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Introduction

As Vitalo and Bujak (2019) documented, people's conception of the ultimate goal that lean's approach to conducting commerce serves varies depending upon who you ask within the lean community. This confusion about the ends lean pursues spills over into understanding just what constitutes a lean enterprise. The lack of clarity as to what constitutes a lean enterprise first became exposed with regard to the Delphi Corporation's bankruptcy in 2005, a company that had won "many Shingo Prizes for lean manufacturing excellence" (Waddell, 2005). Following its bankruptcy, there was much disagreement about whether Delphi had been a truly "lean enterprise." Indeed, Waddell lists many factual features of that company's conduct and management that he and others considered not lean (Meyers and Waddell, 2005). He stated that "The lesson is that looking lean is not the same as being lean" (Waddell, 2005). Yet, in the same article he reports that James Womack himself declared that Delphi was indeed a lean enterprise.

Since the lean enterprise model is not a formally developed one—that is, it is not a set of knowledge logically derived from basic assumptions about what commerce is, why people engage in it, and what its contribution to society should be—there is no way to reason conclusively about its ultimate purpose. Essentially, its aim is whatever its practitioners use it to achieve. Any attempt to use the practices of the Toyota Motor Company as a "Rosetta Stone" to decipher what is and is not "Lean thinking" or a Lean Enterprise has also been shown to be fruitless by an exhaustive study into the history of practices demonstrated by that company (Vitalo, 2019).

Given this situation, each practitioner of lean thinking who seeks to communicate with others about "lean enterprise" must document explicitly what his/her understanding of the lean approach to commerce is, including especially what end it pursues and how it pursues it. Absent such documentation and its sharing, we can never know whether we are speaking about the same concept or entity when we share our thoughts about Lean or the results we realize from our applications of Lean thinking. For this reason, we define explicitly in this article our understanding of the aim of the lean approach to commerce and how a lean enterprise operates. In our article *How Different Is a Lean Enterprise* (Vitalo and Bujak, 2023), we detail in practical terms the key features of strategy, structure, systems, and people that constitute a lean enterprise as we understand it. Our vision of the lean approach to commerce guides all the content offered on this website to assist people in creating and sustaining a lean enterprise.

A System's View of the Lean Approach to Commerce

In this section, we use the framework of a system to represent how we conceptualize the lean enterprise approach to commerce. A system is a set of components that operate together to accomplish a goal. The components of a system are its goal, inputs, outputs, process, feedback, and interfaces. The goal specifies what the system must accomplish. Inputs are those external resources required for the system to operate. The system's outputs are the results it immediately generates. Together, these outputs realize the system's goal, in this case, a lean enterprises's goal.

The system's operations are represented with its process, feedback, and interface elements. The process lists the major steps that transform the system's inputs into its outputs. The feedback element registers the expected features of the system's operations and outputs that its performance should demonstrate. The interface element lists the other entities with which the system must interact as it accomplishes its goal and what the exchange between the system and each entity must be.

Lean's Goal

Exhibit 1, next page, presents the goal that the lean approach to commerce seeks to realize. A complete goal statement includes six components: a "To" statement that tells the result to be produced, a "For" statement that tells who is to benefit from producing the result, a "By" statement that names the task or process to be implemented to produce the result, a "So That" statement that lists the benefits to be produced for each benefiting party, a "Conditions" statement that lists the constraints that must be abided by during the pursuit of the system's goal, and a "Success Criteria" component that lists the benchmarks that define success (Vitalo, 2020).

The Purpose Lean Serves

The lean approach to commerce seeks to provide its customers an ever-more value-ladened and success-enabling product or service and buying–benefiting experience¹ by eliminating waste in everything it does, maximizing its delivery of value to its customers as defined by the customer, benefiting all its stakeholders² inclusively, and developing a workforce that sustains these activities into the future. Waste is any activity or resource expenditure that does not materially change a product or service output or a customer's buying–benefiting experience in a way that a well-informed and reasonable customer deems valuable. Value is any feature of an offering or a customer's buying–benefiting experience that he or she judges important enough to pay for. A workforce capable of sustaining waste removal, value enhancement, and satisfying all stakeholders inclusively is made up of people who are aligned, teamed, energized, capable, and pioneering (Vitalo, Byron, Bierley, & Holmberg, 2008) and are empowered to apply their capabilities to continuously improving the business. The stakeholders a lean enterprise recognizes are all those people and groups who are affected by its actions or can affect its actions. These include, at a minimum, its employees, suppliers, owners, and the communities within which it operates.

