

Kaizen Event Fieldbook

PART I

FOUNDATION AND FRAMEWORK

1

GETTING STARTED

KAIZEN EVENT EFFECTIVENESS: PREREQUISITE FOR LEAN TRANSFORMATION

Over the past decade, there has been an explosion of lean studies. The types of media and delivery vehicles that have been deployed are many, including books, magazine articles, white papers, conferences, seminars, certifications, “belts,” and blogs. The subject matter spans from the elemental with a focus on specific tools and techniques to the more holistic where the emphasis is more systemic and enterprise-wide.

Yet, despite the proliferation of lean “knowledge” and lean activity at the *gemba* (the Japanese term for the “actual place” where the work is done), many companies are still struggling to find their way. A recent study reflects that 59% of the 2,500 business people surveyed were either in the planning or early stages of lean, as contrasted with the 7% allegedly enjoying an “advanced” level of lean implementation and 34% at “extensive.” The same survey respondents identified their company’s primary barriers to the creation of a lean enterprise as:

1. pushback from middle management (36%),
2. lack of implementation know-how (31%),
3. employee resistance (28%), and
4. supervisor resistance (23%) (Lean Enterprise Institute 2007).

All of these barriers, except the second, are of a change management and transformation leadership nature. However, it is safe to say that the remaining barriers are, directly and indirectly,

partly addressable by the effective removal of the second barrier. Competency and success are effective countermeasures to many of the root causes of resistance.

One of the most significant components of implementation know-how is the kaizen event. While the engine of any lean transformation is people, the kaizen event is a primary vehicle for engaging the hearts and minds of the workforce. Kaizens teach people how to see, think, and feel within the context of lean and, ultimately, how to rapidly and effectively deploy their improvement ideas to address high-impact opportunities.

In fact, there is a lot of talk about material and information flow within the scope of value stream mapping specifically, and lean in general. Kaizen is much about idea flow—first getting the ideas, big and small, to flow within a scientific construct and then ultimately implementing them and sustaining results. In the end, it is

Gemba Tales



Over 35 real life stories are interspersed throughout the Fieldbook. These “Tales from the Gemba,” or “Gemba Tales” for short, are based upon the experiences of the author and other lean practitioners. The stories provide insight into the application of the concepts. Sometimes they reflect success and other times failure, but the intent is always to teach and, if possible, share some gemba humor.

Kaizen

The word “kaizen,” Japanese for continuous improvement, and more formally defined in Chapter 2, is used as both a noun and a verb. As a noun, “kaizen” is shorthand for a kaizen event or a smaller discrete kaizen activity, while kaizens (plural) is for multiple kaizen events. As a verb, it represents the action of continuous improvement.

about human return on ideas. Of course, one central and pragmatic tenet is that kaizen must be done *with* people and not *to* people. The kaizen (and lean) foundation is built upon humility and respect for the individual.

Some may judge this a bold statement, but . . . *A company that does not possess and routinely exercise the capability to effectively target, plan, execute, and follow-through on its kaizen events, including the non-negotiable requirement to comply with the new standard work to sustain the gains, cannot and will not successfully transform into a lean enterprise.* Kaizen event effectiveness is thus a prerequisite for lean transformation success and a precursor of a daily kaizen culture. Due to the dynamics of transformation leadership, the converse is not necessarily true; a company can be good at kaizen events, but still fail in its effort to become lean.

The scope of this book is primarily limited to kaizen standard work and event management. It is focused on imparting the reader with the strategies, tools, and techniques necessary to conduct effective kaizen events, with some forays into other supporting elements of the lean enterprise. However, before beginning, it is useful to understand some of the symptoms of ineffective kaizen events. Table 1-1 will help the reader discern whether there indeed may be a kaizen performance gap within his or her organization.

During the outset of a lean launch the symptoms outlined in Table 1-1 are imperceptible to all but the most experienced. The symptoms are often masked by the initial energy and euphoria that accompany any new initiative, and the first flurry of activity and the easy elimination of the most egregious forms of waste. To some degree,

this is to be expected; people are at the beginning of the learning curve. However, kaizen event malpractice will eventually limit the success of the fledgling transformation.

Flawed kaizen management approaches sap the vitality out of any lean transformation effort. Effective lean leaders employ and propagate best practices, “standard work” in lean parlance, to limit malpractice and dramatically increase the odds of success.

