



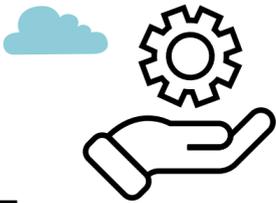
5 KEY LEAN PRINCIPLES FOR ENGINEERS



Lean Principles

Lean methodologies can eliminate waste, the non-value-added component of any production process. When applied properly, lean generates huge improvements in efficiency, cycle time, productivity, material costs, and scrap. This lowers costs and improves competitiveness. According to the Lean Enterprise Institute, a go-to source for lean education, there are five key lean principles:

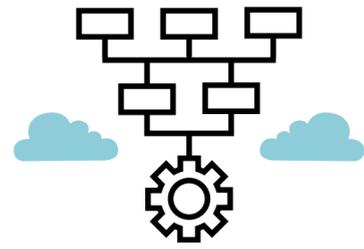
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VALUE

Value is defined by customer needs. Lean producers focus on what customers will pay for, whether it is quality, delivery date, price point, or other requirements or expectations.

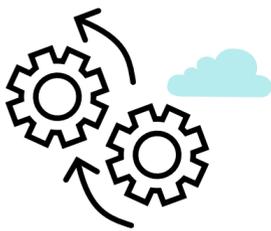
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VALUE STREAM

Map all the steps, from raw materials to delivery, used to make a product and identify and eliminate each step that does not create value.

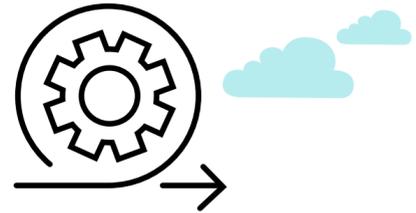
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FLOW

After removing waste, lean companies ensure the remaining production steps flow smoothly without interruptions, delays, or bottlenecks. This may require cross-functional collaboration across all departments.

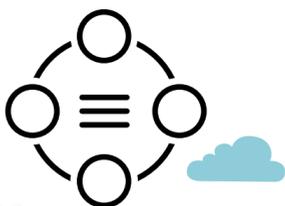
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PULL

Improved flow slashes time to market, so producers can deliver products as needed. “Just in time” manufacturing reduces the need to build or buy products in advance, saving money for manufacturers and their customers.

5



PERFECTION

Lean thinking and process improvement is never done. As gains continue to pile up, every employee should be involved in implementing lean principles to achieve ongoing improvement.