The Benefits It Produces

A lean enterprise ensures that all its stakeholders prosper as they contribute to maximizing the delivery of value to the business's customers. Fulfilling this commitment is essential to a lean enterprise's sustained growth and achievement because only prospering partners in commerce generate ever-increasing opportunities for new commerce and collaboration. To this end, a lean enterprise generates the following benefits for its customers and each of its stakeholders:

¹ Refers to all the activities the customer must engage in to access, acquire, prepare to use and use an offering; maintain it in a useful state between uses; dispose of it or its byproducts; and extract benefit from it.

 $^{^{2}\;}$ A stakeholder is any person or group who is affected by the business's operations or can affect them.

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Exhibit 1. Lean's Goal					
Goal					
To:	Provide its customers an ever-more value-ladened and success-enabling product or service and buying–benefiting experience				
For:	Customers, employees, owners, suppliers, and the communities and governments within which the business operates				
By:	Eliminating waste in everything it does, maximizing its delivery of value to its customers as defined by its customers, benefiting all its stakeholders inclusively, and developing a workforce that sustains these activities into the future				
So That:	All participants in the business prosper				
Conditions:	The markets it operates in must be free. A lean enterprise cannot succeed in markets where customers lack the freedom to choose because of monopolistic practices of producers or protectionist policies of governments or where prospective customers lack understanding of their real needs or are incapable of making effective decisions. ¹				
Success Criteria: ²	 Customers receive an ever-more value-ladened and success-enabling product or service and buying-benefiting experience. Employees have greater control over their work, elevated capabilities to eliminate waste and add value, increased pride of workmanship, expanded career opportunities, and fair participation in the monetary benefits their contributions generate. Business systems, operations, and workplaces continually improve in their waste-free value generation and safety. Suppliers have greater success in conducting their own businesses by incorporating lean thinking with your support and deliver greater value to your business. Owners have a business that continuously increases in producing value, generates increasing financial returns, and engenders pride as a result of its reputation as a business that delivers exceptional value to its customers and provides its stakeholders the benefits they seek. Communities and governments within which the lean enterprise operates have more capable citizens and experience more wealth and work opportunities as a result of the business's growth and success. 				
¹ This condition near-term cost ² The statement <i>Task 9 Measur</i> into a properly	n applies to the full application of the lean enterprise approach. The limited use of lean ideas and tools can produce t-reduction benefits for producers anywhere but cannot achieve the above specified goal. s recorded here are abridged versions of properly constructed success criteria. Use the guidance provided in the chapter <i>re Results</i> of <i>The Lean Champion Resource Guide</i> (Vitalo, Bujak, Vitalo, Bierley, and Ruffino, 2023) to transform each or constructed success criterion.				

- Customers receive an ever-more value-ladened and success-enabling product or service and buying-benefiting experience.
- Employees have greater control over their work, elevated capabilities to eliminate waste and add value, increased pride of workmanship, expanded career opportunities, and fair participation in the monetary benefits their contributions generate.
- Business systems, operations, and workplaces continually improve their waste-free value generation and safety.
- Suppliers have greater success in conducting their own businesses by incorporating lean thinking with your support and delivering greater value to your business.

- Owners have a business that continuously increases in producing value, generates increasing financial returns, and engenders pride as the result of its reputation as a business that delivers exceptional value to its customers and provides its stakeholders the benefits they seek.
- Communities and governments within which the lean enterprise operates have more capable citizens and experience more wealth and work opportunities as a result of the business's growth and success.

