

## Endorsements

“Do you have access to better web-based productivity tools at home than you do at the office? Is your corporate email inbox polluted with well-meaning but productivity-draining administrative emails? Is corporate IT a help or a hindrance to serving your customers? Do your internal projects spend more time competing for resources and attention than serving the organization? If any of these apply to you, then you must read this book! *Far from the Factory: Lean for the Information Age* is a lively and fascinating read containing several lifetimes of wisdom, experience, and insights. This book is a must-read for today’s knowledge worker, IT manager, project manager, Lean neophyte, or Lean guru. It is filled with thought-provoking and entertaining anecdotes, illustrations, and tips that highlight the problem of waste in information-intensive processes. The book is filled with many practical tools and ideas from the Lean Body of Knowledge and expertly outlines how they can be put to use in driving out waste and improving information flow. While earlier texts have done a good job of explaining how Lean techniques can be adapted from shop floor to office floor, this book is the first to truly make the leap to the knowledge-intensive, email-filled, and utterly chaotic Information Age.”

— **Tim McLaren, MBA, PhD Assoc. Professor of IT and Supply Chain Management, Ryerson University and Project Leader, Korva Consulting Ltd**

“It’s one thing to develop a concept. It’s another to make it sing. This is the hymnal.”

— **Dr. Don V. Steward, CEO Problematics, Professor Emeritus Sacramento State University, inventor of DSM**

“A very inspiring and thoughtful reading for me as a knowledge worker. It is addressing the lean principles for the Web 2.0 in a quest for higher value efficiency of our time, in a work context of overflow of email, RSS, Facebook etc. It is describing among others a Lean process in 5 steps for the Knowledge worker, as well as describing how to get to a Lean Culture and Lean time metrics.”

— **Leif Edvinsson, The World’s First Professor of Intellectual Capital**

“Congratulations to all the readers holding this book! It is not only well written and entertaining, it confirms some of my own experiences as well as offering important new insights that give you, the reader, many new ideas to consider to drive success in your business. These Lean ideas must be an integral part of the daily operations of your business. I am going to get each and every one of my management team a copy of this brilliant book at the start for our own Lean journey.”

— **Lennart Käll, CEO Wasa Kredit. Former CEO of Ticket Travel Group, ICA Bank and SEB Finans**

“I really enjoyed reading *Far from the Factory: Lean for the Information Age*. This is a book that I did not even know we needed, but we do. The book addresses the needs of modern companies in a way that no other Lean handbook does. It takes a fresh attempt to ineffective office practices that has evolved in most companies and it suggests methods, tools and inspirations to tackle the challenges. The book gives a good mix of proven lean thinking and modern tools like collaboration software etc. to help restore your competitiveness”

— **Gert Moelgaard, VP, Innovation & Business Development, NNE Pharmaplan**

“Applying Lean to the office has long been the “missing link” for consultants and practitioners alike. This book fills that void with well thought out, coherent and provocative prescriptions. In an environment full of arm-chair Lean experts who peddle dubious wisdom, this book is a bright light, showing how good thinking can advance best practices.

— **Jorge A. Colazo Professor of Operations Management at Universidad Torcuato Di Tella, Argentina Former Toyota Production and Maintenance Manager Founder and CEO – Lean Specialists – Consultants in Process Improvement**

“This is a beautiful book knitting together the concepts of LEAN for the white collar knowledge worker to a practical guide of how to really get the benefits out of your LEAN-project. The authors has proved a very deep understanding of how to make a difference In applying the LEAN philosophy in the information age and also the importance to involve all parts of the organization on the change journey. I certainly recommend all my CIO colleagues to read the book.”

— **Ulf Tingström, former CIO for several financial institutions  
in Nordic, Skandia/Old Mutual and SBAB**

“We have used Value Stream Mapping as the primary tool for making process improvements in the office, but the business of applying lean thinking in this environment is relatively new. I find it encouraging to see that the authors have developed additional tools and methods and are leveraging new applications that can be used to identify and eliminate waste for the purpose of improving process performance.”

— **Lou Farinola, Manufacturing Engineering Director, Global Industrial  
Engineering and GM Global Manufacturing System**

“George Gonzalez-Rivas and Linus Larsson describe the challenge of working in the knowledge economy: Knowledge workers wrestling with data and information overload, offices and projects working in traditional ways and failing to keep pace with the information revolution; IT departments lagging behind the shift to a Web 2.0 world. *Far from the Factory: Lean for the Information Age* provides timely insight into how Lean can be applied in the knowledge environment. Practical tools and approaches are given that take Lean out of its traditional manufacturing setting and apply it the Knowledge world. Excellent guidance for leaders and workers in office and project environments, and a ‘must read’ for CIOs everywhere.”

