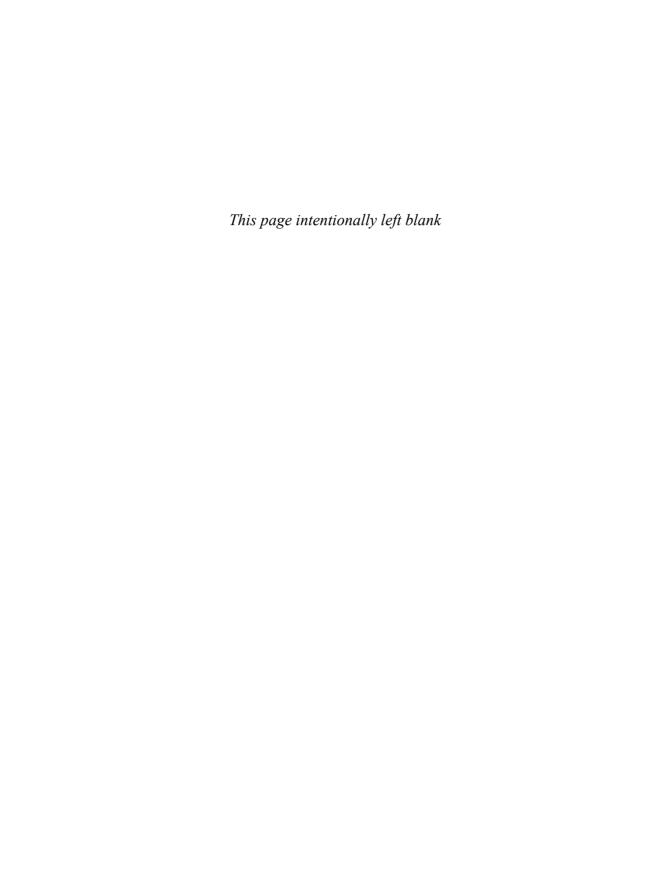
• Part I (Chapters 2–5): Generalized roadmaps that describe the sequence of thought for the major types of Lean Sigma projects, from the commencement of the project

to completion. The text lists which tools to use, in which order, and why. To understand the application of a particular tool in more detail, the reader should refer to Part III.

- Part II (Chapters 6–7): A wide range of focused roadmaps used within Lean Sigma projects that describe the route to detailed deconstruction and characterization of the specific business problems found. The text lists which tools to use, in which order, and why. To understand the application of a particular tool in more detail, the reader should refer to Part III.
- Part III (Chapter 8): Individual tool roadmaps explaining in detail how to use each tool.

Throughout this book, I explain which tool to use and why it is used, so that Belts move from blind tool use to truly thinking about what they do and focusing on the end goal of improving the process. Processes and their respective problems are real-world phenomena, requiring practical actions and change. The best Belts I've found are the most practical thinkers, not theorists, because any tool, even based on the cleverest theory, is only as good as the practical business solution it provides.

Register your copy of *Lean Sigma: A Practitioner's Guide* at informit.com for convenient access to downloads, updates, and corrections as they become available. To start the registration process, go to informit.com/register and log in or create an account. Enter the product ISBN (9780133991031) and click Submit. Once the process is complete, you will find any available bonus content under "Registered Products."