The Conditions That Constrain Its Success

A lean enterprise can only succeed in markets that are free. It cannot succeed in markets where customers lack the freedom to choose because of monopolistic practices of producers or protectionist policies of governments or where prospective customers lack understanding of their real needs or are incapable of making effective decisions. Essentially, the more competitive the marketplace is and the more informed and capable buyers are, the greater the success the application of the lean enterprise approach to commerce delivers. The reason is that a lean enterprise competes based on the excellence of its offering and the buying–benefiting experience it provides its customers. Its marketing and competitive strategies do not include the manipulation of market conditions or customer behavior. Only in marketplaces where customers are informed, free to choose, and capable of making rational choices does excellence produce greater success. Absent these factors, it is the power of a business to control a marketplace that determines its success.

The Criteria That Judges Lean's Success

Success criteria are the benchmarks that must be met for a goal to be judged as achieved. They verify that the goal's purpose has been realized and its promised benefits have been delivered. In most goal statements, they also verify that any conditions that constrain the conduct of the people charged with accomplishing the goal are satisfied. In this goal statement (Exhibit 1), the conditions expressed are not a constraint on how the enterprise acts but a limit on the capability of the system itself to realize its purpose. Therefore, no success criterion is included to test it.

The benchmarks recorded in Exhibit 1 are abridged versions of complete success criteria statements. Each criterion it lists is a compound statement that identifies multiple anchors to be assessed and characterizes the target state that each must achieve. A properly constructed success criterion focuses on one anchor only and includes a description of the method of measurement to be used to test its status. For guidance on constructing a complete success criterion see the chapter *Task 9 Measure Results* in *The Lean Champion Resource Guide* (Vitalo, Bujak, Vitalo, Bierley, and Ruffino, 2023).

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Lean's Inputs

Lean's inputs are people, a business, and a committed ownership (Exhibit 2, next page). To power a lean enterprise, people must be educated about lean thinking, aligned to the task of creating a lean enterprise, and empowered to act to achieve that end. They must be skilled, work together as a team, and committed to learning in the service of realizing their common business intent. To create a lean enterprise one needs a business, either an existing business ("brownfield" application) or a business being established ("greenfield" application). In this book, the term "business" means a set of operating components that conceive, develop, resource, produce, market, sell, distribute, and support a product or service offering targeted to satisfy the needs of a customer. It is different from a "company" in that a company may have many businesses within it (e.g., Alphabet Incorporated). It is different from a business function, which is a component of a business that applies a unique set of expertise to produce an output that is either delivered to the business's customers or enables that delivery (e.g., product development, marketing, sales, purchasing, human resources, collections, engineering, production, or distribution). A full adoption of the lean approach to commerce has the whole business as its focus, not a business function.³

Lean's third input is ownership. If the business is not employee owned, then whoever owns the business must understand the lean approach to commerce and commit him- or herself to using it as their business model. Owners also must have in place or be willing to put in place *and* practice a purpose, vision, and set of core values; methods of competition and internal business systems (e.g., strategic planning, human resource management, accounting) that are consistent with the lean enterprise approach.⁴ Finally, they must be ready to satisfy all the other requirements described in the chapter *Executing a Lean Initiative* in *The Lean Champion Resource Guide* (Vitalo, Bujak, Vitalo, Bierley et al., 2023). These include rationalizing the business structure, creating a lean-ready workforce, satisfying lean's information needs, establishing standardized work, establishing a common standard for problem solving and decision making, creating opportunities for employees to improve the business, and implementing a Hoshin Kanri business planning process.

Lean's Outputs

The outputs generated by a lean enterprise are those benefits it delivers to its customers, employees, suppliers, owners, the communities within which it operates, and all its other stakeholders. They are listed in Exhibit 2, prior page. One of those outputs requires further clarification. It is the output of a business that continuously increases its waste-free production of value. The components that make up that result are the following:

³ If the adopting company has multiple businesses (a multiactivity company), then the focus of a full-adoption lean initiative is both at the company level and at the level of each of its businesses (see page 58). All must satisfy the input requirements described in this paragraph.

