

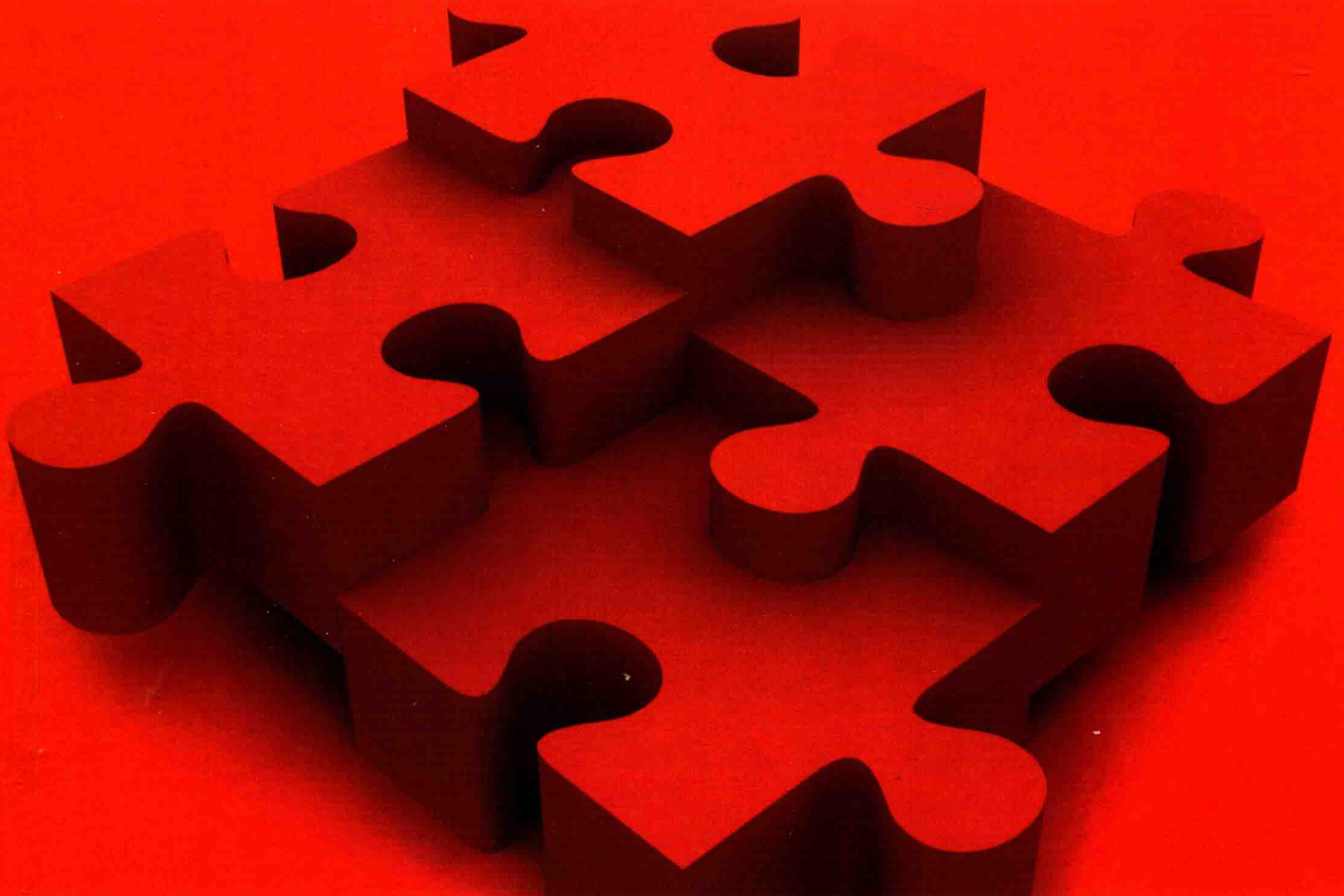
Ian Fraser Glenday • Rick Sather

With a Foreword by **Daniel T. Jones**

Lean RFS

(Repetitive Flexible Supply)

PUTTING THE PIECES TOGETHER



■■■■■■■■■■
REPETITIVE

Flexible

SUPPLY



CRC Press

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A PRODUCTIVITY PRESS BOOK

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Lean RFS

(Repetitive Flexible Supply)

PUTTING THE PIECES TOGETHER

Foreword

Daniel T. Jones

This book is the missing link in many Lean journeys. So often, people conclude that Lean, single-piece flow will not work in their situation—whether it is making big batches of many different products through a common process, or dealing with patients with many different conditions in a hospital, or processing orders or claims requiring very different amounts of time in an office. This book shows how to begin to create flow even in these circumstances. The key insight is that a small fraction of products, patient conditions, or types of claims account for the majority of the work. Separating these from the rest, at least initially, makes it possible to create flow, to standardize and improve the way this work is done and managed. Not only will this create noticeable results quickly, but it also begins to free up time to go on to tackle the rest.