— **Julian Amey, Principal Fellow Warwick University, former Vice  
President, Global Supply Chain at AstraZeneca**

“This book is packed with new ideas, and breaks new ground in so many directions, for a ‘traditional’ Lean thinker like me! I have been continually surprised, amazed, and delighted at your many new insights. It truly breaks new ground in areas as IT, knowledge management, project management, office lean, and more that have been very much under-thought-out in transferring thinking from the factory to the office.”

— **John Bicheno, Director MSc in Lean Operations at Lean  
Enterprise Research Centre, Cardiff Business School**

“This is an excellent book that I experienced and enjoyed reading on several levels. It is very useful — filled with good practical advice and tools adapted and designed to suit business improvement in information-oriented areas such as research and development. I look forward to experimenting with some of the novel approaches described. It is thought-provoking — rich in new ideas and concepts bringing together classical Lean principles with the tools and capabilities of a modern Web 2.0 environment. It teaches us how to visualize the depth of hidden wastes in our complex information flows and the large opportunity for improvement that this suggests. Finally it was fun to read a book that so creatively integrates and weaves together such a diversity of ideas and approaches and instructive stories into a much needed fresh adaptation of Lean for knowledge workers.... just like me and everyone I work with in Research & Development.”

— **Keith Russell PhD, Global Continuous Improvement Leader R&D, AstraZeneca Pharmaceuticals**

“Very interesting view on operational excellence, helpful to readers without a background in this area of expertise.”

— **Bert Nordberg, President and CEO, Sony Ericsson**

# Far from the Factory

Lean for the Information Age

**George Gonzalez-Rivas**  
**Linus Larsson**



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# Introduction

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## The Lean Information Age

We are at an exciting time in the development of business and management science—the nexus of process improvement methodologies and the information handling tools that can take them to another level.

At the beginning of the 20th century, we had an agrarian economy in which most workers were farmers, artisans, or shopkeepers. Factories were very small and peopled by unfortunates who received appalling treatment for meager pay. The term *wage slave* was no exaggeration.

Then early in the 20th century, several great innovators reshaped everything: Taylor taught us to improve activities; Ford taught us how to scale improvements to entire production lines; Sloan showed us how to efficiently organize the much larger companies made possible by these changes; Deming and Juran taught us how to measure, check, and improve these processes; and Shingo and Ohno reminded us of the underlying principles of Ford and Deming and showed us how to better apply them.

### **TWO KEY LEAN IDEAS**

1. Push innovation and the responsibility for improvement down to the direct contributors—the modern-day craftspeople who understand the details of their work and have a pent-up well of suggestions to deploy.
2. Look at the entire process including the upstream supply chain to improve speed, remove waste, and give customers what they value.

Overlapping the latter part of this timeline, starting in the 1980s, was the development of a computer-enabled workforce. The service sector of the economy became increasingly important and tremendous information wrangling power moved down into the hands of the direct contributors. White-collar workers with Internet and intranet access have market and corporate information resources at their fingertips, which was inconceivable a generation earlier. At the

same time, management was still absorbing the lessons of the factory/physical world such as economies of scale, divisional organization, centralized purchasing, and shared services. As a result, as Lean works its way into the office, we find that central control and economies of scale come into direct conflict with the bottoms-up empowered workforce that is key to generating innovations and improvements. This new workforce is comfortable with the Web 2.0 backdrop and the context of accelerated evolution of tools and Web-based solutions. They emphasize collaboration and networking and embrace “the new” as opposed to “the approved standard.” Lean philosophy dovetails with this new culture of technical change to shape the businesses of tomorrow.

The new economy of scale is based on the electronic connections to peers, seamless connections to the supply chain, and massive open innovation to the information and applications marketplace. This puts it on a scale far beyond any that can be fit into a particular factory or even giant corporation. The rationale for breaking central organizations into various divisions, which is span of control, is being replaced by information force multipliers, which give managers unprecedented ability to understand what’s going on as well as demonstrable productivity from self-directed worker teams.