⁴ *Chapter Step 9.2 Align Measures With the Business's Strategic Intent in he Lean Champion Resource Guide* (Vitalo, Bujak, Vitalo, Bierley, et al., 2023) provides guidance on detecting whether a business's purpose, vision, and core values align with lean.

Exhibit 2. The Lean System's Input, Process, Output, and Feedback Components							
Inputs	Process ¹	Outputs					
 Exhibit 2. The Lean System Inputs People Educated in lean thinking and aligned to the task of creating a lean enterprise Skilled, work together as a team, and committed to learning in the service of realizing their common business intent Empowered to apply their capabilities to establish a lean enterprise Business A business is a set of operating components that conceive, develop, resource, produce, market, sell, distribute, and support a product or service offering targeted to satisfy the needs of some customer Ownership Owners knowledgeably committed to applying the lean approach to commerce to 	m's Input, Process, Output Process ¹ 1. Define value from the customers' perspective. 2. Map the business's value streams. 3. Establish flow. 4. Establish pull. 5. Strive for perfection.	 and Feedback Components Outputs Customers receive an ever-more value-ladened and success-enabling product or service and buying-benefiting experience Employees have greater control over their work, elevated capabilities to eliminate waste and add value, increased pride of workmanship, expanded career opportunities, and fair participation in the monetary benefits their contributions generate A business that continuously increases its waste-free production of value Suppliers have greater success in conducting their own businesses by incorporating lean thinking with your support and deliver greater value to your business Owners have a business that continuously increases in producing value, generating financial returns, and engendering pride as a result of its reputation as a business that delivers exceptional value to its customers and provides its stakeholders the benefits they coak 					
 accomplish their ownership objectives Owners who adopt a purpose, vision, and set of core values; methods of competition; and internal business systems (e.g., strategic planning, human resource management, accounting) that are consistent with the lean enterprise approach and implement them faithfully 		 Communities and governments within which the lean enterprise operates have more capable citizens and experience more wealth and work opportunities as a result of the business's growth and success 					
	Feedback						
1. Establish success cr	iteria for achieving each pror	nised result.					
2. Measure performance and compare it with criteria.							
3. Extract learning.							
4. Use learning to improve the business's implementation of the lean approach to commerce.							

¹ These tasks describe the lean approach to maximizing the waste-free delivery of value to customers. They are not the steps that implement a *lean initiative*.

- business systems and operations continually improve with regard to their waste-free value generation,
- business workplaces continually improve with regard to their safety and utility, and
- new knowledge is developed that guides better performance.

Below is a description of what each of these components means.

Business Systems and Operations Continuously Improve

All business functions and work processes improve with regard to the waste-free value they generate when every operation performed evidences the following performance characteristics:

- increasing value-added ratios (VAR),
- decreasing defect rates,
- improving cycle-to-takt time and throughput-to-demand ratios,
- decreasing need for inventory,
- decreasing generation of scrap,
- decreasing special cause variation,
- decreasing common cause variation,
- decreasing cost to customers for operations implemented and outputs produced, and
- an increasing convergence between the work process's typical output and the output that maximally enables customer success, satisfies customer values, and benefits all stakeholders.

Workplaces Continuously Improve Their Safety and Utility

Workplaces evidence improved waste-free value productivity when they are made safer (i.e., fewer recordable and reportable incidents) and more effective and efficient in their support of the operations that are performed within them (i.e., require less travel and transport for workers as they perform a process, less search for needed materials, and less motion during the performance of a value-adding task).

New Knowledge That Guides Better Performance

New knowledge that guides more efficient and effective performance is generated by every contributor as a natural output of the contributor's continuous improvement activities. Each such effort yields a new method for improving business performance that is documented. This documented knowledge is readily transferable. Its rapid dissemination guides improved performance businesswide. When incorporated into the training of new hires, it shortens the time needed

by new employees to perform productively. It represents an important intellectual asset of the business.

Lean's Process for Realizing Its Purpose

Lean's approach to operating a commercial enterprise involves five major tasks.

