KLAUS LEOPOLD
SIEGFRIED KALTENECKER

KANBAN CHANGE LEADERSHIP

CREATING A CULTURE OF CONTINUOUS IMPROVEMENT

WILEY

FOREWORD

As I sit here at home in the summer of 2014 contemplating the next few years of for my business, my family, and my personal life, I realize that perhaps my children aged 12 and 9 will never actually learn to drive a car, unless they choose to do so for purely recreational purposes. The driverless car is now technically viable and commercial models may appear within the decade. The driverless car is truly a discontinuous or disruptive innovation. It will change the way we live and the next generation of adults will know a truly different lifestyle and society to the one I have grown up in. In a world of driverless cars, what is the difference between a family car, a rental car, and a taxi? Perhaps there is none? How will that disrupt existing businesses and existing lifestyles? What shifts in society will it enable?

Unlike the electric car, which uses an electric motor and lithium ion batteries, the driverless car is a truly disruptive and discontinuous innovation. The change to electric motors is on the other hand merely a continuous innovation. It doesn’t disrupt the market; it merely offers an alternative technology for an existing system and operating model. It does shift the market for energy supply and it shifts the demand on natural resources, encouraging lithium mining rather than oil drilling, but life for everyday citizens doesn’t change that much.

The technology industry tends to discard the value of continuous innovation—doing things better rather than differently or in a new and previously unavailable or unconsidered fashion. However, consider the world through the eyes of a 12-year-old. Children today assume that screens are touch sensitive and that they can interact with

a device through the screen. They do not remember a world before the iPhone or the iPad. They've grown up in a broadband connected world. A rotary dial telephone is alien to them as is the concept that telephones are connected to the wall through wires. Continuous innovations can be easy to adopt because they don't require a huge change in lifestyle or business model. People with mobile phones simply upgraded to the latest model of smartphones and started using the touch screens, but the combination of ubiquitous broadband wireless data and high-definition color touch screens, available as smart handheld devices, did provide tremendous opportunity for change.

Continuous innovations—making things better, easier, and cheaper—commoditization, and democratization are all around us every day. Discontinuous, disruptive innovations come along every few years but the pace of these disruptive changes is accelerating. Each generation of technology innovation seems to help accelerate the pace of the next generation of discontinuous, disruptive change. Meanwhile, the world population is growing and the level of education is improving. More brainpower the world over means more knowledge workers producing more new knowledge and faster and faster innovations.

For the leaders of today's businesses this pace of innovation presents a huge challenge: business models that were solidly profitable for decades or even centuries and being threatened and disrupted. Uber is disrupting the market for taxis, a business model that is 120 years old, but only 5 years from now, driverless cars will disrupt Uber. Large businesses survive for shorter and shorter periods of time. Who would have thought, 10 years ago, that Nokia would have lost the mobile phone market and all but ceased to exist? Resilience is the new challenge for the senior leadership of big businesses.

How do you create a resilient business? How do you survive and thrive in a world that is moving so quickly where continuous innovations threaten your products and services on a monthly basis and discontinuous innovations threaten your business model every 2–5 years? The modern business must be able to change frequently and rapidly. It must have a core capability to enable and manage change. A modern business must be capable of evolving to adapt to a changing external environment full of new innovations.

When threatened with declining markets and possible extinction, businesses need to be able to experiment with new products, new services, and new models of service delivery. In turn, they may want to set the pace and stay ahead by producing their own, mostly continuous, innovations in products, services, and service delivery models. Innovations can provide a competitive edge. They can make the difference between surviving and thriving or declining and failing completely.

When a business wants to innovate, it almost certainly requires IT. IT projects are born out of a desire for a business to innovate or quickly catch up with a competitive innovation. IT projects are about change, and the service delivery from IT can provide a competitive edge if innovations can be delivered rapidly, at low cost, and with predictable outcomes. Equally, businesses can’t always predict which ideas will work in the market and which won’t. Evolving to stay fit for purpose requires experimentation—like generating several mutations of a species and waiting to see which produces the better result. As a result, there is almost infinite demand for IT projects because they represent experiments and guesses. The more bets we can place and the faster we can place them, the more chance we have of surviving and thriving. A strong capability in IT has become a core part of a strong adaptive, evolutionary capability in a business. Strong, fast,

reliable, predictable IT services are now core to enabling resilience. More than ever, senior executives are pressurizing IT departments for more work and more services, delivered faster and with greater predictability and ideally at lower cost. When you don't know which options will work, you'd prefer to have lots of them at a low cost per option.