This book is also a great introduction to the power of learning by doing, which lies at the heart of Lean. Acting our way to a new way of thinking and working together is the way to challenge old mind-sets and habits. Do the *Glenday Sieve* analysis on your own work and you will be surprised how this changes the way you think. It provokes new questions that lead in quite counter-intuitive directions and takes us on a very different path down our own Lean journey. Seeing a way through the chaos and complexity of most work situations with our colleagues is the essential first step on this journey. This cannot be done for you by experts or consultants—it is a path everyone must take for himself or herself. This book will show you how.

What is also unique about this book is that it clearly spells out the theory and practice originally published in *Breaking Through to Flow*,* together with stories from Kimberly-Clark's experience in using them over many years with great success. It weaves together the experiences with the method and shows step-by-step how it builds from astonishing transformations on the shop floor to a management system higher up the organization. Kimberly-Clark and others have discovered how this thinking helps at every level, for instance in focusing actions on the vital few objectives or performance gaps in strategy formulation.

* *Breaking Through to Flow* by Ian Glenday, Lean Enterprise Academy, UK, 2005.

These stories give the reader a real feel of how this learning-by-doing journey led to “aha!” moments for those involved. Experienced Lean practitioners will recognize that, step-by-step, this method establishes the stability necessary to reap the benefits of the Toyota Production System in very different environments than automobile production. Indeed, it mirrors Toyota’s own experiences in laying the groundwork for using TPS in batch-production environments. The steps begin by separating high- from low-volume work and establishing a pattern or rhythm to the work to expose deviations and establish stability, and they end up with the ability to align the work with both the volume and mix of demand.

I first met the coauthor of this book, Ian Glenday, while writing *Lean Thinking*.^{*} He was working in a company making various food products in the UK. I was just getting involved in pioneering Lean supply chains with the UK supermarket chain Tesco. It puzzled me why food manufacturers glazed over when you talked about one-piece flow and synchronizing production with demand. Here was the answer.

It took several years to find willing guinea pigs, like Rick Sather (coauthor of this book) at Kimberly-Clark, to give it a go. In almost every case, Ian opened closed minds to see how this could be done, while I injected these ideas into the Efficient Consumer Response (ECR) movement in Europe. This was the missing piece of the puzzle in Leaning the fast-moving consumer goods (FMCG) industry, which is now well down the path to demand-driven, rapid-replenishment production and supply chains. Ian and I then found places to experiment with this method in all kinds of organizations, from law courts to hospitals. In each case, it produced the same initial amazement from those involved, which in turn unleashed the enthusiasm to embark on this journey. We planted many seeds that are now growing on their own accord across the world.

Ian Glenday started developing this approach in pharmaceutical and food production. He later met Yoshiki Iwata, one of the founders of the Shingijutsu Consulting Group, who at Toyota Gosei was one of the first Toyota Group suppliers to be taught the Toyota Production System by Taiichi Ohno and his team. He showed Ian the steps of leveling that Toyota used to get to one-piece-flow and encouraged Ian to develop his ideas further. This led in turn to the methodology and results described in this book.

^{*} James P. Womack and Daniel T. Jones, *Lean Thinking*, Simon & Schuster, 1996.

Introduction: Lean Repetitive *flexible* Supply—Putting the Pieces Together

Repetitive *and* flexible—at the same time? Surely, that’s impossible.

Using proven examples and quantifiable evidence, this book sets out to illustrate that Repetitive *flexible* Supply (RfS) can be achieved; moreover, its implementation within your company will help you reach a new level of improved performance in manufacturing and across the whole of the supply chain.

Throughout this book, Repetitive *flexible* Supply (RfS) is written with the *flexible* in italics to create an image of the principle that one can be both repetitive and *flexible* at the same time.

What Is Lean Repetitive *flexible* Supply?