Standard work, also known as standardized work, is a fundamental lean tool that explicitly defines and communicates the current best practice (least wasteful) for a given process that is dependent upon human action. It provides a routine for consistency, relative to safety, quality, cost, and delivery, and serves as a basis for improvement. Standard work is comprised of three basic elements:

1. *takt* time (rate of customer demand),
2. work sequence, and
3. standard work-in-process.

The notion and relevancy of kaizen event standard work is addressed throughout this book.

AUDIENCE

This book is written primarily for lean practitioners, both existing and aspiring, whose population is comprised of three groups (see Figure 1-1):

1. kaizen technologists and facilitators in the kaizen promotion office,

The Universality of Kaizen

Kaizen “works” in every industry and, by extension, every enterprise. This can be deduced from vast empirical evidence and corroborated by the experiences of lean practitioners far and wide. So why is kaizen so universal? Every value stream is comprised of processes which, in turn, are comprised of activities. Virtually every activity has a measure of waste, some a lot, some a little. Kaizen does not discriminate, waste is waste. Kaizen’s very core is about identifying and eliminating waste with a vengeance and implementing management systems to ensure sustainability of the improvements.

Table 1-1. Nine symptoms of kaizen event malpractice

Symptom	Description	Root Causes (Related Book Chapters)				
		Leadership (3)	Strategy (4)	Planning (5)	Event Execution (6)	Follow-through (7)
1. Variation	Fundamental kaizen event content, sequence, and approach vary event to event. Kaizen events are not conducted in accordance with standard work or standard work is not defined.	X	X	X	X	X
2. Insignificance	Events are not strategically selected to address high-impact opportunities.	X	X	X		
3. Incoherence	Events are not synergistic with other achieved or anticipated improvements within the value stream(s).	X	X	X		
4. Blindness	The kaizen event team's ability to identify waste/opportunities during the event is limited due to inadequate preparation, training, tools, or approach.	X		X	X	
5. Indifference	The kaizen event team's readiness to acknowledge identified waste/opportunities is limited by behaviorally and culturally induced "filters."	X			X	
6. Lethargy	The kaizen event team and support functions' sense of urgency is inadequate to eliminate acknowledged waste during the event.	X		X	X	
7. "Unsustainability"	Kaizen gains are not sustainable due to lack of validation, rigor in standard work development, training, follow-through, and/or day-to-day discipline.	X			X	X
8. Demoralization	Kaizen team members and others in organization are demoralized due to lack of meaningful and sustainable results, inadequate planning, resources, empowerment, recognition, follow-through, use of kaizen to "cut heads," etc.	X	X	X	X	X
9. Presumption	Kaizen events are narrowly presumed to equal lean in total and are not viewed as only part of the total lean transformation journey.	X	X			



Figure 1-1. Audience of lean practitioners.

2. lean leaders, and
3. kaizen event team leaders.

Kaizen event participants may also benefit by reading the Fieldbook.

Kaizen technologists and facilitators. While the use of the term “technologist” may appear curious, it is appropriate in that it reflects someone who applies scientific knowledge to solve practical problems. (This is in purposeful contrast to “technocrat,” which smacks of elitism—a very un-lean characteristic.) The science of kaizen is real and, at its core, is founded upon the profoundly simple, but powerful plan-do-check-act (PDCA) cycle. Also, it should be acknowledged that the use of technology, especially in the change management business of lean, does not preclude a necessary balance with behavioral skills.

Depending on the company, kaizen technologists and facilitators represent individuals whose titles combine words such as “vice president (VP),” “director,” “officer,” “manager,” or “coordinator” with words or phrases like “kaizen promotion,” “continuous improvement,” “kaizen,” “lean,” “just-in-time (JIT),” “lean six sigma,” or “operational excellence.” There is an opportunity for a veritable title bingo card, but you get the point.

For the sake of simplicity, the title “kaizen promotion officer” will be used as the proxy for the kaizen technologist/facilitator. These individuals comprise an enterprise’s “lean function,” which is discussed in detail in Chapter 8. They are the organization’s identified lean subject matter and

deployment experts whose primary role is to teach, advise, and facilitate at all levels within the company. The placement and reporting relationships of kaizen promotion officers within the organization should be such that they can have meaningful access to others and exert the requisite amount of influence within the organization as indicated in Figure 1-2. Similarly, there should be sufficient resources, from the perspectives of the corporation, business units and value streams to drive meaningful change—through formal kaizen events, training, and projects.