# **Acknowledgments**

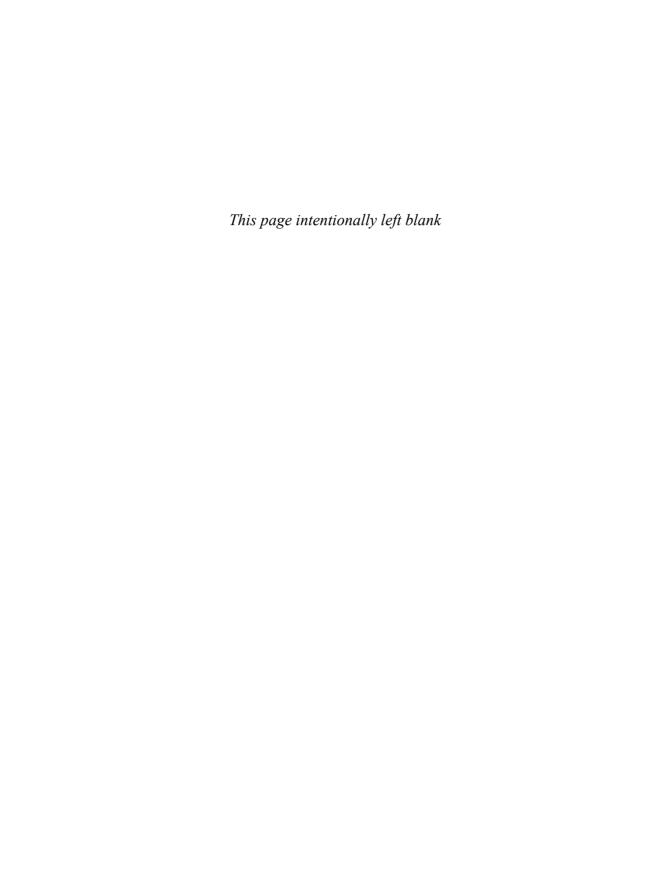
I'd like to acknowledge the host of leaders, across dozens of clients, from whom I've had the good fortune to learn over the years and who helped shape the understanding shared in this book: in particular, Sam Lampugnani, Russell Schwartz, and Dr. John Nimmo at SunChemical; Dr. Al Landers, formerly at Huber Engineered Woods; Paul Fantelli, formerly at Lincoln Electric; Antonio Rodriguez at Celanese; John Murphy at CSX; Dave Petratis, formerly at Quanex; George Rommal, formerly at Air Products; Jim Bickel and Doug Sabotin at Columbus Regional Health; Bob Siegmann at Centerstone Behavioral Health; Kathy Rose at Floyd Memorial Health; Brian Daeger and Trish Hunter at Margaret Mary Health; Dr. Tim Phillippe at Christian Homes; Miguel de la Rosa at Genermasa; and Eric Thompson at Wyndham Worldwide.

I also want to recognize the multitude of great minds such as Dr. Stephen Zinkgraf and Dr. David Bacon for developing and progressing the Lean Sigma body of knowledge from its early beginnings to the level of sophistication found today. Included in this multitude are the experts in what were considered adjacent fields until fairly recently, such as Dr. Ed Barrows in the field of strategy development and execution and Dr. Russ Osmond in the field of human interaction.

Sincere thanks to Bernard Goodwin, Chris Guzikowski, Michelle Housley, Kesel Wilson, and the team at Prentice Hall, and especially to Barbara Wood for a truly incredible copyediting job.

As always, I just don't have enough words to express my appreciation to my wife, Veronica, my sons, Christian and Sean, and my parents, who encourage and support me in everything I do.

The most important acknowledgment of all has to be to the host of Belts and Project Leaders across hundreds of companies in multiple industries, without whom all of this would be theory—to you we are all truly indebted.



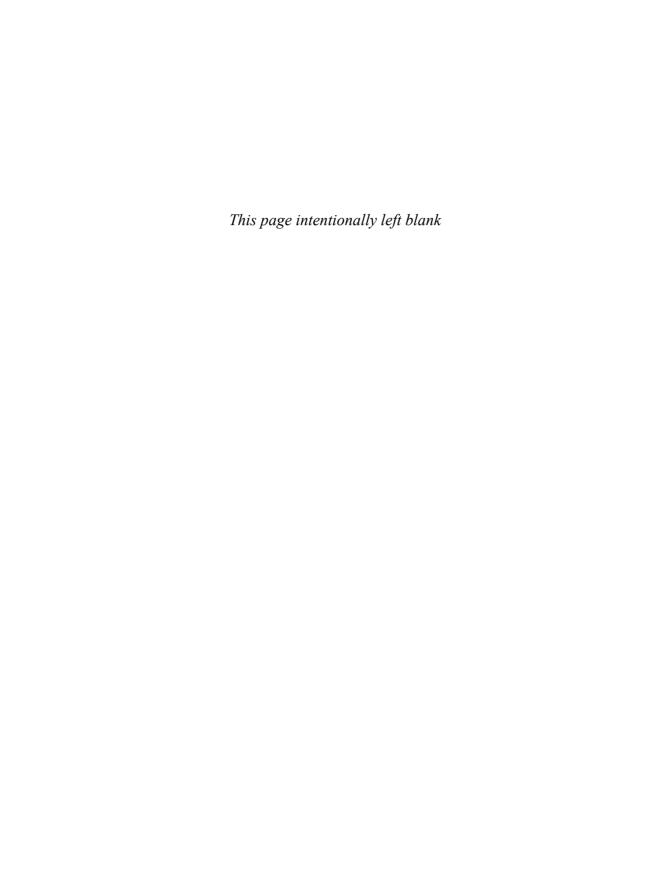
## About the Author

**Ian Wedgwood, Ph.D.,** President and CEO of Haelan Group, has more than two decades of experience guiding organizations through change. He has led and facilitated dozens of Lean Sigma deployments in industries as diverse as healthcare, electronics, engineered materials, chemicals, banking, and hospitality, and has trained and mentored numerous executives, Champions, and Belts.