The analogy we are using throughout this book for Lean/RfS is that of a jigsaw puzzle—hence our subtitle, “Putting the Pieces Together.”

All of us have worked on a jigsaw puzzle at some time in our lives. Our jigsaw analogy works for us on two levels. It serves as an image of the planning process currently used by most companies; that is, of batch logic based on economically feasible order quantities. It’s like every time the plan is calculated, all the pieces of the jigsaw—i.e., all the different products the company makes—are put back in the box, shaken up, and then tipped out. The planners try to put all the pieces together as best they can. The result is that all the pieces are planned every time, and—as the pieces can be assembled in many ways—one gets a different plan every time. This plan is often then changed, which can result in corporate firefighting. We find this approach endemic in most of the companies we have worked with.

When someone sets out to solve a real jigsaw puzzle, the first thing they do is find the corner pieces. Then they put in the straight edges to give shape and structure to the puzzle, thus making it easier to position the center pieces.

What would it be like if, in our planning processes, we were able to leave the corners and straight pieces in place each time we made the plan? It would create a stable, repeating structure (the repetitive products) that would make planning the center pieces (the flexible products) much easier. The manufacturer would make the key products in a repetitive pattern of the same quantities on the same day every week. This would stop a lot of unnecessary, time consuming, and costly firefighting while providing a better foundation for sustainable continuous improvement.

This is one of the key objectives of Lean/RfS—to *create a repetitive, fixed, stable plan*. Yet to many people, it seems ridiculous, impossible, and sometimes counterintuitive.

The second reason for using a jigsaw puzzle as an analogy is concerned with what we observe in most companies when they say they are applying “Lean.” This usually consists of Lean tools and techniques, for example SMED, 5S, TPM, and kanbans, to name a few. When the question, “What is the main objective of Lean?” is put to people in these companies, invariably the response is, “To eliminate waste.” To us, these tools and techniques are equivalent to the center pieces of a jigsaw puzzle. More importantly, however, they do not provide the outline and structure—the equivalents of the corners and straight edge pieces of a jigsaw puzzle.

The foundation of Lean is flow logic and leveled production, yet it seems that few people or companies focus on these vital aspects of Lean. Why? In our experience, it’s because these aspects are not really understood. But it is these very aspects of Lean that provide the stability required to achieve *sustainable continuous improvement*. We have found that eliminating waste is an *outcome* of implementing flow logic and leveled production. It is a natural result rather than the prime focus of attention. Like any jigsaw, one should start with the corner pieces followed by the straight edges—flow logic and leveled production—and only then put in the center pieces. These are the tools and techniques most people associate with “doing Lean.”

In many organizations, Lean/RfS has provided a breakthrough in the company. Firstly, it removes much of the firefighting that is endemic in most companies. As a result, the organization gains a much-improved performance on parameters of efficiency, quality, and waste while at the same time acquiring lower inventories and higher customer service.

Secondly, Lean/RfS can change people’s mindsets about operation strategies within companies. It can encourage greater teamwork and engagement of people, together with making more time available to work on improvements rather than constantly firefighting. Lean/RfS really does change people’s behavior, and how they work with one another, for the better.

However, there have also been two common issues within companies after the organization has implemented Lean/RfS.

- Firstly, people cannot see clearly how they can use the increased available time they now have, and what they can do to further improve flow—and hence performance—across the total supply chain.
- Secondly, people cannot see how they can go on to apply Lean/RfS principles across every function to improve all business processes in order to effect a Lean transformation across the whole organization.

There is a risk that, having implemented Lean/RfS into the manufacturing process, a company will describe itself as “having done Lean/RfS.” Unfortunately, Lean/RfS is *not* seen as the stable foundation on which far greater continuous improvement activities can be built in every area of the business—improving the quality and effectiveness of the service that each function delivers while reducing costs.

The objective is to have every function in the organization achieve a step change in performance—and they can, with Lean/RfS. These improvements need to be aligned, which is where policy deployment comes in, to ensure that the ultimate objectives are achieved: simultaneous improvements in market share, profit margins, employee motivation, and customer satisfaction. This is a tall order, but it is one that we will demonstrate can be done. Stopping corporate firefighting by moving from batch to flow logic in manufacturing is just the first step.