So, the new world of twenty-first-century business involves an ever faster pace of innovation and a greater need than ever to respond to a changing environment with new products, services, and service delivery models. Business must be capable of adapting quickly in order to remain fit for purpose. Resilience requires a strong ability to change. Change management is now a core business skill for survival in the twenty-first century!

The Kanban method was born out of the synthesis of two ideas to solve two different but related business problems. The first problem was tendency to manage IT projects in large batches and to commit too early to specifications when the requirements were still uncertain. In 2004, I introduced the concept of a virtual kanban system, with an IT department at Microsoft. The concept of kanban systems was adapted from Toyota's use of them in manufacturing industry. Kanban systems force deferred commitment, limiting the work in progress, preventing businesses from committing too early to things that are uncertain. Kanban systems force a discussion about what should be started now and whether we have enough information to start now versus what should wait until later and until more information is gathered or what should be discarded altogether. Kanban systems have a vital role to play in a world full of increasing pace of change and lots of uncertainty.

The second problem was a very human problem. People in IT departments were resistant to adopting new methods and processes. About a decade ago, I concluded that this resistance wasn't simply explained away as laziness or bad behavior; it was actually core to the human condition. The people were resisting adopting new methods and processes because they were wired to do so. So I asked myself, what would be easier to change, the design of the humans or the way we manage change and the introduction of new working practices? I concluded that we needed a new approach to change management: we needed an evolutionary approach to change.

In the English-speaking world, change management is dominated by the model developed by the McKinsey consulting firm. This model of prescribing a defined process or designing a new process to replace an old one, and then managing a transition from the old method to the new, has been around for over 80 years. It seemed to serve manufacturing industry and related physical goods industries such as distribution or retail rather well. Despite the ubiquitous nature of this model among large consulting firms working in the IT sector, I concluded that it was an obsolete model that wasn't compatible with the human condition. Trying to impose change on knowledge workers and creative people was simply a recipe for invoking passive–aggressive resistance. Instead, we needed a way to "start with what you do now" and evolve from there, and it had to be a way that engaged the people doing the work and made change and improvement an everyday concern for them. It had to self-motivate change from within, not some change imposed by change agents from the outside. The industrial engineering model of the twentieth century was out, and self-motivated, management driven improvement was in!

In 2007, these two ideas came together in a synthesis that we now call the Kanban method. Kanban systems and visual boards are key enablers of a culture of continuous improvement. It turns out that visualizing invisible work on what has become known as a kanban board and deferring commitment through use of a kanban system are catalysts of employee and manager-driven process improvement. Change driven from the shop floor and undertaken as part and parcel of the everyday work of the organization produces just the experimental, evolutionary change mechanism we need in order develop a core adaptive capability for business resilience. Meanwhile, the use of kanban systems improves delivery through shorter lead times and greater predictability. Kanban Change Leadership becomes a core strategy for resilience in twenty-first-century businesses.

I'm delighted that Klaus Leopold and Sigi Kaltenecker's book has been translated into English. Klaus and Sigi hail from Austria, and their work in change management has been influenced by a number of German-speaking theorists, such as Baecker, whose work is not widely known or available in the English language. Klaus and Sigi open our minds to a different slant on change management by synthesizing ideas from the German-speaking world. Change management texts in English are all too dominated by the twentieth-century model popularized by McKinsey. So it is fitting that a book about Kanban, a new approach to change in the twenty-first century, should feature the diversity of thought in the field from experts not well known to English-speaking readers. Part 2 of this book offers you insights into the human condition and a deeper understanding of why a new approach to change is needed in the twenty-first century. It will help you understand how people take change personally and how to adapt your approach rather than push against the fundamental