Ultimately, it is the corporate kaizen promotion officer’s responsibility to develop and maintain the standard work for kaizen event management. Each kaizen promotion officer, no matter the level in the organization, should be expected to adhere to the standard work and contribute to its continued improvement by way of formal activities such as periodic Lean Summit meetings and informal collaboration with fellow kaizen promotion officers and management. This subject is addressed in Chapter 8.

Lean leaders. Without the lean leaders, there is categorically no chance for a sustainable lean transformation. They provide vision, direction, urgency, resources, and accountability, and back it up with tenacious and consistent involvement and communication. Lean leadership is addressed explicitly in Chapter 3 and implicitly throughout this book.

The lean leader population encompasses all of the senior executives, business leaders, and managers, especially those who participate on a lean steering committee and who lead or manage the various value streams and key processes. Optimally, they will use lean within the framework of a lean business system and drive high-leverage kaizen events to fulfill strategic imperatives and execute the value stream improvement plans.

The various senior change agents can also benefit from a deeper understanding of kaizen and kaizen event management. This is particularly important if they are integral in the selection of kaizen promotion officers and kaizen event team leaders.

Kaizen event team leaders. A quick review of this book will provide team leaders with greater

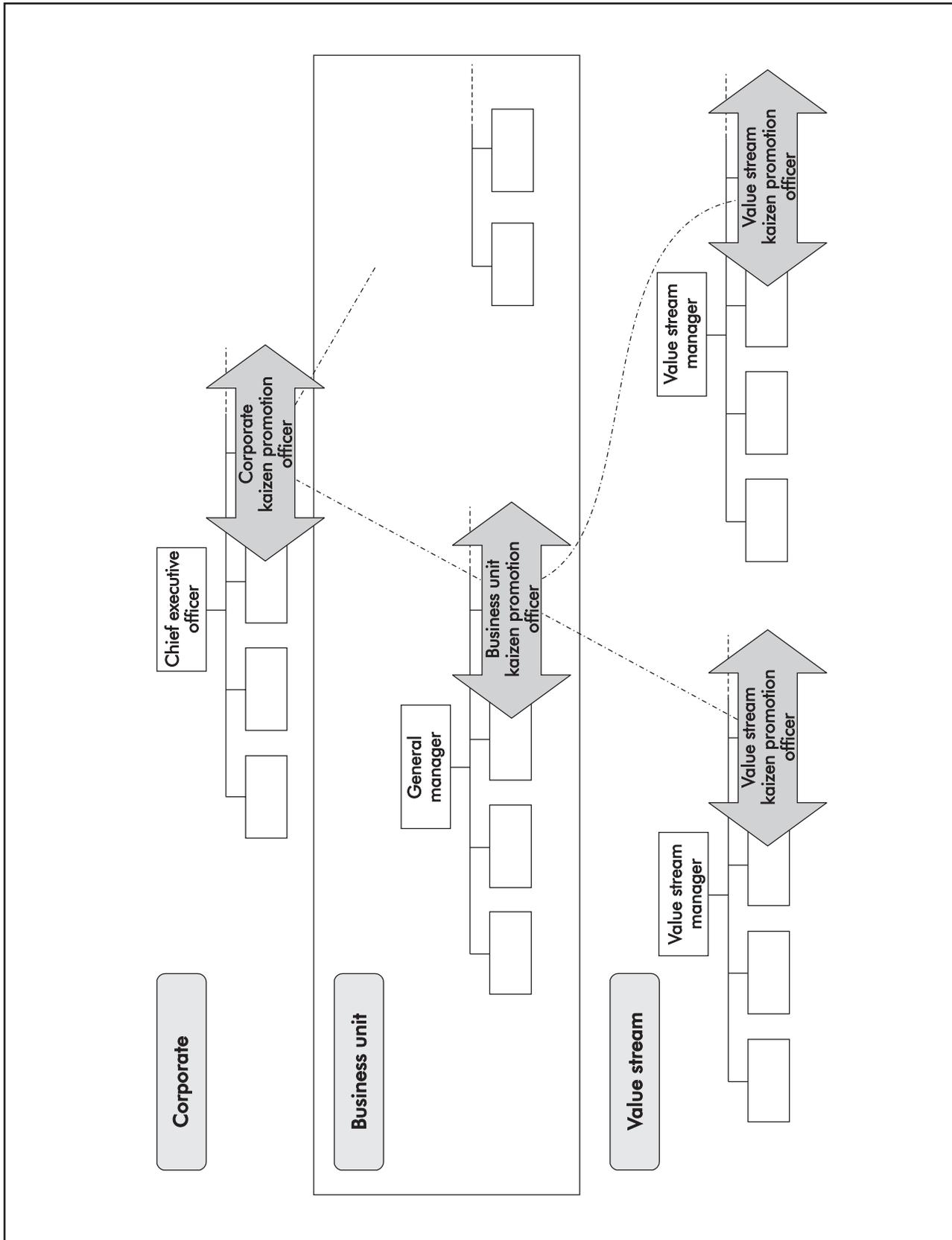


Figure 1-2. Placement and reporting relationships of kaizen promotion officers within the organization.

insight into the big picture of the kaizen event process and the underlying scientific method and strategy. Additionally, it will instill a deeper appreciation of the need for effective planning and follow-through.

PURPOSE OF THE FIELDBOOK

The Fieldbook was created to answer the needs of both the newly engaged and the experienced lean practitioner. The primary intent is twofold: 1) to provide insight into the foundational elements of kaizen and its context within a holistic lean business system, and 2) to provide the practitioner with kaizen event standard work. This is based upon the approach and philosophy employed and propagated by Shingijutsu, a self-described world consultancy for manufacturing technology founded by several former members of Taiichi Ohno's Toyota Production System implementation team. It was instrumental in the first U.S. lean transformation (Danaher's Jacobs Vehicle Systems, a.k.a. "Jake Brake," in Bloomfield, CT) and many others since.