- 1. Define value from the customer's perspective.
- 2. Map the business's extended value streams.
- 3. Establish flow.
- 4. Establish pull.
- 5. Strive for perfection.

Tasks 1 and 5 are continuous. Tasks 2, 3, and 4 are recycled as changes in customer values, market conditions, or business solutions require adjustments in the business's value streams.

What follows is a brief overview of each task. For a detailed description of each task, see the chapter *Lean Enterprise Model* in *The Lean Champion Resource Guide* (Vitalo, Bujak, Vitalo, Bierley, and Ruffino, 2023).

1. Define value from the customer's perspective.

Customers are the users of your business offering. Their values represent characteristics of that offering and their buying-benefiting experience that they judge as benefiting their efforts and for which they are willing to pay. To gather and apply knowledge of customer values, one must first break down the features of each offering and of the customer's buying-benefiting experience so that you can connect each feature with each the values customers hold.

A lean enterprise gathers values information in several ways. *First*, it mines the customerrelated information the business already collects. *Second*, it studies the findings of industry research about what features the business's target customer segments value and will reward for their increasing presence, what they demand and will not accept if missing, and what they do not require but, if present, will delight them.⁵ *Third*, it gathers customer comments about its offering and buying–benefiting experience from the Internet. *Fourth*, employees walk in their customers' shoes as they acquire and use an offering to deepen their grasp of the customers' experience and uncover unspoken values. They do this by observing customers or by simulating being a customer who acquires and uses an offering.

The enterprise's guiding principle in understanding value from its customer's perspective is that the more detailed the information it captures, the more precisely its employees can adjust business operations and their outputs to satisfy them. Also, a lean enterprise knows that

⁵ These groupings of values refer to Kano's categories for organizes customer values (The Center for Quality of Management, Inc., 1993). See the chapter *Task 3. Understanding Customer Values* in *he Lean Champion Resource Guide* (Vitalo, Bujak, Vitalo, Bierley, et al., 2023) for a full discussion of Kano's system.

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customer values information is only useful when it is current, distributed to all employees, and applied to making business decisions. It especially uses customer-values information to drive the development of new offerings, the improvement of current offerings, and the detection of waste and opportunities to affirmatively add value in every business activity. Detailed guidance for gathering, classifying, storing, maintaining, and using customer-values information is provided in *Task 3 Understand Customer Values* in *The Lean Champion Resource Guide* (Vitalo, Bujak, Vitalo, Bierley, et al., 2023).

2. Map the business's extended value streams.

A value stream map is at a high level the end-to-end flow of work and control information that transforms a business function's inputs into its final output. An extended value stream map adds to this the representation of the function's suppliers and the flow of materials from them to the value stream and, at the other end, the flow of the final product to its customers.

A modern business is made up of many business functions, each having its own unique extended value stream.⁶ The central value stream produces and delivers the business's offering to its customers. The remaining business functions produce outputs that enable the implementation of the production value stream—e.g., the human resource management value stream provides skilled and engaged employees performing to expectation, where and when needed.

In a lean enterprise, each business function's leadership team visually represents its extended value stream, and uses that map to continuously improving the function's performance. At the business level, leaders manage the integration and optimization of performance across all business functions. At the business function level, the extended value stream map makes visible the present state of the entire workflow and allows the function's leaders to manage it from a systems perspective.⁷ They analyze the workflow within their function and the performance of each of its main components to uncover waste. Each instance of waste is prioritized and targeted for removal by the application of teamed problem solving or a specialized lean tool. They also analyze the workflow and the performance of each of its main components from the perspective of its current satisfaction of customer values. Opportunities for enhancing value delivery are identified, prioritized, and targeted for realization. With each elimination of waste and adding of value, employees build in consistent quality as defined by the customer, optimize the performance of each component, reduce cost, and eliminate sources of worker frustration, including the aggravations caused by interruptions, search, rework, and other forms of waste. Beyond waste removal and value enhancement, each function's leaders optimize their extended value stream's performance by introducing flow and pull. As all of this work proceeds, they test each change for its impact on other components of the extended value stream to ensure that optimizing one element within the workflow does not hinder the delivery of value by another element.