psychology and sociology of each individual. It will help you understand that the need for change is driven by change in the environment and to comprehend your business as a system that responds to that environment. This book will explain to you how and why Kanban offers us a new approach to change in twenty-first-century businesses using knowledge workers to do creative work and why Kanban Change Leadership can help even more traditional twentieth-century physical goods businesses by providing them with IT departments more agile and adept to deliver improvement and new capabilities faster and more reliably than before. For those of you who take the time to read this book thoroughly and internalize its contents, I have no doubt that it will make you more effective coaches and leaders of change using Kanban. Your business will gain more value from a deeper more effective Kanban implementation, and both you and your business should be better equipped to survive and thrive in this rapidly evolving world of work in the twenty-first century.

David J. Anderson
Seattle, July 2014

PREFACE

We are pleased to provide the English edition of our book on *Kanban Change Leadership*. As the kind appraisals show, this edition builds on encouraging resonance both from readers and from clients working on their specific culture of continuous improvement.

From both groups, we have learned a lot since the first German edition of our book had been published in 2012. In this regard, the current version is also a product of continuous improvement. For both the second edition in German and the English edition, we intensively reviewed the text, adapted new experiences, dropped some ideas, and changed others. The third part of our book, focusing on the practical implementation of Kanban, has probably undergone the most radical changes. Thriving on various lessons learned with many clients, we can now provide a simple four-phase model with clear goals and tried and tested tools.

As always, coming up with a new version does not necessarily mean to achieve perfection. The process of reviewing and rewriting our initial insights amplified a few question marks too. There are some limitations we were not able to overcome such as the emphasis of Kanban on team level, the rather weak focus on whole value streams, or the missing examples of portfolio or change management Kanban.

To effectively overcome these limitations, we would have to write another book—a book with a fresh approach to the broad field of Kanban, change and leadership, with different case studies, cocreating stories together with line managers and other key players, going even beyond the

exclusive IT space, exploring the benefits of evolutionary change management in other business areas such as HR, finance, or graphic design. Unfortunately, we didn't find the time yet to realize this ambitious initiative—except for some current posts and articles that indicate what we have in mind for the future [1–5].

However, for the meantime, we wish you an inspiring read of this book—and a pleasant journey implementing some of the outlined change concepts and leadership tools. As always, we are pleased to receive all kinds of feedback.

Klaus Leopold and Sigi Kaltenecker
Vienna, July 2014

PART 1
KANBAN

1
INTRODUCTION

> *“What should I do?” the Zen apprentice asks his master while standing in front of a tall ladder.*
>
> *“You can climb the ladder, rung by rung, to the top.”*
>
> *“How many rungs does the ladder have?” asks the apprentice.*
>
> *“Eighteen,” the Zen master replies.*
>
> *“And what should I do when I’m at the top?” the pupil wants to know as he places his foot on the first rung.*
>
> *“You can stand there,” the master explains in a friendly manner, “you can enjoy the view, you can climb back down, or you can continue to climb without any rungs.”*

This book has been written to give you the courage to climb further. It tells of ladders tall and short, of passionate climbers and spectacular climbs. A common feature of all climbs is that they begin with the first rung and then proceed step-by-step. Each one of these steps represents a small alteration through which you can gain new experience and improve.

We believe that this Zen story is a fitting introduction to a book about Kanban—after all Kanban is also about step-by-step change. Clear structures provide a gradual process of improvement that is relatively easy to establish. Many Kanban practices are like simple ladders. It is due to this that Kanban is quickly becoming a sensation, enjoying widespread popularity in the world of software development.

