



## 1. Identify Customers and Specify Value

An **existing customer** is any entity (individual or organization, internal or external to the producing organization) that uses and/or consumes the product or service that is produced. A **potential customer** is any entity that has a need that can be met by specific functions in a product or service that the organization produces.

A product or service has value to a customer if it provides **specific functions** that meet a customer's needs and the customer is willing to pay a specific price for the product or service at a given point in time. The more unneeded functions a product or service has, the harder it is for a customer to justify acquisition because the price point will need to ensure that the cost basis for all functions, needed and unneeded, is covered.

From the definitions above, it can be seen that it is important to ensure that the products or services that existing customers use continue to **provide the value that they need**. For potential customers, it is important to clearly identify the customer's needs in terms of the specific value they expect and use that specified value to structure the design of the product or service. Any functions in the product or service that do not provide value to the customer are unneeded and therefore considered to be **waste** and will put the organization in a less competitive pricing position.

## 2. Identify and Map the Value Stream

A **value stream** is the complete sequence of activities an organization performs in order to produce and deliver its end product or service. It encompasses suppliers, internal processes, customers and end-users.

A **value stream map** is a graphical representation of the series of activities the organization follows in producing and delivering its end product or service. It shows the flow of information and material and the occurrence of actions using easy-to-understand symbols.

The value stream map is usually composed of three parts:

- 1) The flow of material and information from production by suppliers to delivery to customers
- 2) The transformation of the material and information into finished products or services
- 3) The flow of information that supports the first two parts. A value stream map is a graphical representation of the flow and transformation of material and information.

Often, there is more than one value stream in an organization

### 3. Create Flow by Eliminating Waste and Achieving a Lot Size of One

Flow in a process is achieved when the product or service being created progresses through a series of value-added steps **without delays, defects or non-value-added operations**. That means that the product or service moves from the point of production to the point of consumption as quickly as possible. This type of flow, with no waste in the process, is called **continuous** flow.

Mapping the value stream provides **visibility** to the wasteful operations within the processes that are part of the value stream.

The elimination of waste is an important component of achieving flow. However, even after all the possible waste has been eliminated, the configuration of the process may not be conducive to achieving flow for the given customer demand. A **rearrangement** of the process configuration using tools such as line balancing, cellular processing and quick changeover may be required.

### 4. Respond to Customer Pull

Responding to customer pull means that no upstream step in a process produces a component of a product or service until a downstream step requests it. Taking this to its logical conclusion means that **nothing is produced** until the customer asks for it. Producing in batches based on a sales forecast is replaced by producing in continuous flow by **sensing customer demand**.

However, at some point in most value streams, the ability to not produce until a demand signal is received breaks down and **small buffer stocks** of material or information are needed. For example, it would be impractical to wait until a car is ordered by a customer to start mining the iron ore necessary to produce the steel needed for the various components for that particular vehicle. In healthcare, it would likewise not make sense to wait until a patient gets sick with a virus to grow the live cultures necessary to produce the vaccine for that particular patient.

Some of the tools employed to more effectively implement pull are just-in-time (JIT) manufacturing, Kanbans to communicate production signals and demand-driven scheduling – where production schedules are based on actual customer demand.

### 5. Pursue Perfection

The previous four principles of lean interact in what is caused a **virtuous circle**. Each principle, when employed, uncovers more opportunities for achieving the goals of the previous principles. For example, increasing flow almost always uncovers additional non-valued-added operations. As implementation teams begin to experience this effect, the idea that perfection (no waste, continuous flow and producing to demand) can be achieved begins to take hold.

While true perfection may never be achieved, a lean organization **continuously strives** toward that perfection.

Some of the tools employed to pursue perfection are Kaizen (rapid improvement) events, error-proofing, total productive maintenance (TPM) and standardized work.

These 5 Lean Principles first appeared in the book *Lean Thinking* by Womack and Jones, 1996, Simon & Schuster.