## I'm not a robot



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Ready to begin your first Lean Six Sigma project? Looking for examples for inspiration or reference to get you started? Here are some project storyboards from different industries and from home. Remember, Lean Six Sigma can help you with more than just work! Finance Reducing Underwriting Resubmits by Over 20% Governments Manufacturing
Nonprofit Lean Six Sigma Helps Feed People In Need 45% Faster Technology Over the past 2 years, over 2,000 learners (2,197 to be exact) have come to DCM to learn more about lean and get certified. Read (and watch) their reviews to see how our courses have helped them achieve their career goals. Inhouse Tailored Training for Your Team We
provide training programs that are developed by industry, for industry, 
workforce grows and evolves, our globally certified and industry-validated learning solutions can assess, train and qualify your employees. For more information on how we can help please visit the in-house training page. Membership, Stay Connected. Stay Relevant. Completing a program is a point-in-time exercise that delivers huge value, but there
is a next step to maintaining the currency of your skills in the ever-evolving professional world. Membership is designed to ensure that you are in tune and up-to-date with the latest tools, trends and developments. Being a member provides just-in-time training and continuous professional development,
and an exclusive and evolving content library informed by subject matter experts and industry leaders. 1 1 1 Identifying project ideas for Lean Six Sigma projects typically originate from one of two sources: a Top-Down approach,
initiated at a senior level to address strategic requirements, or a Bottom-Up approach, where employees identify local issues that need attention. Top-Down approach to a practitioner after the project charter
has been drafted by the sponsor. Senior leadership identifies key strategic goals, such as reducing costs, improving customer satisfaction, or increasing efficiency. These strategic projects are then cascaded down through the organisation to ensure alignment with the company's overall strategy. Steps in the Top-Down Approach: Strategic Goals and
Objectives: Senior leaders identify key strategic goals and performance metrics to address areas requiring improvement. Priority Areas: Specific processes or departments that significantly impact the organisation's performance are prioritised. Project Selection: Projects are selected based on their potential impact on achieving strategic
goals.Implementation: These expectations are cascaded down the organisation, ensuring all defined projects are aligned with the company's strategy. Involvement of Lean Six Sigma Belts: Master Black Belts: Assist in the
selection and scoping of projects, providing expertise in feasibility and resource allocation. Green Belts and Yellow Belts: Execute projects identified through the Top-Down approach empowers employees at all levels to identify improvement
opportunities based on their day-to-day experiences and insights. This approach fosters a culture of continuous improvement and leverages the collective knowledge of the workforce. Steps in the Bottom-Up Approach: Employees suggest ideas based on their observations of inefficiencies, bottlenecks, or recurring issues in their
work areas. Improvement Teams: Cross-functional teams, often facilitated by Green Belts or Yellow Belts, are formed to evaluate and prioritise these ideas. Pilot Projects are piloted to test the feasibility and impact of the proposed improvements. Scaling Up: Successful pilot projects are scaled up and implemented across the
organisation. Involvement of Lean Six Sigma Belts: Yellow Belts: Lead small, everyday improvement activities within their local work areas, suggesting and testing ideas that can lead to quick wins. Green Belts: Facilitate improvement teams, guiding the evaluation and implementation of ideas generated by employees. Black Belts: Support larger-scale
projects that arise from Bottom-Up initiatives, providing advanced problem-solving skills. Master Black Belts: Mentor and coach other belts, ensuring Bottom-Up projects are effectively managed and aligned with strategic priorities. Hybrid Approach In practice, many organisations use a hybrid approach that combines elements of both Top-Down and
Bottom-Up methodologies. This ensures strategic alignment while encouraging employee engagement and innovation. Steps in the Hybrid Approach: Employees are encouraged to identify and suggest improvement ideas
that align with the strategic priorities. Collaboration: Cross-functional teams work together to evaluate and implement projects, with oversight from Master Black Belts or Black Belts or
projects. This collaborative effort ensures both strategic objectives and grassroots innovations are addressed. Identifying Potential Projects objectives and grassroots innovations are addressed. Identifying Potential Projects objectives and grassroots innovations are addressed. Identifying Potential Projects objectives and grassroots innovations are addressed. Identifying Potential Projects objectives and grassroots innovations are addressed. Identifying Potential Projects objectives and grassroots innovations are addressed. Identifying Potential Projects objectives and grassroots innovations are addressed. Identifying Potential Projects objectives and grassroots innovations are addressed. Identifying Potential Projects objectives and grassroots innovations are addressed. Identifying Potential Projects objectives and grassroots innovations are addressed. Identifying Potential Projects objectives are addressed in the projects objectives are addressed in the projects objective projects. In the project object is addressed in the project object o
operational objectives?What are your customers complaining about?What problems do staff deal with daily?Sources of Ideas:Go & See: Regularly walk around operational or frontline areas to see and feel where issues exist.Performance Metrics: Analyse daily, weekly, and monthly performance metrics to identify significant changes.Customer
Feedback: Look for recurring themes in customer complaints. Staff Feedback: Address issues raised by staff, such as drops in morale or specific feedback. Non-Conformance: Identify instances where standard processes are not followed, indicating possible areas for improvement. Not every issue is best tackled using the Lean Six Sigma methodology. At
the outset, consider the following questions: Is there a gap between current and desired performance? Is the cause of the problem unknown? Is the solution unclear? If the answers to these questions are Yes, No, and No respectively, the project is likely suitable for Lean Six Sigma. Conversely, if the cause is already understood or the solution is evident
Lean Six Sigma is not necessary. Lean Six Sigma projects should also be: Achievable within a timeframe of ideally 6 to 9 months Clearly aligned with no definitive end date Focused on implementing known solutions Justifications for unnecessary.