The practitioner, unless at the absolute beginning of personal exposure to lean, undoubtedly will have had standard work, its benefits, tools, and techniques drilled into him or her by a *sensei*. "Sensei" is the Japanese term for teacher. From the perspective of kaizen event facilitation, many believe that a person only begins to *approach* proficiency after coaching 100 kaizen events. Accordingly, it is often presumptuous to self-adopt the title of "sensei." Even in Japan the term has experienced title inflation, meaning that anyone who teaches anything is apt to call himself a sensei (hence, some lean teachers have moved to the formal or informal title of "coach"). In any event, caution should be exercised when it comes to sensei selection. This role is, after all, an extremely critical element in any successful lean transformation.

Consistent with the lean "foundation" instilled by the sensei, the practitioner has hopefully enjoyed some measure of success implementing standard work on the plant floor, in the office, field, and lab, and anywhere else waste hides. So, if standard work is so powerful and important . . . and it is, why is there a dearth of standard

work in the public and private domain on how to conduct an effective kaizen event?

There is standard work that most sensei do not explicitly share. The apparent lack of sharing is usually not because the sensei is being contrary. Indeed, his job, vocation even, is to teach the willing student. It is just that virtually all of the tools, techniques, and strategies are intuitive to him. In other words, the sensei *just does it*.

If the average sensei was asked how he or she facilitates an event, the reply likely would be that it is something that is learned, first and foremost, by *doing*. Indeed, the meaning of sensei is "one who has lived before." There are no shortcuts. Simply telling "how" is dangerous in that it artificially shortens the student's developmental journey. This can rob the student of the natural growth inherent in the pure experience of doing and reflecting, which is best supplemented by a sensei's Socratic Method. Of course, not every corporate environment has the requisite patience or readily available sensei. Nevertheless, if the sensei were to entertain such a question, he or she would likely have to stop and think. The sensei would recount the process, decisions, tools, and strategies, and then provide a perhaps esoteric response. The "answer" is most difficult because, while many elements of the strategy, pre-event planning, and follow-through phases are fairly straightforward, there are numerous details that must be considered.

The actual event execution has many straightforward elements. However, a lean sensei will tell you that no two events are ever exactly the same. There will always be one or many more differences in the scope, targets, process, tools and, without question, team dynamics. Accordingly, the sensei often *feels* his way through the event, introducing new tools or techniques at the appropriate time, pushing teams one way or another, altering strategy, etc. So, it is hard, if not impossible, to capture this dynamic within standard work. This leads to another reason why there is little in the way of substantive kaizen event standard work—it is downright painful to articulate and, in some ways, dangerous to attempt such an explicit summary.