In *Far from the Factory* you will discover how to leverage the latest crop of tool sets to deliver on the promise of Lean for the modern, information-rich, white-collar office. This is an environment where distance between networked computers does not matter and the work product zips through uncontrolled webs in nanoseconds. Figure 0.1 provides an overview of the major ideas we hope to impart.

In *Far from the Factory*, we apply the Lean paradigms that allow us to see and recognize waste among the processes, tools, and habits of knowledge workers. We borrow techniques from design control and advanced project management toolboxes that allow us to measure, evaluate, and pinpoint these new expressions of waste. We also develop a new paradigm—the information element—the

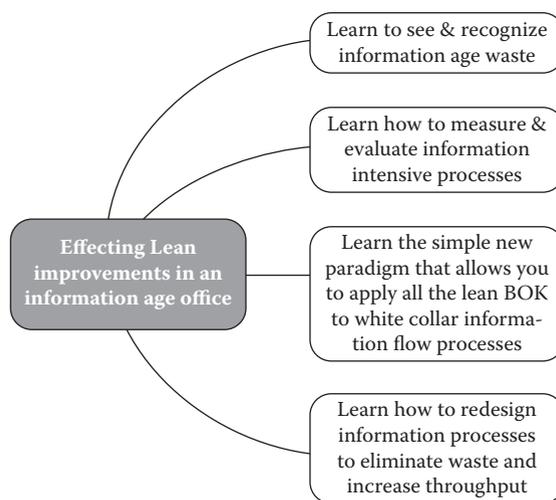


Figure 0.1 The four key ideas needed for Information Age Lean.

building block of documents and designs, which is the true index of information flow. This new perspective allows us to leverage Lean's vast body of knowledge and the theory of constraints to our advantage. It explains, for example, how the development of an entire new product can be held up by one simple piece of information in the same way that a sub-assembly in a factory can be held up for a single part. In addition, you will learn how to augment and kick-start your *kai-zen* and problem-solving session by using the information matrix as a diagnostic and idea-generation tool.

### ***Who Needs This Book***

This book is for organizations and change agents or managers within those organizations who work with information. That does not mean only information technology companies and it does not reflect on the amount of information or information storage; rather it is for organizations that create, modify, and consume information electronically in their work. The more creative, one-off, or bespoke these projects or tasks are, the better. The larger and more complex the information usage is in any process, the greater the opportunity for improving that process using these ideas.

Our philosophy is that information *is* the work piece in this electronic age; it is not some form of metadata that accompanies the physical work item. Process flow has always had accompanying information flow. For example, the delivery date might be information used to schedule a machining operation. Value stream management is a great Lean tool that illustrates left-to-right process flow and right-to-left information flow governing a particular manufacturing process. From our perspective, it is less useful in the pure information world of today's high-tech office.

If you employ knowledge workers—resources who do most of their work on computers or with computers, access the Internet, utilize internal and external databases, use e-mail as their primary work transport system (when they're not using instant messaging [IM], file transfer protocol [FTP], Skype, Tweets, or any other new technology), and carry smart phones, and do not really know what that yellow interoffice envelope with the string closure is for—you need this book.

If you rely more on fax and Xerox machines than the Web, e-mail, or other modern means of communication, much of what we say may seem like a stretch to you. If you work on projects but utilize a waterfall or left-to-right Gantt chart and multitasked workers to manage them, this book can help quite a bit.

Who needs this book? In a phrase: any organization with a lot of Web DNA that wishes to cut costs and improve performance. And stay in business.

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# **LEAN FOR THE KNOWLEDGE WORKER**

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**I**

## Chapter 1

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# What Is Knowledge Worker Lean?

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The fundamental difference between working with tangible assets and intangible ones, such as information, complicates the application of Factory Lean to the modern office. The focus of this chapter is to put Lean philosophy into the context of the new information age and the coming generations of information-pullers.

### The Role of Lean in the Invisible Office

In the musical comedy *My Fair Lady* Professor Higgins vents his frustration with Victorian women who only straighten up their hair as opposed to the mess that's inside.\* One of the themes of this book is that we share the professor's frustration; in the modern office it is not a tidy desk or stockroom that matters but the efficient flow and use of "what's inside"—information.

The Lean for the information age office has some fundamental differences from what we call classic Lean. We do not deny the benefits of Lean for the office as currently described; we wish to add to it. Most of the Lean body of knowledge is directly applicable to the modern white-collar workplace. However, some aspects of it require translation and redefinition; others require an entirely new point of reference.