Prior to his consulting career, Ian worked for the global engineering group Invensys PLC facilitating major initiatives. One such initiative, building a new 180,000-square-foot manufacturing facility in Tijuana, Mexico, brought Ian to the United States, where he still lives with his wife, Veronica, and sons, Christian and Sean. Ian also led Invensys's highly successful Lean Design for Six Sigma deployment. Some 380+ Design Belts within a single division yielded a 65 times return in less than two years.

Ian holds a Ph.D. and a First-Class Honors degree in applied mathematics from Scotland's St. Andrew's University. In addition to his consulting work, Ian serves on the faculty of the Jones Graduate School of Business at Rice University.

He also authored *Lean Sigma: Rebuilding Capability in Healthcare*, which is shaping how healthcare leaders think about Lean Sigma and its application to this industry in need.



# Introduction

#### **OVERVIEW**

The motivation for writing this book was a disappointing realization over many years of training and mentoring Project Leaders that there are plenty of technical texts explaining the painful underlying statistics in Six Sigma and Lean Sigma, but there are hardly any books explaining what to do from a practical standpoint. There are proliferations of books explaining at a high level the overall concept of a project, but next to none that take the Project Leader through a project, step by step. There are a multitude of books explaining just enough on project tools to suck the reader into buying consulting time from the author to apply them, but none that leave the reader in a position of practical self-sufficiency. Most unfortunately of all, there are a whole host of books written by theorists who have never led a project to solve a business problem using the methodologies they espouse, but very few ever written by those who have actually applied this stuff.

The aim here is to be different. The hope is that I have provided a book that can be used practically day to day by Process Improvement Leaders (from any industry), Champions, and Consultants to guide them through how to solve as many different types of business problems as possible. It is certainly not meant to be a technical text to take the place of the statistical tomes that are readily available—I'll reference as many of those as I can along the way. By analogy, this is how to drive the car, not how the car works. In a field as passionate as Lean Sigma, I'm sure there will be disagreement at times with the order of tools used, so please remember that this is a guide—not the definitive solution.

I also hasten to add at this point that I don't favor Lean over Six Sigma or vice versa. Let's face it—we need them both, and by the end of this book, I probably will have offended both camps equally. The text is most certainly not for purists; it's just about an approach that works.

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#### INTENDED AUDIENCE

The primary audiences for this book are

- The host of Process Improvement Project Leaders (Green Belts and Black Belts), across *all* industries, who are leading projects to improve processes by shortening Lead Times, increasing capacity, improving yields and accuracy, reducing inventories, and so forth using tools and methodologies that come under the Lean or Six Sigma banners
- Project Champions or Sponsors who are wondering what questions to ask of their Project Leaders and what they should see in terms of activity, as well as those who are seeking to improve their project selection and scoping skills
- Technical Mentors (Master Black Belts) who are looking to improve their projectand tools-mentoring skills and to better select and scope projects
- Deployment Leaders who are seeking to better select and scope projects to improve return on investment (ROI) of a program
- Consultants who are brushing up on skills as both a Technical Mentor and a Deployment Lead

#### **PREREQUISITES**

This book specifically takes a project-based approach to process improvement. In order to ensure a usable text, it is necessary to make some basic assumptions before leading up to the project—in particular, the existence of the following:

- A clear business reason to do the project.
- A Project Leader (usually referred to as a Black Belt or Green Belt, depending on the level of training) to lead the project. It is usually best to have a Belt who is not from the functional groups impacted by the project if at all possible; that way, the Belt has no preconceived notions of a solution and can be relied upon to look at the process with a fresh set of eyes.
- A Team composed of people who live and breathe the process every day. Lean Sigma is certainly a team sport and should not be viewed as a "gladiator" undertaking. There should be no hero mentality in the solution of process problems.