A serious student of kaizen event management must never forget that learning comes from direct

observation of the sensei, instruction from the sensei, studying and, most importantly, facilitating and participating in kaizen events. As in anything, learning comes from both success and failure. As one person was wont to say, “Knowledge makes a bloody entrance.” Perhaps less graphic is the sentiment that “Wisdom grows out of difficulties” (Hirano 1990).

WHAT THE FIELDBOOK IS NOT

As reflected in the discussion thus far, the Fieldbook is many things. However, to appropriately set expectations, it is important to articulate what *it is not*:

- *The “Lean Gospel.”* The Fieldbook is not intended as a compelling exhortation to undertake a lean transformation. It presumes that the reader has taken the leap of intellect and faith to the lean side. The Fieldbook does not attempt to point out the errors of batch-and-queue thinking, the wiles of ill-conceived automation, or the corrosive effects of poor workplace organization. It does not try to contrast the key performance indicators or measures of market value added in lean and non-lean companies. Nor does it try to convince the reader to vigorously implement continuous flow wherever possible or apply autonomous maintenance or balance work content among multiple operators.
- *A “how to book.”* The Fieldbook is not a treatise on the how, where, and when to implement any of the various lean tools and techniques—5S (sort, straighten, shine, standardize, sustain), visual controls, continuous flow, kanban, heijunka, single-minute exchange of dies (SMED), mistake proofing, total productive maintenance (TPM), jidoka, strategy deployment, value stream mapping, lean management systems, etc. However, it does presume that the reader already has, at a minimum, an understanding of lean tools and techniques, their interrelationships, leverage, primacy, and sequence of use.

Further, the Fieldbook is not a cookbook. It must be understood that the notion of

standard work is treated in this book at the conceptual level. To successfully facilitate a kaizen, a facilitator must possess a mix of technical and behavioral skills that enable him to transcend a paint-by-numbers approach (otherwise, everyone could do this!). So, it may be helpful to think of the Fieldbook as a set of standard work *and* guidelines.

- *A substantive exploration of daily kaizen.* Daily kaizen is the genuine implementation of continuous small incremental improvements, which is representative of a profoundly engaged workforce that is empowered to experiment and make things better every day. The Fieldbook is unabashedly focused on kaizen events that are more closely aligned with breakthrough performance and are typically the initial laboratory in which employees learn about kaizen. Events dynamically support and coexist with daily kaizen as the lean transformation matures. (Appendix B devotes several pages to the subject of daily kaizen.)

There are a multitude of excellent books that address the broader topic of lean, the required cultural shifts, and the various specific tools and techniques so necessary to a successful lean transformation. It would be useful to obtain and peruse the recommended reading list for Lean Certification (available from the Society of Manufacturing Engineers, www.sme.org/certification). Also, the Glossary herein contains brief definitions of many of the lean tools.

The best practices embodied in the Fieldbook can be characterized within the three basic elements of standard work:

1. *takt time*, which is a measure of the rate of customer demand (takt is a German word that means meter and is calculated by dividing the available time of a given process for a given period by the customer demand for that period);
2. work sequence, and
3. standard work-in-process (WIP).

Each event has its own implicit takt time, relative to the duration of the kaizen event and the prescribed timing of the pre-event planning and post-event follow-through. Similarly, there is a

best practice sequence for planning, executing, and following up after a kaizen. Within each one of these macro processes, there is standard work for the micro-level processes. Standard WIP can be understood within the context of the progressions of tasks and the collection and analysis of data, which is guided by the many standard forms and work sheets and captured and reflected in charts, maps, etc.

Consistent with the notion of guidelines, within this amalgam of standard work, the practitioner must learn how to *think* to facilitate an effective kaizen event; effectiveness is measured by the achievement of kaizen targets and the behavioral and technical development of the participants. There is an underlying philosophy, process, and story behind kaizen (more on this in the next chapter) to which the practitioner must remain true. This does not mean that the event standard work is not applicable. Quite the contrary, it means that the facilitator must understand how to weave the standard work within the kaizen. This sort of rigid flexibility is necessary because, as mentioned before, every event is unique. There will always be some measure of variation because of dynamics introduced by changes or differences in scope, targets, takt times, process issues and technologies, improvement ideas, environments, and people. Accordingly, the value of experience and good old-fashioned common sense, combined with the time-proven lean tools and techniques, can never be underestimated.