Our work is geared to the information age worker. The person we call the "knowledge worker," that is, a heavy computer user, adept at a number of applications, and a vast creator and consumer of information.

The current state of office Lean work and published material takes the factory analogy too literally. For example they take the Japanese workplace organization principles known as 5S and translate that into a tidy workplace. We see nothing

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\* Alan J. Lerner and Frederick Lowe, "A Hymn to Him," 1956.

wrong with that but believe it doesn't go nearly far enough.\* In lean factories it is common to mark outdated or rarely used equipment with a red tag marking a probationary period. If that equipment is unused for a period of time it is considered unnecessary waste. There's nothing wrong with red-tagging old reference materials and unused office equipment. There's nothing wrong with standardizing workstations and adding visual performance feedback, such as progress charts or guiding office principles. However, these steps are not as important, today, as Lean information flow.

A tidy workflow strikes us as more relevant than a tidy storage room. One of the principles of 5S is that, once an area is clean and organized, it becomes easier to spot exceptions and we can understand and attack the root cause of the exception. This is great for solving the problem of toner spills around a centrally located copier, but not so great for understanding that the reason there is so much rework in a department is because some of the team members are still cutting and pasting from an obsolete data source. Visually, the correct and incorrect documents will look just the same.

The symptoms we would look for in the knowledge worker's information flow process are invisible to the eye in the workplace. We can stand in the hallway and observe as long and hard as we like, but we'll never learn to see them.

Mary and John can have spotless tidy cubicles with standard equipment located in a standard arrangement. It looks neat as a pin, but the real problem might be that Mary has several files on her hard drive that John doesn't even know exist and he'll spend the next two days recreating them.

What if, as happens more and more today, John and Mary don't work beside each other, or in the same building, or time zone, or they telecommute? The visual order and self-evident feedback that a 5S office system is supposed to provide is largely wasted unless we move it to the cloud.

A simple visual system cannot work in an environment where the key material—information—is largely invisible. To make Lean work in the modern office we need to make the invisible visible. We need to organize around the constantly evolving information flow, not the legacy process flow; we need to make it accessible to a distributed team, we need to develop effective visual management systems, and we need to do it all while adhering to the basic Lean principles of practical, bottom-driven solutions from the workforce.

To this end, a mash up of Lean principles and Web 2.0 collaborative technologies holds the key.

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\* Much emphasis is placed on the physical domain; for example, on how to organize your (actual, physical) desktop—phone here, keyboard there, pen cup here, and so forth. Examples abound about tidying up the filing cabinets and supply cabinets but practically nothing about knowledge management or file structure on servers.

## Lean and Web 2.0

Modern-day offices rely less and less on paper-based work systems and more on electronic ones. Until the electronic age, office work-to-be-done was contained within documents or packages of documents. For example, a request for a quotation was received and logged; it was then routed to various workers to verify the current stock availability, pricing, terms, and other transactional details. A formal quote was prepared, perhaps legal and shipping terms were appended, and a salesperson followed up by mail or phone. The company resources add value directly to the work piece (the price quotation letter). This work piece could be physically tracked through the building from inbox to inbox, and much of the total response time was consumed by travel and waiting. To find the relevant information you needed to find the physical folder.

This is just a snippet of the overall process. On the front end, the customer first underwent an entire process to find appropriate vendors, develop some sort of product specification or service need before the request for a quote was ever typed up (with carbon paper copies, no less). On the back end, the selected vendors' responses needed to be compared and evaluated, financial viability needed to be established, delivery performance needed to be assessed, and all the follow-on sales discussions needed to take place. In addition, from a systems view, it is important to realize this work is replicated for every vendor the buyer contacted. Every one of them is manually retyping the specs into the quote. Every one of them is creating and filing these carbon copies. Every one of them is spending time to follow up and close on this prospect. And so on.

And think of the rework. The pre-electronic age office was ordering from a catalog (printed who knows when) or previous experience with the vendor. If the vendor has changed the product, he might suggest a substitute, which would trigger a whole new cycle of evaluation. The buyer might even learn that the substituted product incorporates features they had not included in their request for quotation. Therefore, to be fair and keep the pool of bidders broad, the buyer issues a revised request to each vendor. Now each vendor has to rework its quote. Let's hope that none of them decides to suggest even more features, else this process might never end!

There's a lot of waste here in the Lean sense. Rework. Waiting. Transport. Errors. How odd that seems today when we (generally) expect a very different approach.

