

LEAN PROCESSES

What are Lean processes and how are they related to Business Knowledge & Processes?

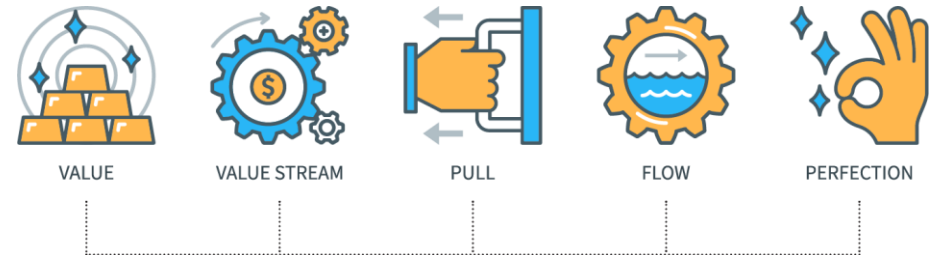
Lean processes focus on maximizing customer value while using fewer resources and minimizing waste. Lean thinking means always thinking about how processes and products can be improved.

Vocabulary

- **Continuous process improvement**—the ongoing improvements of products, services, or processes; related to the Japanese term **Kaizen**—improvement; good change
- **Efficiency**—the ability to achieve a goal with the least amount of waste
- **Waste** – materials or processes that are not creating value for the customer
- **Value** – what the customer is willing to pay for goods they want
- **Value stream** – all the steps in a work process that end with something a customer wants
- **Pull** – producing and delivering products and services when there is customer demand for them; related to the Toyota Kanban method
- **Flow** –ensuring steps in the value stream run smoothly without interruptions, delays, or bottlenecks
- **Perfection** – the overarching goal of meeting customer needs and striving to do it better each day ([source](#))

How will technicians use Lean processes?

Amelia is a manufacturing technician for an automotive parts company. She has been recognized for her contributions to the company’s delivery of quality parts on time to their customers. Recently, Amelia was becoming frustrated that her workstation was being left in disarray from the previous shift. This was impacting her daily production goals. She discussed this with her supervisor and found out there were other issues affecting productivity across shifts. Her supervisor facilitated a meeting with all the technicians to identify the root cause of the problems. Together they came up with a plan to address the decreased productivity. The last 10 minutes of a shift would overlap with the first 10 minutes of the next shift. Processes would not stop running—the flow (a critical principle of Lean manufacturing) would continue—but the technicians would have time to communicate important information, clean the work area, and check machinery (if needed). This change increased the company’s manufacturing productivity and resulted in higher job satisfaction for Amelia and the other technicians.



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Skills Needed for a High-Paying Career

- Prioritizing what customers value
- Following company business processes
- Staying current with technological advancements
- Thinking creatively about how to solve problems
- Communicating effectively
- Demonstrating teamwork

Education

Your local community college provides the classes you will need. An understanding of Lean processes is most often taught within an Engineering Technologies, Advanced Manufacturing or Business associate degree program or in Management courses within general education requirements of an associate degree. Lean business processes affect all sectors of the economy, including businesses and industry in technical fields in which you might work or start your own company. Community college course schedules are designed to accommodate the needs of working students and often include online and hybrid delivery formats. [Find your nearest community college here.](#)

Future Trends

The future of Lean business processes includes:

- More small businesses adopting Lean processes
- Combining Lean business processes with advanced digital technologies like the Internet of Things
- Integration of big data
- Data-driven decision making
- Emphasis on problem solving, interpersonal skills and teamwork

Learn More

- [What Is Lean Process Improvement?](#)
- [The Five Principles of Lean](#)
- [Why Use Kanban to Establish Pull Systems?](#)



Preparing Technicians for the
FUTURE OF WORK



LEAN PROCESSES

What are Lean Processes?

Lean processes are design to help businesses identify and eliminate waste, focus on the activities that create value for the customer, and ultimately, increase company profitability. The approach is based on the idea of continuous improvement and involves ongoing process adjustments to achieve better quality and flow, less time and effort, and lower cost.