⁶ A fuller discussion of value streams appears in the chapter *Executing a Lean Initiative* in *The Lean Champion Resource Guide* (Vitalo, Bujak, Vitalo, Bierley, et al., 2023).

⁷ For the most detained description of how to manage from a system's perspective, see *Life Enabling Enterprise: An Economic System for the Good of Humankind* (Vitalo and Bujak, 2023, pp. 315–324).

3. Establish flow.

Flow describes a value stream through which work moves continuously as a single piece and at a pace that matches customer demand (takt).⁸ It establishes a consistent rhythm for the process's operation, balances workloads across it, and ensures that customers receive what they need, when they need it, and in the quantity they require. Flow reduces work-in-progress (WIP) inventory, accelerates the cash-to-cash cycle, and reduces operating costs.

There are three requirements a lean enterprise must satisfy to accomplish flow in each of its business function value streams. Contributors to a value stream must

- 1. view the value-adding activities that produce a function's final output as a single process;
- 2. recognize the importance of moving outputs as single units of production, not in batches; and
- 3. understand the pace of their customers' demand (takt).⁹

Once the prerequisite conditions for flow are satisfied, each business function establishes flow by involving a cross-functional team in analyzing the current state of flow in each work stream, beginning at the value stream level. It also involves members of the function's extended value stream, since changes in the pace or content of a function's value stream may require supply- or delivery-side adjustments. As with all activities, achieving flow requires maintaining a systems perspective.

The process used at each level from the value stream down through to workstations is similar. The first task contributors perform ensures that the work stream's mapped sequence of major activities represents the critical path through the process. The critical path is the series of steps that must be executed *in sequence* in order for a process to finish. All other tasks in a process can be done *in parallel* to this sequence. That is, they can be implemented while tasks on the critical path are being executed and completed before any task on the critical path needs their outputs.

The time consumed by all the tasks on the critical path determines the *minimum time* needed for an output to pass through the work stream. Once the critical path is revealed, the non-critical path activities become feeder processes that operate in parallel to the critical path.

Next, contributors identify and eliminate unnecessary operations within the work stream. They then seek to balance the time it takes to pass through each work stream operation by eliminating waste and re-grouping work into sets that minimize handoffs and can be accomplished with a timing that matches takt. Finally, they document the revised work stream.

⁸ In misguided applications of Lean thinking, flow has a different meaning. Yes, a product or service output moves through the business with no delays, but the pace of production is not dictated by customer demand (takt). Rather, it fits a schedule devised from other bases—e.g., the most cost-efficient rate at which to run one's machinery. In fact, in our experience, businesses implementing "flow" do not even compute takt time.

⁹ A more detailed discussion of these requirements is provided in the chapter *Lean Enterprise Model* in *The Lean Champion Resource Guide* (Vitalo, Bujak, Vitalo, Bierley, et al., 2023).

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Once work is regrouped, balanced, and documented, the flow team revises, as needed, the locations of work and the workplace layouts to further minimize waste and ensure safe operation.

At the workstation level, the teams right-size machines, ensuring that the capability of each machine meets *but does not exceed* the needs of each workstation and that each machine's performance supports the process's performance to takt. Where one machine produces multiple outputs, teams quicken the changeover from producing one component on a machine to producing a different component on the same machine. Quickening the changeover activity eliminates waste (setup), reduces cycle time, and allows you to reduce batch sizes.

If after the just described improvements are made, the process's cycle time is still greater than takt, it may be necessary to introduce inventory or WHIP measures to bring cycle and takt time into alignment. These solutions are considered temporary, and the search to eliminate them continues.

4. Establish pull.

Pull means that a customer's demand for an offering triggers the flow of value-adding activities through a function's extended value steam. A pull system therefore operates in reverse. A customer order (or shipped product) cascades a signal backwards through the system, triggering production and replenishment¹⁰ activity as it proceeds. This approach contrasts with the typical "push" approach to production and replenishment in non-service industries.¹¹ With the push approach, activity is *driven* by targets and schedules that are based on factors such as machine sizing, changeover times, and supply availability. At best, these factors are only partly related to customer demand.