HOW TO APPLY THE FIELDBOOK

The Fieldbook can be applied in several ways: 1) at a corporate level as a framework for developing (improving, if the “developing” is done) and deploying standard work throughout the organization, and 2) for the personal development of motivated kaizen practitioners. Many of the figures contained herein are available for download at www.kaizenfieldbook.com.

Certainly, any company heading down the lean transformation path must develop an excellent in-house capacity and competency to conduct numerous, frequent, and effective kaizens in a variety of different venues. In so many ways, the kaizen event is the initial (and repeat) lean

delivery, cultural indoctrination, and training system. It is too important to risk dropping the ball in this area. Kaizen event standard work is one of the great enablers.

In the situation where an organization does not have a resident lean sensei, it is most advisable to get one quickly. Second only to finding a change agent at the most senior executive level is the need to secure the requisite knowledge (Womack and Jones 1996). The most expedient way of doing that, presuming that there is no candidate in house, is to hire a full-time sensei or consultant who will in turn develop your own in-house capabilities.

Even if there is a resident sensei, there still may be a critical need for a consultant, who should bring blunt objectivity and a wealth of experience and perspectives from a variety of applications, industries, and clients. The decision to use a consultant should be based upon several factors, including the magnitude of the performance gaps, the rapidity with which the gaps must be closed, the number and diversity of company locations and operations, and the extent of the required cultural change. It is also based upon leadership’s desire for the benefits of the outsider’s:

- fresh eyes,
- propensity to tell it like it is, and
- frequent challenge to achieve what may be (currently) unimaginable.

FIELDBOOK STRUCTURE

The Fieldbook’s eight chapters are apportioned into three parts:

1. Foundation and Framework,
2. Standard Work: The Multi-phase Approach, and
3. Developing Internal Capability: The “Lean Function.”

Part I, encompassing Chapters 1 through 3, is structured to provide the reader with an overview of kaizen from a definitional and conceptual perspective. The role and importance of transformation leadership is reviewed. Part II, Chapters 4 through 7, details the kaizen event standard work, spanning the logical sequence of:

1. strategy,
2. pre-event planning,
3. event execution, and
4. event follow-through.

Finally, Chapter 8 comprises Part III, moving from the specifics of kaizen standard work to the development and customization of the enterprise's lean function. Lastly, the Fieldbook contains a glossary and two appendices.

Part I—Foundation and Framework

Chapter 1, Getting Started. This is the chapter you are reading now. It establishes the premise that effective kaizen events are a prerequisite for true lean transformation, while specifying the Fieldbook's audience, scope, and purpose.

Chapter 2, A Short Course in “Kaizenology.” In this chapter, the reader is provided with the source, foundation, and fundamentals of kaizen, its Training Within Industry (TWI) job methods, plan-do-check-act (PDCA) and standardize-do-check-act (SDCA) roots, and its context within a lean business system. The chapter is “dense” from the perspective of background, concepts, principles, systems, and tools. There may be a desire to skip to Chapter 3 or 4 and jump right into the mechanics. This may be fine if you have a deep understanding of the substance within Chapter 2, otherwise, “grind it out” and study. The risk of jumping downstream of Chapter 2 is that you will learn “how,” but may miss much of the “why.”

Chapter 3, Transformation Leadership. This chapter addresses what is often the elephant in the lean room that no one wants to acknowledge—poor transformation leadership. Without good leadership, kaizen is just a bunch of *muda* (waste). It addresses the basic things that lean leaders must do well:

- know, execute, and require others to adhere to the kaizen event standard work,
- apply the rigor of the lean performance system,
- develop an effective KPO function,
- effectively manage change, and
- develop their own personal lean competency.

Part II—Standard Work: The Multi-phase Approach

Chapter 4, Strategy: Right Wall, Right Ladder. This chapter addresses the first of the four-phase kaizen event methodology. The strategy, as articulated within the enterprise's strategy deployment process as well as the supporting value stream improvement plans, must be the primary driving force behind each kaizen event. Absent of this linkage, there is a real risk of conducting indiscriminate kaizen events, which is waste, by any definition.