<sup>1.</sup> The chapters on project identification and selection in Stephen A. Zinkgraf's book *Six Sigma—The First 90 Days* will certainly help set the stage here (Prentice Hall, 2006, ISBN 0131687409). For healthcare leaders, recommended reading is Chapter 2, "Structuring Change—Program Infrastructure," in *Lean Sigma—Rebuilding Capability in Healthcare* by Ian Wedgwood (Prentice Hall, 2015, ISBN 0133992004).

- A committed Champion to remove potential roadblocks.<sup>2</sup>
- Time made available for the Team to complete the project, for both the Belt and the Team. If this is not the case, failure is just a few short weeks away.

These elements are absolutely necessary, but in this book I will not spend any more time on them because the focus here will be on the problem-solving roadmap itself and the tools therein.

Another significant assumption here is that the Project Leader will have gone through some basic Lean Sigma or Six Sigma training to at least the Green Belt level. It is possible to complete a project using just this text alone, but the intent is for this book to be a *practical* support guide as opposed to a technical teaching guide. I will endeavor to reference key technical texts throughout.

#### **BASICS**

In order to better understand the detailed methods of Lean Sigma process improvement, it is important to first have a clear understanding of the basics involved. This begins with simple clarifications of what a process is, how it is defined, and then how it is improved.

#### **A Process**

The first thing to point out here is that Lean Sigma is a *process* improvement methodology, not a function or an activity improvement methodology. This is a key distinction in framing the project, and it is one that Champions frequently get wrong during project identification, scoping, and selection.

A process is a sequence of activities with a definite beginning and end, including defined deliverables. Also, a "something" travels through the sequence (typical examples include a product, an order, a patient, or an invoice). Resources are used to accomplish the activities along the way.

If you can't see an obvious, single process in your project, you might have difficulty applying process improvement to it. The start and end points need to be completely agreed upon among the Belt, Champion, and Process Owner (if this is not the Champion). Clearly, if this is not the case, there will be problems later when the end results don't match expectations.

<sup>2.</sup> The role of the Champion is clearly outlined in Chapter 8, "Defining the Six Sigma Infrastructure," in Stephen A. Zinkgraf's book, Six Sigma—The First 90 Days.

#### **ENTITIES**

In the preceding definition of a process, there is a "something" that travels along it. For want of a better name, I'll refer to this as an *entity*. Clearly, this entity can be fundamentally different from process to process, but there seem to be surprisingly few distinct types:

• Human: Employees, customers, patients

• Inanimate: Documents, parts, units, molecules

• Abstract: Email, telephone calls, orders, needs

The trick is to be able to identify the Primary Entity as it flows through the process with value being added to it (for example, a patient or perhaps the physical molecules of a product). There will, of course, be secondary entities moving around the process, but focus should be on identifying the primary.

Belts sometimes find this difficult when the entity changes form, splits, or replicates. For instance, in healthcare (in the ubiquitous medication delivery process), orders are typically entered into the electronic medical record (EMR) by the physician, and so the Primary Entity is the electronic order. The order is then converted to a work order by the system that can be accessed in the pharmacy. The work order is then fulfilled (meds are picked from an inventory), and effectively the Primary Entity changes to the medication itself, which will be sent back to the point of request.

Similarly, in an industrial setting, we might see the Primary Entity change from Customer need to sales order to production order to product.

#### **DELIVERABLES**

The last element of the definition of a process is the deliverables. This is often where novice Belts make the biggest mistakes. Simply put, the deliverables are the minimum set of physical entities and outcomes that a process has to yield in order to meet the downstream Customers' needs.

The single most common mistake Belts make in process improvement is to improve a process based on what Customers say they *want* versus what they truly *need* (more about this in the section "Customer Interviewing" in Chapter 8, "Tools").

The deliverables need to be thoroughly understood and agreed upon in the early stages of the project; otherwise later, during the analysis of exactly what in the process affects performance, the Belt will have the wrong focus.

If your project doesn't have a start, an end, deliverables, or a Primary Entity, it probably isn't a process and you will struggle to apply Lean Sigma to it. Table 1.1 gives examples of good and poor projects across varying industries.