You cannot implement a pull system without having first established flow. As Womack and Jones (2003) pointed out, once a process flows, new possibilities open. You can establish a system of signals (kanbans) that start at the fulfillment end of the value stream and trigger the startup of operations upstream (in-process or production kanban). The kanban system can be extended to supplier operations as well (materials or transport kanban). A combined production and materials kanban system is termed an integrated kanban process. Together, this system carries the signal of customer demand back through the value stream and out to its suppliers. By establishing pull, a business further reduces its inventory needs and improves its cash-to-cash cycle.

5. Strive for perfection.

Striving for perfection uses learning to continuously improve the waste-free production of maximum value by every operation. Placing striving for perfection as the fifth step is misleading.

¹⁰ Replenishment is the restocking of work business with the materials used to complete production.

¹¹ In service industries, pull is always the trigger for service delivery. No one can initiate a service operation until a customer requests it. An automotive repair shop cannot initiate an oil change for your car until you request the service. Neither can a healthcare provider treat a person's illness until the person requests care. The challenge in the service sector is to be available to serve when service is needed. This is the challenge of making the service flow. On the other hand, the supply processes associated with service delivery will generally not be pulled, and these areas would be targeted for implementing pull.

In a real sense, it is the first and only step in applying lean thinking since engaging employees, understanding customer values, mapping and analyzing the extended value stream, and establishing flow and pull are simply expressions of this striving. It is placed fifth to indicate that, once value streams are flowed and pulled, the application of lean thinking continues. Together, employees work to perfect the business's offering and every business function required to provide it. Their efforts extend to every business operation and workplace. Employees gather and analyze information to recognize changes in customer needs and market conditions, prepare themselves to address them, and continue their progress toward realizing the business's purpose and vision. They recycle the application of tools like Kaizen to continuously improve the waste-free operation of every process and workplace (Roll, 2005). They systematically leverage improvement ideas, replicating their use everywhere they are applicable. This collective striving for perfection is guided by the results of the business's yearly Hoshin Kanri business planning process, which sets priorities and cascades goals and plans throughout the business. It also flows from the real-time discoveries of employees as they apply, on a daily basis, their understanding of customer values, skill in detecting waste, and creative abilities to generate ideas that add value.

The business's improvement efforts also extend outward to incorporate its suppliers and customers. Each is treated as a partner in commerce. Suppliers are informed about what the business's customers value and the methods used by the business to satisfy them. The business works with its suppliers to understand their perspectives on their tasks and needs. It goes to their workplaces to learn about their businesses and the challenges they face. It supports its suppliers in learning and using lean thinking to improve their success as businesses and the value-add content of the output they provide to its business.

The business's approach to its customers is similar. If the business serves industry, it engages its customers within the context of *their* businesses to find ways to apply lean that enable their customers' improved success in executing the operations its offering is intended to support. If it serves individuals, it will involve its customers using different methods but to the same end—namely, educating them about more beneficial ways to realize their purposes.

Underpinning the business's efforts to elevate the performance of the members of its extended value stream is the understanding that perfection in its own operations is not possible unless all partners in commerce maximize their realization of value in their operations through the application of lean thinking. Waste in supplier operations causes waste in the producer's operations through, for example, added cost. Inefficiencies in its customers' operations (e.g., poor scheduling of ordering causes uneven demand) also causes waste in the producer's operations.

Finally, striving for perfection expresses itself at the individual contributor level. Employees continuously improve themselves by analyzing their achievements and uncovering the reasons for the success they realized and why still greater success was notachieved. They extract and use their learning to improve how well they implement their core responsibilities and their technical

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roles. They also leverage their learning to improve existing lean tools and build new ones to aid them in removing waste and adding value throughout the business.

Lean's Feedback Information

A lean enterprise uses measurement to monitor its performance and generate the learning it uses to achieve higher levels of success.