spendingConclusionIdentifying Lean Six Sigma project ideas is crucial for driving meaningful improvements within an organisation. Whether through a Top-Down, Bottom-Up, or hybrid approach, involving the right Lean Six Sigma belts at each stage ensures that projects are strategically aligned, feasible, and impactful. At Marí Consulting Group, we
specialise in quiding organisations through the process of identifying and executing Lean Six Sigma to achieve your operational excellence goals. Six Sigma is a project management methodology that focuses on reducing the number of defects in a process. 6
Sigma project examples are laid out throughout industries. Six Sigma aims to reduce the number of defects by eliminating all factors that might contribute to blemishes. Six Sigma methodology has been applied in different sectors, such as manufacturing,
healthcare, finance, and more. Six Sigma complete project examples involve all of these sectors. 1. Healthcare sector, Six Sigma projects include improving quality and efficiency in processes such as medical records. In the
financial industry, Six Sigma projects involve developing more accurate risk models for credit card fraud. Six Sigma is a process improvement methodology. It is a set of tools and techniques that help companies identify and eliminate the causes of defects and errors. Applying Six Sigma in the healthcare sector has led to some exciting projects. One
such project was undertaken by Johns Hopkins Hospital, where they used Six Sigma to improve their patient satisfaction scores. Example of Six Sigma to improve their patient satisfaction from Minimising medication errors Improving patient safety Cutting down the length of stay in hospital 2. Manufacturing Many companies are trying to
reduce their production time and cost. One of the most successful methods for doing this is Six Sigma project examples of manufacturing include using the method to promote manufacturing sector. Six Sigma is a methodology
that Motorola developed in 1986 to improve quality and eliminate defects from manufacturing processes. Many other businesses have since adopted it. Examples of Six Sigma projects aim to create a process that produces a high-quality
product. The goal of Six Sigma projects is to reduce variability in the process as much as possible. Every process should be able to have at least 99% of items without defects or errors. Example of Six Sigma Projects in Manufacturing: Improving customer service Cutting down lead times for new products Reducing defects in products Enhancing
quality control processes Minimizing maintenance costs Improving product design Lowering scrap rates 3. Finance Six Sigma is to create a culture of quality and innovation that reduces defects and improves customer satisfaction. The finance sector has
used it for risk management, balance sheet management, and investment portfolio optimization. Example of Six Sigma Projects in Finance: Improving customers to get their money back Cutting down the time taken to process payments Minimizing the time takes to pay bills Lowering the cost of
credit card transactions 4. Governments The key to the success of Six Sigma projects is ensuring that the project team is well-trained and equipped with all necessary resources. Thus, government sectors enjoy a clear benefit from the Six Sigma project. The Six Sigma projects are used to improve the efficiency and effectiveness of government
organizations. One can implement this process in any part of the government, but they are more common in departments that deal with service delivery, such as healthcare and education Improving customer service
Cutting down the time taken for a passport application Minimizing the time at the airport Improving the quality of water supply Improving traffic flow on roads Improving the efficiency of
public transport Enhancing the provision of services Enhancing environmental sustainability Improving energy efficiency 5. Nonprofit There are many ways that Six Sigma can help nonprofits increase their impact, such as by improving administrative processes or increasing the efficiency of fundraising efforts. In the nonprofit sector, one can use Six
Sigma projects to improve the efficiency and effectiveness of the organization. Simple Six Sigma project examples out there. Example of Six Sigma Projects in Nonprofit Sector: Minimize time to train volunteers Cutting down time to receive donations Minimize time to reply to
donors Minimize risk of issues at fundraising event Optimize email marketing content to maximize donations Analyze opportunity to increase staffing to incre
is a management system that helps companies improve their service quality and reduce production costs. The Six Sigma project examples in IT industry are noticeable. It was designed for manufacturing but can also be used in other sectors, such as IT Technology. Six Sigma is not a relatively new concept, but it has recently gained popularity in the IT
sector. It is repeatedly used by software developers who want to create high-quality products that are bug-free and meet the customer's expectations. Six Sigma has also been successfully applied in IT/Technology: Reduce
network/server/application/website downtime Improve system reliability/uptime Improve the process of logging in to network from remote locations Standardize computer loads for configuration and support productivity improvement Minimize the risk of access to the system from non-authorized employees Decrease time to release new software/application/website downtime Improve system from non-authorized employees.