Table I.I Examples of poor versus good projects

Industry	Healthcare	Chemical Manufacturing	Discrete Manufacturing	Service/ Administrative	Transportation and Logistics
Good Projects	Length of stay  Emergency department, operating room, care units  Accuracy  Meds admin/ delivery, charging, billing, patient handoffs  Capacity  Emergency department, operating room, radiology, lab  Lead Time Radiology, lab  Downtime Equipment, rooms	Accuracy Invoice, yield, assay Capacity Line, product, vessel Lead Time Delivery, production, replenishment Downtime Equipment, lines, vessel	Accuracy Invoice, yield Capacity Line, product Lead Time Delivery, production, replenishment Downtime Equipment, lines	Accuracy Invoice, delivery, product Capacity Service area, call center, product Lead Time Delivery, call hold time Downtime Equipment, servers, lines	Accuracy Invoice, bills of lading Capacity Hump yard, distribution center Lead Time Delivery Downtime Locomotive Damage Locomotive, package, radio Inventory Product, packaging
Poor Projects	Satisfaction <sup>3</sup> Patient, staff, physician	Reduce healthcare	e costs		

(continues)

<sup>3.</sup> Satisfaction is a useful metric, but it typically lags in the process and thus becomes difficult to deal with. Also, it is inherently affected by many noises in the process. Try to understand what in the process brings the satisfaction and perhaps target that in the project.

		Chemical	Discrete	Serv
Table I.I	I Examples of poor versus good projects (continued)			

Industry	Healthcare	Chemical Manufacturing	Discrete Manufacturing	Service/ Administrative	Transportation and Logistics
Poor Projects	Communication Sales and marke Improve forecas Cell phone cons Improve employ Implement XYZ	eting st accuracy <sup>5</sup> solidation wee retention		Reduce office utili Improve quality of SAP/Oracle/etc. File all paper docu electronically Electronic product Reduce DSO from	f master data in ments t catalog

#### **M**ETHODOLOGIES

Six Sigma and Lean are both business improvement methodologies—more specifically, they are business process improvement methodologies. Their end goals are similar—better process performance—but they focus on different elements of a process. Unfortunately, both have been victims of bastardization (primarily out of ignorance of their merits) and often have been positioned as competitors when, in fact, they are wholly complementary. For the purpose of this practical approach to process improvement:

- **Six Sigma** is a systematic methodology to home in on the key factors that drive the performance of a process, set them at the best levels, and hold them there for all time.
- **Lean** is a systematic methodology to reduce the complexity and streamline a process by identifying and eliminating sources of waste in the process—waste that typically causes a lack of flow.

In simple terms, Lean looks at what we *shouldn't* be doing and aims to remove it; Six Sigma looks at what we *should* be doing and aims to get it right the first time and every time, so the process flows better and robustly delivers what it should, every time for all time.

<sup>4.</sup> Although communication is a process, it is not a fundamental Value Stream in an organization. Instead, look to mending the primary Value Streams first, and then it might even be possible to eliminate the need for person-to-person communication entirely.

<sup>5.</sup> It is best to tackle the responsiveness of the process before looking into forecasting (i.e., the more responsive my process, the less I have to worry about forecasting).

<sup>6.</sup> Although this is a legitimate project, it is large and difficult for a Green or Black Belt to handle. It usually requires running as a Master Black Belt program of projects.

#### LEAN SIGMA ROADMAPS

Lean Sigma is all about linkage of tools, not using tools individually. In fact, none of the tools are new—the strength of the approach is in the sequence of tools. The ability to understand the theory of tools is important, but this book is about how to apply and sequence the tools.

There are many versions of the Six Sigma roadmap, but not so many that fully incorporate Lean in a truly integrated Lean Sigma form. Figure 1.1 shows a robust version of a fully integrated approach developed by the author and the team at Haelan Group over many years. The roadmap follows the basic tried and tested DMAIC (Define, Measure, Analyze, Improve, and Control) approach from Six Sigma, but with Lean flow tools as well as Six Sigma statistical tools threaded seamlessly together throughout. As proven across a diverse range of organizations, the roadmap is equally at home in service industries, manufacturing industries of all types, and healthcare, including sharp-end hospital processes, even though at first glance some tools may lean toward only one of these. For example, despite being considered most at home in manufacturing, the best *Pull Systems* I've seen were for controlling replenishment in office supplies. Similarly, Workstation Design applies equally to a triage nurse as it does to an assembly worker.