What Is Measured

Lean's feedback mechanism focuses on every feature of the business's results, activities, and resources that define it as being a lean enterprise. For example, one essential feature of a lean enterprise's activities is the value-added status of its work processes. The expectation is that the value-added ratio of each work process should increase. As another example, a feature of a lean enterprise's results is the contribution to improved business performance made by employees. The expectation is that employees will demonstrate increasing contributions to business success through, for example, making suggestions that result in waste removal or value enhancement.

How Metrics Are Constructed

For each lean-relevant result, activity, and resource feature, a success criterion is defined.¹² It has three components: an anchor, a measure, and a target (Exhibit 3). The anchor identifies the result, activity, or resource feature about whose status is being gauged and achievement is being judged. The measure identifies some quantity, quality, timeliness, or efficiency metric used to calibrate success—for example, the percentage change in the value-added ratio of a work process. It also describes how the status on that metric will be determined. The target is a level of achievement on the measure that, if realized, indicates successful performance.

How Feedback Information Is Communicated

The status of the business's feedback metrics is reported to employees using displays placed in areas where work relevant to the information being reported is done. The information should also be accessible electronically by any contributor.

How Are Metrics and Targets for Success Decided?

The target for each success criterion is set during the yearly Hoshin Kanri planning process.

Lean's Interfaces

As we understand lean thinking, it incorporates Deming's teaching to Japanese businesses that a business must reach beyond itself and interact effectively with every one of its stakeholders. As shared earlier, Deming taught that "The aim proposed here for any organization is for every-body to gain—stockholders, employees, suppliers, customers, community, the environment" (Deming, 2000, p. 51).

¹² Guidance in how to construct success criteria is provided in the chapter *Task 9 Measure Results* in the *The Lean Champion Resource Guide* (Vitalo, Bujak, Vitalo, Bierley, et al., 2023).

Exhibit 3. Examples of Success Criteria That Would Appear on the Business's Management Dashboards							
Anchor	Measure	Target	Status				
Tells what is being monitored	Tells how its status is gauged	Tells the value on the measure that defines success	Tells the result of the last measurement				
Strategic Section							
 Customers realize greater success by using your offering (Yearly) 	 Percentage change, year over year, in customer ratings of business's offering with regard to it enabling their success as measured by the business's yearly customers satisfaction survey Percentage change year over year in 	10%10%	11%8%				
 Customers report greater satisfaction with the business as their supplier 	 referringe change, year over year, in customer ratings of their satisfaction with the business as their supplier as measured by the business's yearly customers satisfaction survey 						
Revenue growth (net of inflation, price increases, and currency fluctuations) (Quarterly)	Percentage improvement in revenue growth as measured by subtracting current quarter revenues from revenues earned in the same quarter last year and dividing that difference by revenues earned in the same quarter last year. Multiple that result by 100%	12%	9%				
Operating Section							
Business processes continually improved with regard to their value-added ratios	Percentage change, year-over-year, in value-added ratios (VAR) evidenced by each work process averaged across all processes. The VAR is computed using the computational method recommend in Bujak and Vitalo (2014)	10%	15%				

Lean's Interfaces

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Benefiting all stakeholders requires interacting with each stakeholder and demonstrating in those meetings the use of the interpersonal skills of clarifying and confirming (Byron & Bierley, 2003) at a minimum. Each interaction should get information about each stakeholder's thinking with respect to the business so that the business's employees understand the current perspective of each of their stakeholders. It is especially important to grasp what each stakeholder's interests, expectations, and concerns are as related to the business and how well they experience those

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matters as being addressed by the business. After each encounter, it is important to communicate back to each stakeholder how the business has incorporated their perspectives in its decision making and actions. Frequently, a single business decision will address the concerns of multiple stakeholders. For example, when Toyota anticipated the need for fuel efficient cars, it not only served its future customers but benefited their governments and communities. Fuel efficient vehicles produce less pollution and reduce the economic burdens of oil-importing nations. Even oil-exporting nations benefit since their depleting oil resources have extended revenue-generating lives. Hence, with one action, Toyota benefited all its stakeholders, including the governments and communities within which it operated.

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