features and functionality Minimize time to respond to help desk requests Enhance speed of webpage loading/processing Decrease number of software licenses based on usage Improve data governance, data security, and source control processes against best practices/guidelines Minimize the amount of resources, hours, or time delays for performing
inspection/quality reviews in the process 7. Automotive Six Sigma is a methodology widely seen in the manufacturing sector for years. It has now been implemented in other sectors of the economy, such as automotive technology. The Six Sigma methodology is an approach that Motorola developed to improve quality and reduce costs. General Electric
including recruitment. Some companies use it to eliminate human intervention, while others use it to avoid costly mistakes. The project's fundamental goal is to improve the efficiency of the process and make it more cost-effective by reducing waste. Six Sigma project examples of
recruitment involve making several data-driven decisions. Example of Six Sigma Projects in Recruitment: Minimize the turnaround time to hire an employee Evaluate and improve gender pay equality Improve employee on-boarding and orientation processes Decrease the time to process an insurance claim Improve hit rate for successful hiring
is using Six Sigma to improve safety on construction sites. Motorola started this project, and many other companies have adopted it. Construction Sector: The construction sector also uses Six Sigma for its projects in Construction: Improving the quality of
construction projects and materials Decrease the number of defects in construction projects Cutting down the time taken for construction projects Reducing accidents during construction Minimize delays in construction projects Weld repair rate reduction Enhancing
industries, such as education technology. Six Sigma projects have been implemented in teacher evaluation and training, student assessment, and curriculum design in the education sector. An LSS Green Belt certification allows you to make a mark when it comes to Lean Six Sigma projects. The process improvement methodology has been used to
improve student engagement, reduce dropouts, increase graduation rates and enhance teacher performance. Example of Six Sigma Projects in Education: Ensuring that student performance Increasing the efficacy of teachers Reducing the time taken
for students to pass exams Improving student retention rate Diminishing dropout rates Reducing plagiarism Reducing the amount of time it takes for teachers to grade papers 11. Entertainment The Six Sigma methodology has been an increase in the
use of Six Sigma projects over the last few years. It is because it helps them improve their processes and reduce costs. The Six Sigma methodology is created on the idea that defects are not random and are caused by identifiable, controllable, and preventable causes. There are various sectors where Six Sigma has been implemented with great
success. One such sector is entertainment technology, where Six Sigma has helped reduce the number of errors made while shooting films, editing them, or printing them. Example of Six Sigma Projects in Entertainment: Improving customer service Minimize the length of the queue at movie theaters Cutting down the time takes for a movie to be
released Decrease the amount of time takes to make a movie Reducing staff turnover Decrease the time takes for a new album to be released Enhancing the quality of the entertainment experience 12. Sports The Six Sigma methodology has been applied to various sectors, such as sports technology. This project aims to improve athletes' performance
by analyzing their data and providing personalized training programs. Sports technology has been around for a while now. From wearable technologies to sport-specific data analytics, there are plenty of ways that the sports industry has been able to use technologies to sport training programs.