“Kanban rocks” is how one of our customers summed it up. He, like many other Kanban fans, has reason to be thrilled. Kanban:

- Follows **simple rules**
- Is built and runs on **easy-to-master mechanics**
- Can be implemented with **relatively little effort**
- Can lead to **remarkable improvement in very little time**

Sounds good, doesn’t it? However, we have not written this book just for the growing Kanban fan base. We will emphasize critical aspects and the several traps into which users repeatedly fall and present some practical guidelines for Kanban change management to help avoid these traps. In order to do so, we will investigate various starting points, identify relevant system and environmental factors, and describe the personal challenges involved in a process of continuous improvement. Ultimately, Kanban is always about the whole system. Kanban:

- Often starts with a small team but **always has its eye on the organization as a whole**
- Concentrates on technical development but is simultaneously **always aligned with economic value creation**
- Aims to improve software development processes but **requires everyone involved in these processes to be willing to change**
- Is quick to apply but **requires mindfulness in order to improve continuously**

It is relatively easy to start a Kanban initiative at your place of work. However, it is highly challenging to implement the

initiative in such a way that you create a culture of continual improvement. Practice shows that a *quick-fix* approach to Kanban at the workplace will rarely deliver long-lasting change—professional change management is required to achieve a sustainable environment.

1.1 WHAT WE CARE ABOUT

Kanban Change Leadership will show you all that is necessary to properly understand change management with Kanban and be able to apply it optimally. In order to achieve this, we provide you with many maps, tools, and, most importantly, various scenarios. We draw on our own experience as Kanban coaches and change experts to enable you to read real case studies and then apply what you have learned systemically. In other words, we attempt to smuggle valuable knowledge about organizations, cultures, strategies, and emotions from systems theory into the book without losing sight of the real world. What good is the best theory in the world if you're not capable of applying it appropriately?

On the subject of appropriate action, in a study carried out by Kimberley-Clark, people were asked what they would take with them on a desert island. More than 50% of the 1000 people asked said it would be very important for them to take toilet paper. What can we conclude from this? As the German economist Günther Ortmann put it, "people think practically" [1].

Practical thinking is a requisite for twenty-first-century change management. In this book, thinking is based on four fundamental principles as stipulated by David J. Anderson [2]:

1. **Kanban begins where a system is already in place**. No big change, rigorous training or process

transformation is required. You have already begun climbing the Zen ladder simply by bringing about awareness of your current work processes.

2. **Kanban respects the current state**. Neither the current processes nor the existing functions are called into question. In this context, to respect is to assign meaning to that which is already there and subsequently, together with all other value-creation partners, build on this meaning.
3. **Kanban seeks incremental, evolutionary changes**. It's all about proceeding step-by-step—not in a single, massive leap—and agreement among all essentially involved in this process of change. In other words, Kanban requires that all stakeholders in a given value-creation process have a shared understanding of the work and improvement, regardless of whether this concerns the core team, clients, suppliers, owners, or senior management.
4. **Kanban requires leadership at all levels of the organization**. In order to create a culture of continuous improvement, all involved should contribute their ideas for improvement and be able to implement them. The operationally active employees frequently best know what needs to be improved in their daily work environment—let us support them in equalizing their viewpoint with that of management and taking the next step toward improvement together.

We believe that beyond these principles a profound fundamental understanding of how a culture can create continuous improvement is necessary. Our opinion is that the following principles are relevant:

1. **Kanban is an initiative for change**. We are concerned with systemic improvement, where collaboration rather

than individual performance is important. Value creation and quality of work increase due to better structures and clearer rules of play between all cooperating partners.

2. **Kanban is concerned with the overall working environment**. The improvement of this environment requires critical reflection on each individual's fundamental mindset, expressed in terms of performance and cooperation. This in turn requires the willingness to continually work on one's self-development.
3. **Kanban revolves around people and not around mechanisms**. It is people who drive a sustainable process of improvement, and they achieve this very visibly through emotions: joy, courage, enthusiasm, but also anger, disappointment, and sadness. We strongly recommend that these emotions be respected and used since, ultimately, they can very much be seen as the key drivers of change.
4. **Kanban is a team sport**. You need allies to create a culture of continual improvement. You need partners who will create and sustain new value with you. You need the support of your management because you want to expose systemic problems and resolve them. And you must have your stakeholders on board because you cannot create the added value you want without their active cooperation.