The roadmap is a long way removed from its Six Sigma predecessors and is structured into three layers:

- Major phases
- Subphases or steps (the goals or the "what")
- Tools (the "how" to achieve the "what")

With this layered structure in place, the roadmap is goal-driven, depicts the critical-thinking sequence involved, and is completely generic as it relates to process performance improvement. The tools vary project by project, but these goals are consistent for all process improvement projects. The Lean and Six Sigma tools (and any others interchangeably for that matter) can be selected to meet the goals of any step.

This is done purposefully to ensure that the problem-solving approach isn't just a list of tools in some order. It has meaning inherent to its structure. This is a *crucial* point to practitioners. Throughout this book, I'll explain not only *which* tool to use, but also *why* it is used, so that Belts move from blind tool use to truly thinking about what they are doing and focusing on the end goal of improving the process.

The best Belts I've found were the most practical thinkers, not the theorists. This is a practical roadmap, and the user should try to focus on the underlying principle of "I'll

<sup>7.</sup> Haelan Group, LLC is a professional services firm specializing in Lean and Lean Sigma deployments. For more information see www.haelangroup.com.

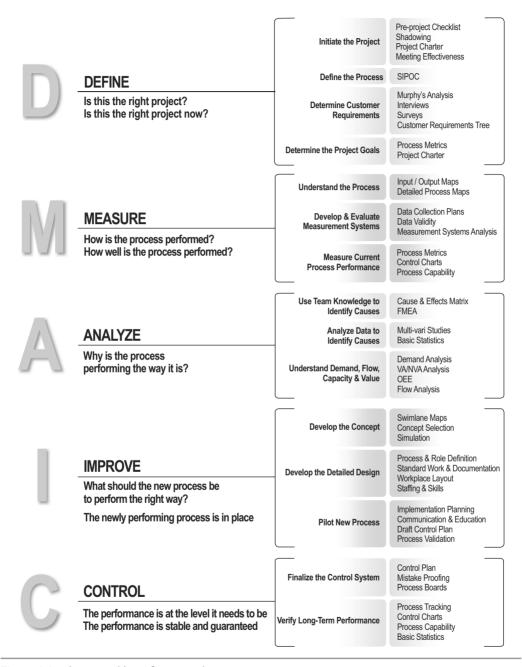


Figure I.I Integrated Lean Sigma roadmap

Source: © Haelan Group, LLC

apply the minimum practical sequence of tools to understand enough about my process to robustly make dramatic improvement for once and for all in my process."

#### How to Use This Book

The intent of this book is that it be used as a tool to help Project Leaders guide a project, and thus it needs to be structured in a form that best helps the reader start with the problem in hand and quickly progress to the solution. I'm sure it is possible to read it from beginning to end; however, it is not designed with that purpose in mind. Its layout probably will be perceived as a little unorthodox, mainly due to a few simple issues:

- There are a multitude of different Problem Categories.
- Each Problem Category has a different route to a solution.
- The same tools are used in the solution of multiple Problem Categories.
- The application of each tool can vary subtly, depending on the problem.

This book is structured into three main parts (shown graphically in Figure 1.2):

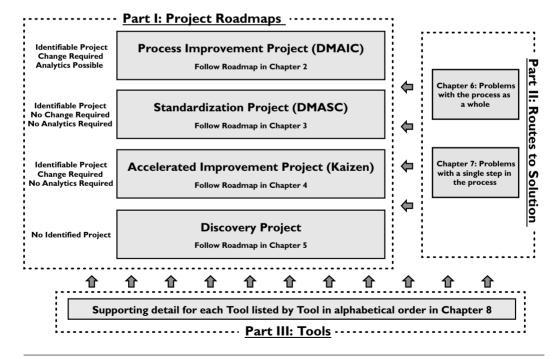


Figure 1.2 Structure of this book

- Part I: Project Roadmaps: There are many different incarnations of roadmaps, depending on the business need, and it is necessary to determine up front which is the most appropriate.
  - **Process Improvement Project**: In this case, there is an identified project. The current process is deficient in some way and therefore a change is required (this requires more than just the process to be standardized). However, that change isn't obvious or unanimously agreed upon by all the key stakeholders, and therefore some data and analytics will likely be necessary. This type of project follows the ubiquitous DMAIC roadmap, as shown in Figure 1.1.