Today, you might:

*Google the product* and evaluate far more offerings than paper catalogs could ever offer you.

*View the product on the vendor's Web site.* Gather a complete up-to-date description and educate yourself about the new advances or features available.

*Purchase online* using your company's procurement card or by placing an electronic order. If you have an account, you can probably make the purchase with one click of your mouse.

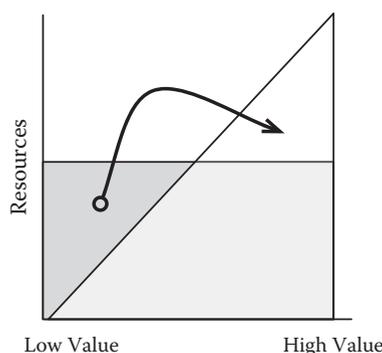
*Track your shipment* online or receive notification via email.

Records are generated automatically and stored electronically for retrieval as needed.

The whole process for a simple purchase certainly takes less time than typing a request for quote in the pre-electronic age. In addition, you are able to see exactly what you are getting (and might even have checked some blogs to get direct user feedback and customer satisfaction scores—something unheard of until recently). With shipping notification and package tracking, you eliminate delivery risk and enable effective planning since you know when your purchase will arrive. Your documentation time is negligible. Since only one vendor is involved, all the waste associated with the losing bids is eliminated and doesn't have to be absorbed into higher product prices.

Sadly, just because we can do the smart thing doesn't mean we do. An individual or an SOHO (small office/home office) worker can easily follow this speedy purchasing process. Most companies add layer upon layer of bureaucracy, budget control, and security to purchasing processes. Some of the reasons behind this practice are good: centrally evaluated and approved vendors help to ensure product quality, consolidated purchasing helps to lower negotiated rates, and the cycle time associated with accounting for widely distributed purchasing can contribute to budget overruns. These are reasoned arguments. However, most of the resistance is overreliance on legacy procedures and simple reluctance to change. We will show that Lean benefits trump legacy procedures and, because the same office workers become aware of them outside the confines of the official office toolset, become inevitable anyway.

Workers often view eliminating waste as a threat to employment, whereas management views it as a cost-cutting exercise. In Chapter 6, you will see why this interpretation is neither Lean, nor effective. Lean is actually geared toward redirecting work from wasted effort to high-value effort (see Figure 1.1).



**Figure 1.1** Eliminating waste is not eliminating people; it is shifting resources to higher-value work.

This increased high-value effort usually stimulates growth, not retrenchment. Increasing value to the customer should drive them to buy more or pay more. The goals are to:

- Eliminate waste
- Increase value
- Add resources to cope with all the new demand

**Key Point:** Lean is not about cost cutting. Lean is about smart improvements. Eliminating waste allows you to redeploy attention and resources, and increase throughput. Eliminating waste allows you to lower price and increase quality, and spur greater demand to match your new increased capacity. Therefore, Lean is not a Plan B to deal with poor quarterly results or an economic crisis; Lean is a growth engine.

## Increase Productivity: What You Can Learn from Bricklayers about Lean Improvement

The Internet marketplace is a network of companies and individuals buying and selling. The paths between these nodes are very heavily traveled and it makes obvious sense that their processes have been worn smooth. If you belong, say, to a gourmet coffee club, it is in the club's interest to make your purchase as easy to complete as possible. The cookie in your browser, the automatic login, the storage of your shipping address, the prompt if you want to use the credit card ending in 1234, and so forth mean that you don't have to remember anything—except that you need to buy coffee. From that point on, completing the process takes seconds.

On a larger scale, many modern enterprises have streamlined commerce via e-invoicing, electronic fund transfers, automatic reordering, and many other process improvements. The results are directly measurable and the business cases are as positive as they are easy to make.

If we have streamlined intercompany commerce, then why haven't we streamlined intracompany operations to anything like this level of maturity?

Millions of highly paid MBAs and researchers scattered throughout corporate America, Europe, and Japan spend a vast amount of their time cutting and pasting between Excel and PowerPoint when they're not managing inboxes bulging with low-priority email. These PowerPoint decks are e-mailed and e-mailed again for editing, which results in multiple copies, the introduction of version control errors, mutually contradictory edits, and delays due to late-arriving contributions. This process screams for improvement.

One of the first documented "lean" improvements is the story of the bricklayers. A young construction worker, John Gilbreth, noted that bricklayers building