These principles emphasize the complexity of the change you can effect with Kanban. It requires an approach to match this complexity, and this is the reason why simply diving into Kanban is not generally recommended—you would risk achieving short-term change at the cost of the long-term potential for improvement. In the context of the

introductory story, you would climb down again after reaching the tenth rung if at all and never get to the point where you climb further, without rungs.

“It shows who is truly committed,” a colleague once said in a discussion about this limitless climbing. Be sure of your decision before making such a commitment. Use our guidelines to define your point of departure before embarking on your Kanban adventure. Try to identify the corporate culture you belong to. And assemble a training program tailored to your personal work situation from the exercises we provide.

1.2 WHO SHOULD READ THIS BOOK

There are three target groups we particularly want to reach with *Kanban Change Leadership*:

1. **Those who are fundamentally interested in Kanban**: “Hey, this is cool! What is it exactly? How does Kaizen work?”
2. **Those involved in change management in IT**: “What approaches are there? What are the unique features of a process of continual improvement? What can I personally adopt from Kanban change management?”
3. **Those considering a Kanban initiative or already underway**: “What do I have to look out for? How do others do it? What could I also try out?”

The three parts of this book correspond to these three target groups.

In the first part, we focus on the foundations of Kanban. What are the basic assumptions? How can you visualize the current situation? What is the purpose of work-in-progress (WIP) limits? What are service classes? How can you apply

metrics? And much more. Part 1 establishes the technical basis of Kanban and indicates the mechanisms required.

In the second part, we explain the context of Kanban change management. What are the options for change? What can they set in motion? What are the consequences for a business? What particular opportunities does Kanban-driven change provide? Besides mechanistic formulas and processes for automatic improvement, in Part 2, we share with you a contemporary understanding of the professional process of change. Despite the fact that everyone talks about change, there is still plenty left to say on the matter.

In the third part, we relate the technical system of Kanban with the social system of business and show you, using selected case studies, how to build a culture of continual improvement. How do you start the process? How do you define your point of departure? How do you create a Kanban system tailored to your field of work? What should you look out for when using it? Part 3 provides you with a compendium of experience showing how Kanban is applied in various situations.

“I don’t know whether it will be better when it’s different,” the German philosopher Lichtenberg once said. “But that it must be different to be better, that much I know.” In this spirit, we wish you a most inspiring read and good luck.

2
KANBAN PRINCIPLES AND CORE PRACTICES

Do you know the film *Modern Times* by Charlie Chaplin? There's a famous scene where the chairman of the corporation suddenly orders the speed of the conveyor belts to be increased without warning, "Conveyor belt five is running too slowly. Double the speed!" Chaplin struggles as best as he can, trying to tighten all the screws as the products speed past. However, he always ends up falling behind—at this speed, it only takes a short sneeze for him to repeatedly get out of sync. Consequently, Chaplin is forever getting in the way of the next conveyor belt worker, who is hammering, disrupting the entire process. Colleagues and supervisors drag him back to his allotted position, but it's no use—he simply can't keep pace. And then it happens: in a wild frenzy of tightening screws, nobody can stop him any longer, and he is pulled onto the conveyor belt and swallowed up by the machine driving it. He elegantly glides between the gigantic cogs and is spat out by the machine on the return run. His accident has left its mark: he suddenly wants to tighten anything remotely resembling a screw, including his colleague's nipples and the buttons on a secretary's skirt.

Released in 1936, Chaplin's film was a harsh critique of the prevailing assembly line conditions. The following appears in the opening credits:

> Modern Times: a story of industry, of individual enterprise—humanity crusading in the pursuit of happiness.

How would Chaplin stage this film today? For most of us, today's conveyor belts are desks and computers; we have better salaries now and the workers in the 1930s could only dream of the social benefits we enjoy. But in the present day—shaped as it is by knowledge work—there's always someone who still shouts, "Double the speed!" It seems that history is repeating itself. Today, knowledge workers also have to strive for good working conditions. It is no longer about the basic demands for a humane working environment such as light, breaks, and safety, but rather about the issue of time and the right to not be required to be available for the company around the clock. In a nutshell, it's about the ability to complete the work at hand within the allotted time period. Of course, there is also the flip side of the coin: global competition is often the source of huge amounts of pressure, causing organizations to reduce the two factors—quality and speed—to a single issue. Is it even possible to bring together this issue with the demands of a socially acceptable working environment? Can one be more relaxed at work while being more productive? We say yes, it is doable when you create adaptive systems in which people are able to find their own way to improvement.