For this type of project, Chapter 2 describes the route through the DMAIC roadmap. Part II (Chapters 6 and 7) supports this journey by describing the route to a solution for a wide range of problems and in essence the journey through the Measure and Analyze phases. The text lists some 25 or so Problem Categories with titles such as "The capacity of the process is too low." Generally speaking, this is at an overall-process level (considering the process as a whole), in which case the categories are listed in Chapter 6. However, there are rare projects in which a significant amount of work has already been done on the process. In this case, the Problem Category might be at a within-process level where a single process step has been identified as being the problem area, in which case the categories are listed in Chapter 7.

The text lists which tools to use (*in italics like this*), in which order, and why and in essence forms the detail behind the roadmap shown in Figure 1.1. The Belt/Team should follow the roadmap that best describes the process problem that they are encountering, based on key decision points listed in the text. For more details on a tool listed, the Belt/Team should refer to the tool detail in Part III (Chapter 8), where the tools are listed in alphabetical order.

• Standardization Project: Here too there is an identified project. The current process, however, is not necessarily deficient; the issue is more that the operators aren't consistent in their approach (this is a very common situation in service industries and healthcare). Since the goal is more one of standardizing the process versus changing it, no heavy data/analytics are necessary to understand the change. This project can follow the DMASC (Define, Measure, Analyze, Standardize, and Control) roadmap.

For this type of project, Chapter 3 describes the route through the entire project to completion. The text lists which tools to use (*in italics like this*), in which order, and why. For more details on a tool listed, the Belt/Team should refer to the tool detail in Part III (Chapter 8), where the tools are listed in alphabetical order.

- Accelerated Improvement Project (Kaizen): In this case again, there is an identified project. The current process is deficient in some way and therefore a change is required. The change itself, however, is limited to a smaller subset of problems involving just streamlining or a reduction of complexity, rather than needing heavy data and analytics. This type of project can follow the Kaizen roadmap and if desired can be conducted in an event-based format, as opposed to a drawn-out project.
  - For this type of project, Chapter 4 describes the route through to project completion. In addition, Part II (Chapters 6 and 7) describing the route to a solution for a wide range of problems can provide guidance for which specific tools to use. The text lists which tools to use (*in italics like this*), in which order, and why. For more details on a tool listed, the Belt/Team should refer to the tool detail in Part III (Chapter 8), where the tools are listed in alphabetical order.
- **Discovery Project**: In some instances there is no obvious project related to a process or area of a business. This is often useful to businesses that are new to Lean Sigma and are not sure how to identify good projects to work on.
  - For this type of project, Chapter 5 shows a Discovery roadmap used to identify potential projects in a process where there are no obvious targets. The text lists which tools to use (*in italics like this*), in which order, and why. For more details on a tool listed, the Belt/Team should refer to the tool detail in Part III (Chapter 8), where the tools are listed in alphabetical order. After the project or multiple projects have been identified in the process using the Discovery roadmap, one will be selected (based on the project type: DMAIC, DMASC, or Kaizen), and the Team will follow the project roadmaps described in Part I.
- Part II: Routes to a Solution: Chapters 6 and 7 provide project roadmaps describing the route to a solution for a wide range of problems, particularly relevant in the Measure and Analyze phases in a DMAIC project or in support of a Kaizen Event, both described in Part I. The text lists which tools to use (*in italics like this*), in which order, and why. For more details on a tool listed, the Belt/Team should refer to the tool detail in Part III (Chapter 8), where the tools are listed in alphabetical order.
- Part III (Chapter 8). Individual roadmaps explain in detail how to use each tool.

#### **PROBLEM CATEGORIES**

To use this book effectively, it will be necessary to identify the Problem Category based on the process issue(s) at hand. This might seem awkward to novice Belts, but it is an important skill to develop. Belts need to be able to step back from the process and see

the bigger picture before diving into the detail. Quite often, the inexperienced Champion and Process Owner can be a hindrance at this point by pushing the Belt down a road to a solution before truly understanding the underlying problem. The purpose of the Define tools, for example, is to provide an understanding of what, from the Customer's perspective, the problem truly is and frame it in a measurable form. Only after the Define tools have been applied can the Belt confidently say which Problem Category he or she is dealing with.