Kimberly-Clark (KC) has been working with Lean/RfS since 2005 and has witnessed some great results. They have also witnessed the issues we’ve already identified. To obtain the maximum gain possible, KC recognized the need to resolve these issues before they could integrate Lean/RfS into the whole of their business and total supply chain. The goal was to create a stable foundation for sustainable continuous improvement and enhanced business performance. This meant combining Lean/RfS with other improvement techniques and principles. The key aspects of this initiative were policy deployment and Lean leadership, and KC used different Lean experts in these areas to help them. KC has greatly benefited from applying Lean/RfS and integrating it into its overall business improvement process.

Ian Glenday (a coauthor of this book alongside Rick Sather) has continued to assist KC. He has also worked with many other organizations—in particular global branded FMCG (fast moving consumer goods) companies—in implementing Lean/RfS into their businesses. He found in these companies the same types of issues discovered by KC. This workbook is about how to apply and integrate Lean/RfS into large organizations so that it becomes part of the way the company does business, rather than an initiative, pilot, or flavor of the month in manufacturing. So, after the initial Lean/RfS implementation, when the firefighting has been greatly reduced and people find they really do have more time, it will help them achieve a companywide Lean transformation.

This workbook is *not* about the Lean/RfS journey at Kimberly-Clark; however, it does include many examples from their experience as well as examples from other

companies that have implemented Lean/RfS. The objective of this workbook is to help people understand how Lean/RfS can become the foundation for achieving sustainable continuous improvement—to discover how they can use the *stability*, *repetitiveness*, and *structure* it creates as the basis for a total Lean transformation.

Ian Glenday and Rick Sather

December 2012

About the Authors

Ian Glenday started his Lean journey as a microbiologist running a plant producing enzymes from deep-culture fermentation of bacteria. It was here that Ian first began developing R/S concepts and principles for application in process industries.

After taking time out to gain an MBA from Bradford Business School in the UK, Ian joined the manufacturer Reckitt & Colman, where he led an MRPII project to Class A status in the company's pharmaceutical division. This experience offered Ian a valuable lesson in understanding why applying batch logic in MRP can cause problems.

Ian then moved to Reckitt & Colman's household and toiletries division, where he initiated and helped implement a pan-European supply chain strategy based on the Lean concept of "every product every cycle," before joining Colman's of Norwich as head of policy deployment, responsible for applying Lean/R/S thinking across the entire company.

Ian currently divides his time between working with Professor Dan Jones at the Lean Enterprise Academy, UK, where he is a senior fellow, and helping businesses around the world make their own Lean transformations through his company Repetitive *flexible* Supply Ltd.

Rick Sather is vice president, customer supply chain, for Kimberly-Clark Corporation's North America Consumer Products Division. In this role, he is responsible for service and efficient product flow from the end of manufacturing through the customer's retail shelf.

Originally from Wisconsin, Rick received a BS degree in industrial technology from the University of Wisconsin-Stout in 1985, and for the past twenty-seven years has worked in a wide range of supply chain roles. Rick's Lean journey began in 2005 when he first connected with Ian and began implementing Lean/R/S at Kimberly-Clark. Learning and applying Lean/R/S in direct-line roles has enabled Rick to establish a problem-solving culture focused on delivering exceptional outcomes for people, customers, and shareholders alike.

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Chapter 1

Twenty-Five Years at Kimberly-Clark

Does This Sound Familiar?

My entire working career has been at Kimberly-Clark (KC). The company manufactures paper-based products such as tissues, toilet paper, and diapers with famous brand names like Kleenex®, Scott®, Andrex®, and Huggies®.

Throughout this time, I have held many roles in manufacturing, planning, and the supply chain. My current position is vice president, Customer Supply Chain North America. One of my early jobs at Kimberly-Clark, back in the mid 1980s, was production scheduler for Kleenex facial tissue. During my first week of training, the current scheduler told me that the first task to do each day was to check what had been produced the day before.

Very often, this would be a quantity that was different from what had been planned. As a result, he then changed the schedule for that particular day. It seemed very odd to me that this was how scheduling was done. I can remember the feeling I experienced each day knowing that the production people would not be happy about yet another plan change. This was my first experience of operating in a working world of short-term plan changes and firefighting. It was an experience that became the norm.

Of course, we tried to minimize the amount of plan changes, but these only seemed to scratch at the surface. A few months later, JIT (just in time) became all the rage, and we were being challenged to apply JIT techniques. I read the books, and they seemed logical—but there was no way that JIT was going to work in our environment. And it didn't. There were simply too many plan changes and too much short-term firefighting going on. It is laughable to think back, because JIT actually made things *worse*. We tried to bring materials “just in time” for production, but now, not only were we changing the schedule to react

to issues with sales and production, we were also having to change the schedule due to shortages in materials.