2.1 SEEKING PRODUCTIVITY

Industrial assembly is all about the economic principle of optimizing the process between the amount applied (input) and the amount yielded (output). "Act in such a way that the desired accomplishments are achieved with the minimum means (the minimum principle), or, rearranged, that the accomplishments with a given amount of means are as high as possible (the maximum principle)," states Zäpfel [1]. One is thus seeking the highest productivity possible.

The idea of optimization is often so incorrectly interpreted that it suddenly states, “Use as little as possible to achieve as much as possible.” Ironically, it is precisely with this perspective that we are commonly confronted in the practice of knowledge work. With unaltered processes, structures, and resources, as much input—that is, tasks or jobs—as possible is crammed into the system in the hope that as much valuable output as possible will emerge at the end.

Peter F. Drucker, one of the pioneers of modern management education, anticipated this problem 20 years ago. In his 1991 article “The New Productivity Challenge,” he demonstrated how productivity in “making and moving things” has constantly increased since the onset of the industrial revolution and how this has developed and continued to nurture the well-being of (above all) Western society. Nowadays, Drucker said, productivity continues to increase steadily, but the great revolutions in production, mining, construction, and transport have already happened. He explained that the workforce has shifted from the classical areas of production into the sectors of knowledge work and services. Drucker therefore asserted right at the beginning of his article [2]:

> The single greatest challenge facing managers in the developed countries of the world is to raise the productivity of knowledge and service workers. This challenge, which will dominate the management agenda for the next several decades, will ultimately determine the competitive performance of companies. Even more important, it will determine the very fabric of society and the quality of life in every industrialized nation.

Today, we know just how right Drucker was. Knowledge-intensive sectors labor endlessly to find the button to press or the screws to tighten in order to increase the

productivity of their knowledge workers. Interestingly, there are very obvious parallels between questions of optimization in industrial production and knowledge work—this will be seen in Kanban's individual steps. Equally, however, there are very sharp contrasts between the two sectors.

But how does one define knowledge work?

KNOWLEDGE WORK

German systems theorist Helmut Willke [3] describes knowledge work as follows:

> Nearly all human activities are based on knowledge in the sense that experience and knowledge play a part. Practically all forms of skilled work, above all the classical professions (doctor, lawyer, teacher, academic), are knowledge-based forms of work, based on specialized expertise that these professionals must acquire through extensive processes of education and training.
>
> The concept *knowledge work* means something else. It describes practices (communication, transaction, interaction) in which the required knowledge is at no point in life acquired simply through experience, initiation, teaching, skill training or professionalization—nor is it implemented in this way. It is much more the case that knowledge work in this sense requires that the relevant knowledge
>
> - Be continually revised;
> - Be permanently viewed as capable of improvement;
> - Be observed not principally as truth but rather as a resource, and
> - Be indivisibly associated with ignorance, meaning that certain risks are unavoidably connected with knowledge work [3].

Manual work thus differs from knowledge work since ignorance—and its necessary reflection in knowledge work

—constitutes a dimension that is hard to influence. The underlying problems, that is, the exercises and tasks, are also significantly more multifaceted in sectors such as software development than they are in the assembly of—in the literal sense of the word—*tangible* products. In these sectors, it's much more frequently about inventing something completely new or refining something that already exists rather than simply reproducing something already established. Simply put, *thinking* and *problem solving* can't be easily standardized.

However, just as there is a big difference, there is also great similarity. Regardless of whether one is developing software or constructing a car, the person carrying out the task should in both cases have the ability to complete certain stages before beginning new ones, irrespective of the process as a whole.