#### AND FINALLY . . .

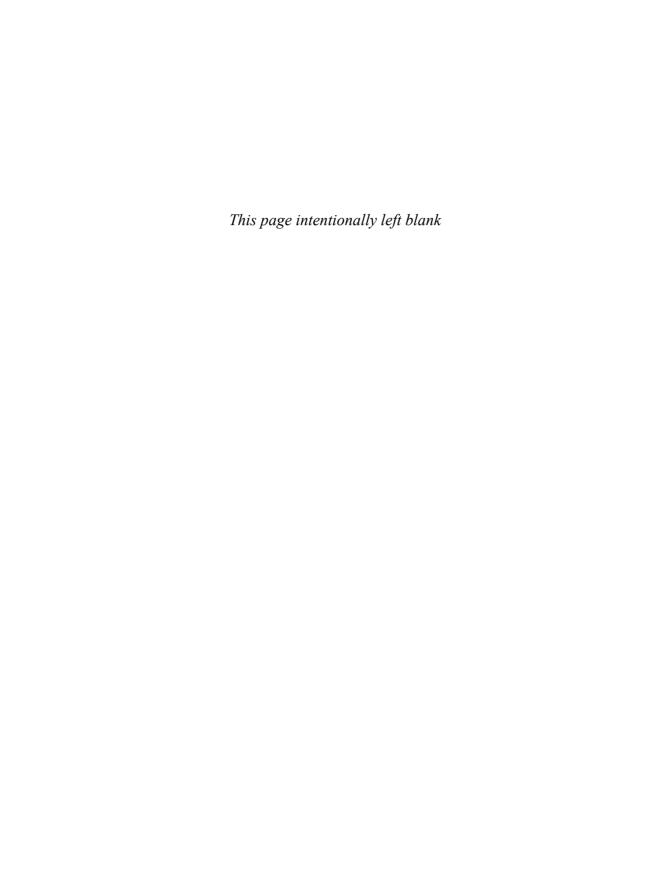
Processes and their respective problems are real-world phenomena, requiring practical actions and change. Any tool, even based on the cleverest theory, is only as good as the practical business solution it provides. To reiterate, this is about practical achievement versus theory; thus, at any point in the project, it is important to be able to answer

- What is the question?
- What tool could help answer the question?
- How do I get the necessary data for the tool?
- Based on the data, what is the tool telling me?
- What are the practical implications (the big "So what?!!" as is it often called)?
- What is the next question that arises based on where we've been?

The best Belts maintain this holistic viewpoint; the best Champions and Mentors keep pushing the Belts for the holistic view.

It is probably worthwhile to point out that no project is easy, but I hope this guide will bring a little clarity and confidence to those who have to navigate through it.

The only thing left to say at this point is "Good luck!" Even the best Belt needs some of that, too.



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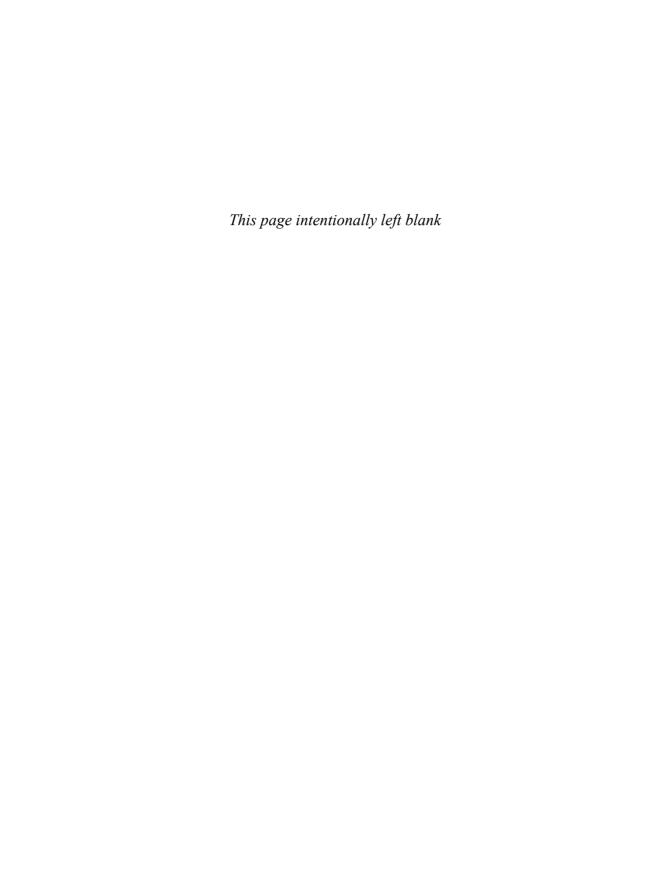
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