Chapter 5, Plan for Success. This chapter sheds light on the unfortunately much overlooked and marginalized pre-event planning process:

1. event selection and definition,
2. communication,
3. pre-work, and
4. logistics.

The underlying standard work is supplemented by several important templates and forms.

Chapter 6, Event Execution. Many would consider this chapter to be the “meat and potatoes” of kaizen event standard work . . . and they would be partly correct (do not forget the other three phases!). There is a tremendous amount of important material in this chapter, including details on the seven-part kaizen event sequence:

1. kick-off,
2. pre-event training,
3. the kaizen “storyline,”
4. team leader meeting process,
5. kaizen work strategy,
6. report-out, and
7. recognition and celebration.

Chapter 7, Event Follow-through. The post-kaizen event presentation applause does not represent the official end of the kaizen, but rather the transition from one phase to another. This chapter is ultimately about sustaining the kaizen gains, improving the organization's kaizen event management capabilities, and post-event communication. It addresses elements such as the kaizen newspaper, leader standard work, the post-event audit, and the kaizen event evaluation.

Part III—Developing Internal Capability: The Lean “Function”

Chapter 8, Becoming a Kaizen-ready Enterprise. After gaining an understanding of how to conduct kaizen events, the next question is often (or should be), “How do we make kaizen our own?” For a company to become proficient at kaizen, it must move beyond “sensei dependency.” The KPO development roadmap contained within this chapter provides a simple approach to developing the “lean function” and becoming a more kaizen-ready enterprise.

Glossary. The Fieldbook may contain terms and concepts that are unfamiliar to the reader. The Glossary, while not comprehensive, defines nearly 60 important terms. It may prove useful for the reader to peruse the glossary prior to beginning Chapter 2.

Appendices. Two appendices are included in the Fieldbook. The first, *A*, contains blank forms to promote the use of standard work in your kaizen events; *B* briefly discusses daily kaizen and its relationship to kaizen events.

SUMMARY

- The majority of companies seeking to become lean have yet to achieve an advanced stage of lean implementation.
- The biggest obstacles to lean are change management issues and gaps in implementation know-how.
- Kaizen must be done *with* people and not *to* people.
- Companies that do not possess and routinely exercise the capability to effectively target, plan, execute, and follow-through on their kaizen events, including the non-negotiable requirement to comply with the new standard work to sustain the gains, cannot and will not successfully transform themselves into lean enterprises.
- The Fieldbook audience includes:
 1. kaizen technologists and facilitators,
 2. lean leaders, and
 3. kaizen event leaders.
- The Fieldbook’s purpose is to provide: 1) insight into the foundational elements of

kaizen and its context within a lean business system, and 2) provide the practitioner with kaizen event standard work.

- The Fieldbook is not: 1) the “Lean Gospel,” 2) a “how to” book or “cookbook,” 3) a deep exploration of daily kaizen.
- The Fieldbook can be applied at a: 1) corporate level and 2) an individual level for personal development.
- The Fieldbook is structured to provide the reader with insight into:
 1. kaizen’s source and foundation,
 2. the role and importance of transformation leadership,
 3. the multi-phase kaizen event process and,
 4. how to make the enterprise more kaizen-ready.

REFERENCES

Hirano, Hiroyuki. 1990. *5 Pillars of the Visual Workplace: The Sourcebook for 5S Implementation*. Portland, OR: Productivity Press, p. 27.

Lean Enterprise Institute. 2007. “Survey: Lean’s No. 1 Obstacle can be Found in the Middle.” Dearborn, MI: Society of Manufacturing Engineers, *Lean Directions*, September, available from <http://www.sme.org/cgi-bin/get-newsletter.pl?LEAN&20070910&4&4>; Internet accessed 9/19/07. Note that the results add up to greater than 100%. Survey participants were encouraged to select all relevant barriers.

Womack, James P. and Jones, Daniel T. 1996. *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*. New York: Simon & Schuster, pp. 248-255. The suggested action plan for initiating a lean transformation within a company encompasses 7 steps: “find a change agent . . . get the knowledge [find a sensei] . . . find a lever by seizing a crisis, or creating one . . . forget grand strategy for the moment . . . map your value streams . . . begin as soon as possible with an important and visible activity . . . demand immediate results . . . as soon as you’ve got momentum, expand your scope.”

**To order call
1-800-733-4763**

or visit

www.sme.org/store

and search on book title