We only need to look at how we carry out practical work in our daily life to see this. When we build shelves, for example, it is clear to us that we should perform the various actions sequentially. Only a very few of us are able to use a hammer and a screwdriver simultaneously. We complete the steps one after the other and concentrate on a task at a time.

Strangely, this logical perspective with regard to the completion of tasks disappears when it comes to knowledge work, where it is often assumed that many tasks can be simultaneously carried out by the same people. More so, tasks that have nothing to do with the actual core goal (e.g., excessive administration) drift into the "production area" of knowledge work. In contrast to production companies, merely pumping more money or technology into a process doesn't result in a significant increase in productivity either. In knowledge work, the only possibility is to work "smarter"—as was also Peter F. Drucker's

understanding—meaning that one focuses only on that which is absolutely essential [2]. For Drucker, the foundations for a smart work ethic lay in the answer to the questions: What is the task? What are we trying to achieve? Why do we need to do it at all? The greatest increase in productivity in knowledge work is achieved when we define the tasks and goals clearly and only do the things that are absolutely necessary.

PRACTICAL KANBAN

The seminar in Zürich with David J. Anderson had just begun. Everyone was there to learn how kanban works, and of course, we had loads of case studies up our sleeve—for practical experience. All of a sudden the fire alarm rang. It wasn't a drill; somewhere in the building, there was a real fire. So the whole group followed the escape route out and into the neighboring café. After a brief moment of panic due to the onslaught of a hoard of homeless seminar attendees, the baristas did the one logical thing. "Coffee?," one of the employees called out into the crowd, and a small group of coffee addicts formed from the disorganized rabble. Those wanting food were organized into a second queue, and whoever didn't want anything just sat down. Logical, simple, efficient, and pretty smart. Why did the baristas react so quickly and efficiently? Well, because they simply knew the bottleneck in their process—quite obviously the coffee machine. Using this knowledge, they were able to adapt their modus operandi as quick as a flash. Were it not the fire, we couldn't have hoped for a better introduction to the seminar.

2.2 KANBAN AND KANBAN

A further curiosity of the application of knowledge work is that an individual is often seen by many as a factor that needs to be optimized. Organizations therefore initiate expensive further education programs and invest heavily in keeping the knowledge level of their employees as up to date as possible. Fundamentally, this is to be praised, but it disregards one thing: even when an employee knows everything there is to know in his/her field, that doesn't necessarily make him/her or his/her team any quicker. Despite all, one can only accomplish a certain amount of work within a given period of time. If you only ever want to optimize an individual, you're failing to take into account something William Edwards Deming put very succinctly [4]: 94% of the performance of an organization is dependent upon the conditions of the system, and only 6% is dependent upon the employees. According to Deming, every significant improvement in quality and productivity is a result of measures that deal with the system. Just like Drucker, Deming says that employees should be helped to work smarter rather than harder.

The most renowned example of permanent change and improvement to a system is the Toyota Production System (TPS). The reason that Taiichi Ohno and Kiichiro Toyoda worked so intensely on the improvement of their production system is that theirs was a similar situation to the one seen today in knowledge work, defined as it is by one-off production. In the case of Ohno and Toyoda, the market demanded many different car models in small quantities. Diversity on this scale was no longer achievable with the production model that Henry Ford had perfected. Ford had achieved cost efficiency with his radical division of labor, however without the possibility to adapt the best-selling "Tin Lizzie"—the Ford Model T that was revolutionary for its time—for special requests. Ohno and Toyoda realized that the problem of variety production

could not be solved by simply burdening employees with an even stricter, more monotonous division of labor. They further wanted to deliver the best quality at low cost and within the shortest possible processing time.