Over the years, we pursued many other improvement initiatives besides JIT at KC, e.g., employee-involvement and quality-circle improvement programs. Both seemed like great ideas, but somehow they didn't quite work out as the books and experts said they should. "Just in time" became "just in case." Better to hold a bit more inventory than risk the stock outs that tended to happen when you tried to implement "just in time." People worked very hard at making improvements. Safety and quality improved. The rate of production increased. However, there always seemed to be lingering problems. Even when improvements were made, there were still big gaps between functions. People were still engaged in blaming each other when things went wrong, and they did go wrong. People seemed to be constantly caught up sorting out the issues caused by short-term plan changes. The focus was not on identifying the root causes for these changes and fixing them, but more on fixing the symptoms—known by everyone as "firefighting." The same issues seemed to keep cropping up time and again, despite everyone's best efforts.

Do You Face This?

Do you face conflicting objectives and targets? Do you face increasing pressure to grow sales plus reduce fixed costs and working capital while improving production and supply chain efficiencies in order to become a more responsive, flexible, and efficient supply chain? Meanwhile, the number and complexity of products continues to grow.

A Typical Example From KC

Diapers—"nappies" in the UK—are an important product category for KC. The last twenty years have seen enormous advances in the effectiveness of the product. Leak protection, form, fit, and function have all advanced dramatically to fit the stages of a baby's development. Today's diapers are a technological marvel with absorbent gels, fasteners, and leakproof leg seals. However, these improvements have also more than tripled the number of component parts in the product. In addition, the range of products has expanded. The number of sizes available has increased; features have been added to meet specific needs; and package configurations have grown to match the variety of retail alternatives. New product categories have been invented, such as Pull-Ups® training pants. There are even different colors for boys and girls. The combination of these factors has made the manufacturing process more complex. Manufacturing departments would like bigger batch sizes to give them longer runs. More product types mean more items to warehouse. Yet the overall inventory target has been reduced. Longer runs (to give higher production efficiencies) coupled with lower inventory (to reduce working capital) at the same time as delivering high order fill rates (to achieve excellent customer service) are in conflict with each other.

This is the conundrum that supply chain personnel face every day.

Have You Done This?

Have you spent millions of dollars on consultants and new IT systems, only to find that the benefits achieved have been questionable versus the costs involved?

We looked to new IT solutions to help enable us to deliver excellent customer service with high efficiency and lower inventory. In many cases, as complexity in the product range increased, we were just not able to deliver the targeted inventory reductions or other savings from these system changes. The computer program solutions available to address the issues of supply chain have grown enormously over the last twenty-five years. We now have more sophisticated systems, but that can also translate into greater complexity and a loss of user-friendliness. Despite having bigger, faster, and better-integrated systems, we still have the same old issues of sales forecasting errors, inventory inaccuracies, and bill-of-material mistakes. These are all issues that contribute to the short-term plan changes that lead to the firefighting we suffer from on a daily basis.

Have You Experienced This?

In a word, *initiatives*: the Theory of Constraints, MRPII (manufacturing resource planning), TQM (total quality management), Six Sigma, Agile, and many more. Driving for improvement has always been part of the culture at Kimberly-Clark. We have experienced a whole series of “initiatives” during my twenty-five years at KC. The champions of each all claim that “their” initiative is the one that will deliver a step change in performance. There are inevitably arguments between the advocates of different approaches on which are the best for improving performance. It seemed to me that there were certain similarities between each of these initiatives. Obviously they were all aimed at improving company performance, and they did achieve this, at least initially. At KC we applied each latest initiative with enthusiasm and commitment. However, not everyone in the company had the same levels of energy for implementing the “new” initiative. It tended to be driven by a few determined “disciples.” When they moved on—either to another role or the next “new initiative”—the discipline of consistently applying the principles started to fade away. As a consequence, the gains made also slipped back. It was difficult to sustain any particular approach. It was much easier, and more fun, to embrace the next new initiative that came along.

I am sure my experiences are common to many people working in large organizations.

Searching for a Step Change

People talk about *wanting* a step change and how the latest initiative would deliver this, but my experience was that nothing ever delivered a *real* step change. Sure, KC improved—a lot. However, sustainable improvements tended