Lean Processes Competencies

- Analyzing data to ascertain what customers value
- Following company business processes
- Staying current with technological advancements
- Thinking creatively about how to solve problems
- Communicating effectively
- Demonstrating teamwork

Cross-disciplinary Skills

- Selecting and utilizing appropriate analytics tools
- Conducting stakeholder analyses
- Instituting continuous process improvement
- Calculating Overall Equipment Efficiency (OEE)
- Communicating with internal and external stakeholders

Supply Chain and Logistics Scenario

Ezra is a Logistics Technician for a food supply chain company that provides warehousing and transportation services to restaurants, schools, and retail companies. Ezra is responsible for continuous process improvements in the warehouse. Ezra learned about an automation software program that would be a breakthrough improvement in helping the company better track their inventory without having to rework other processes or the layout of the warehouse. Radio Frequency Identification Data (RFID)-enabled plastic pallets would replace the company's current pallets. These special pallets have RFID tags inserted. RFID provides real-time visibility and location data specific to warehouse aisles, shelves, and shelf level locations. RFID would allow Ezra to track not just pallets and boxes, but the contents inside the boxes as well. RFID are a wireless technology, so Ezra does not need to do any scanning, making this an automated process. Ezra's company has been using the new pallets for one month and is already realizing more efficient inventory management and less waste.

Information Technology Scenario

Mariana is a Network Technician for a small construction company that is part of a network of local companies committed to Lean construction. The company was continuously seeking business process improvements to ensure customers receive the highest quality services at the best rates. Mariana knew her company would benefit from a new server given theirs was nearly five years old. Mariana researched the Environmental Protection Agency's (EPA) enterprise server efficiency levels product information on the Energy Star web site to inform their purchase of a new server. The Energy Star servers included must be priced no more than \$118 than a less efficient model. An efficient product is cost-effective when the lifetime energy savings (from avoided energy costs over the life of the product, discounted to present value) exceed the additional up-front cost (if any) compared to a less efficient option. Servers have become higher performance and more efficient the past 3-4 years; therefore, the company could expect the savings to be even greater.

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Activity

This activity provides students the opportunity to explore Lean business processes and how they can be used in technician roles. Begin with the video and guiding questions in the warm-up. Next, have students review the infographic about Lean principles. Then, break students into groups to discuss the assigned technique and prepare for a brief presentation.

Warm-Up

Review the definition of Lean and examples from the scenarios. Have students watch these 2-minute videos: [Five Lean Principles and Why Do Lean Manufacturing?](#)

Ask students:

- What did you learn from the video?
- What examples of “Lean thinking” have you demonstrated personally, at school or at work?

Activity Steps

1. Begin by reviewing the definition of Lean and examples from the scenarios.
2. Have the students watch the video, then pose the questions in the warm-up to them.
3. Next, project the infographic, [Five Lean Principles for Engineers](#), for students to review.
4. Break students into groups of 3-4 students. Assign each group a lean principle.

5. Have students discuss their Lean principle and how it could be applied to the work of technicians in their discipline or career of interest.
6. Have groups do a brief presentation to the class about application of their principle.

Tools Available

- The Plan-Do-Check-Act (PDCA) Cycle outlines four steps for managing continuous business assessment and process improvement. Continuous process improvement is a key feature of Lean practices. This [free checklist](#) walks you through the process.

Read More

- [Lean Process Improvement: Achieving Project Success with Process Optimization](#)
- [Lessons in Lean Management for Any Industry](#)



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FUTURE OF WORK



ABOUT THE PROJECT

Preparing Technicians for the Future of Work, funded by the National Science Foundation Advanced Technological Education program, recognizes that technicians need an expanded skill set to remain competitive. The project’s Framework for a Cross-Disciplinary STEM Core outlines recommendations for incorporating knowledge and skills in Advanced Digital Literacy, Data Knowledge and Analysis, and Business Knowledge and Processes. Learn more about implementing the Framework at preparingtechnicians.org.