So they looked at the issue from a new angle, concentrating on the movement of the product through the entire production process. They satisfied the constant demand for an increase in productivity with the principle that only that which is really necessary should be done, precisely at the point in time it is needed, and in the required quantity (just in time (JIT)). This also concerns the avoidance of waste. Toyota in fact defined three different types of waste [5]:

1. Tasks that use up resources without supplying any additional value (*Muda*)
2. Irregularities (or too high variability) in the production process (*Mura*)
3. Overload (*Muri*)

The goal of built-in quality is achieved via *Jidoka*, the instant identification of errors and problems. Production is stopped instantly the moment an error occurs, because experience shows that errors that aren't corrected go on to appear in other areas as well. The core elements of the TPS production-process control are **kanban**—*kan* is Japanese for "visual" and *ban* means "card." These *visual cards* in downstream production stages indicate that a task has been completed and a replenishment of assembly components or material is required in order to be able to continue working. This pull system reduces inventories to a minimum. Simultaneously, problems in the production process become immediately apparent when the assembled products suddenly pile up in the upstream stages of production. The trick behind this is to limit the number of

kanban. You can only feed as much work into the system as the available visual card permit.

In his search for improvement possibilities for software development, David J. Anderson, the pioneer of Kanban for IT, indirectly came across the TPS. During his first deliberations, he started off primarily with the concept of the “drum buffer ropes” in Eliyahu M. Goldratt’s *theory of constraints*, which, put simply, ascertains that every system has specific bottlenecks that limit the possibilities for value creation. This is because the bottleneck determines the rate of flow (this will be discussed at greater length in Chapters 4 and 7). The thinkers at Toyota had already realized this decades ago and believed the simplest way to optimize the flow was to let the bottleneck itself determine how much it could currently process. Kanban in IT brings together the best from the most varied intellectual approaches. However, this will be initially paired with and developed along practical experience such as the approaches of evolutionary change, making rules explicit, or the classes of service. We will look at these more closely in subsequent chapters. Kanban in IT is therefore not the transfer of an individual concept from industrial assembly to knowledge work but rather a hybrid of concepts. It is easy to explain why the term kanban has become so established: it reflects the most important core points, is intuitive, and is easily pronounced by people the world over.

TERMS USED IN THIS BOOK

kanban: A kanban is literally a tag that not only enables but also ensures JIT production. Seen as a totality, it is a system of time management for production companies that helps decide what, when, and how much is to be produced. In knowledge work, we use a virtual kanban system as a means to represent work items.

Kanban: The evolutionary change management method developed by David J. Anderson. It supports change in an evolutionary sense by successively optimizing existing processes. We use a capital "K" when referring to the Kanban method in order to distinguish it from the production kanban and the virtual kanban system.

What do we mean by system?

System in ancient Greek means "body, organized whole, that which is connected." In contemporary sociology, it describes a meaningful unity of elements that differentiates itself from the surrounding environment. According to Niklas Luhmann, who is considered the father of sociological systems theory, "a system is an organised complexity" [6].

Social systems are complex bodies produced and reproduced via communication. Society and all its organizations and interactions are "communication network(s)" [7]. This makes them living beings but also incalculable.

Psychological systems operate in the form of processes of self-awareness that can be described as a meaningful unity of perception, thought, feeling, and desire. They are inseparably connected with social systems although they are not a part of them.

Technical systems unite elements whose interaction likewise forms a unity. This interaction-based unity however is not defined in terms of meaning, but rather in terms of function. It is highly structured and mathematically predictable just like a computer or operational system.

Kanban systems (capital “K”) describe the complex interrelation between social, psychological, and technical elements geared for continual improvement. Kaizen—the Japanese term for “change for the better”—demands a goal-oriented bond between the organization, the employees, and the work processes.

By **technical kanban system**, in the narrow sense, we mean the form of visualization of the work process (e.g., via a board) and the individual instruments (e.g., tickets, meetings) that help provide insights into your own processes. The visualization simultaneously indicates the specific individual in the particular value-creation chain we wish to optimize. The most important characteristic of a technical kanban system is that it quantitatively limits the work in progress.

Kanban team, team, or Kanban group refers to all those who work with a Kanban system and actively apply Kanban practices. A group of this nature does not have a fixed size but rather changes as the application of Kanban progresses. It can increase or decrease in size and can consist of people from the most varied areas, departments, or teams of an organization.

What do we mean by “stakeholder?”

In German parlance, the term “stakeholder” is mostly used to denote an “interest group.” In a corporate context, it refers to all who have a certain input or concern in an organization. This extends the corporate