 manufacturing process of sporting equipment. For example, Adidas has reduced its manufacturing time by over 30% by implementing Six Sigma techniques into its products and faster delivery times for customers who want their products
waiting time for restrooms Enhance player performance (accuracy/consistency) on skills tests (4-yard dash, vertical jump, agility drill, throwing accuracy, etc) Reduce weight (more exercise or less calorie intake) Reduce risk of litigation with fans, staff and players 13. Grocery/Supermarket Six Sigma is a project management methodology widely used
waste and improve customer satisfaction. They have also used it in their bakery department, reducing waste by 30%. Kroger has applied it in their meat departments, where they have reduced shrinkage by 10%. Example of Six Sigma Projects in Grocery/Supermarket: Enhance customer satisfaction scores or flow of customer journey through the
store Increase sales of local/regional baked goods Increase number of customer bringing their bags or reusable containers Decrease wasted food from prepared foods Lean Roster for Team Management Improve organization and safety of back dock Improve space utilization to maximize customer options Minimize handling and flow of products into
store and onto shelf Optimize the use and management of equipment and assets To download a printable PDF of sample Six Sigma project examples, click here. Conclusion Six Sigma project is a management technique that utilizes data and statistical methods to help organizations identify and solve problems. Six Sigma projects are different from
traditional quality improvement efforts because they focus on both the customer and the process—collecting data, analyzing it, and finding solutions. KnowledgeHut's Six Sigma course offers you an opportunity to make your dreams come true. The key to overcoming barriers to Six Sigma projects is having enough good people committed to the
project. Improving quality with Six Sigma projects only takes a few weeks. Use Six Sigma project management techniques to improve the quality of your products and services. Share — copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt — remix, transform, and build upon the material for any
purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution — You must give appropriate credit, provide a link to the licensor endorses you or your use. ShareAlike
— If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrict others from doing anything the license permits. You do not have to comply with the license for elements of the
material in the public domain or where your use is permitted by an applicable exception or limitation. No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. The following is a list of Lean and
Six Sigma projects to consider, based on your industry or department. Actual case studies we worked on are also available. Finding a project to complete your Lean and/or Six Sigma certification is a major challenge for those who take training, so hopefully this list will give you ideas to consider. In general, consider process areas that come to mind
when you think about these questions: Take the longest to complete? Have the most complaints? Require the most employees to support? Seem inconsistent month to month? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the most hectic? Have the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the most hectic? Have the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the most hectic? Have the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the most hectic? Have the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the most hectic? Have the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support? Seem the highest risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support risk (keep you up at night)? Have legal risk or potential reputation damage? Have "heroes" to support risk (keep you up at night)? Have legal risk (keep you up at night)? Have 
saving the day" to meet deadlines? Here are some video examples: Lean in Manufacturing, Government and Healthcare Have too many projects to decide? Consider using a Project Prioritization? Consider our virtual coaching
and certification program! Personal LifeLosing weight or improving fitness routine/workouts (miles walked/run, weights lifted, workouts per week, basketball free throws made, golfing accuracy or distance, stretching/meditation routine, stress mitigation, resting heart rate, etc) Reducing debt, bills and expenses Reducing time to
complete chores (make dinner, mow lawn, vacuum, do dishes, get ready for work, laundry, etc)Reduce electricity or fuel usageReduce risks in your home (natural disaster preparation, equipment maintenance, falls/accidents, late payments on credit cards, etc)Improve inventory management food and other consumables (bread, paper towels, toilet
paper, fruits and vegetables, etc)Reduce space needed for storage, clothing, textbooks, papers and other unused itemsImprove average sleep hours per night or quality of sleep (sleep score)Reduce your implicit biasesCheck out our "Lean at Home" online course for ways to improve your personal life!Finance and AccountingReduce the cycle time to
close the booksImprove the variation in forecast accuracy for sales or budgetsReduce the time to generate recurring (weekly or monthly) reportsReduction of Days Sales Outstanding (DSO) Reduce payroll process cycle time or
and the value of employee performance reviewsReduce absenteeismImprove employee engagementSalesImprove employee engagementSalesImprove employee engagementSalesImprove employee engagementSalesImprove employee satisfaction from survey resultsIdentify and correct retention issuesIncrease employee engagementSalesImprove employee emplo
% of sales from new customersIncrease % of bids/proposals wonReduce time required to enter sales ordersReduce errors and rework associated with sales ordersReduce customer credit worthiness cycle timeReduce the number of "bad deals" that are processedImprove the cycle time of the entire sales order to cash processIncrease repeat
orders/customersHelp technical sales associates use data to improve their sales successReduce time to setup new customers in the systemImprove service provider top-up system)Shipping, Receiving, and WarehouseImprove on-time delivery of
products to customersReduce number of finished goods inventory without impacting deliveries (oil drilling fluids)Reduce processing time from items received until available for production teamReduce time to retrieve parts when requested or triggeredSetup pull system with factoryReduce transportation costs (reduce carrier rate per mile)Improve on
time delivery of goods to our facility from vendorsImprove documentation accuracyReduce time to unload trucks and shipmentsReduce maintenance)Improve and minimize inspection processesReduce floor space requirements for warehouseInformation Technology (IT) and
productivity improvementReduce number of software licenses based on usageImprove project request turnaroundImprove quote accuracy for projectsReduce time to respond to help desk requests turnaroundImprove quote accuracy for projectsReduce time to respond to help desk requests turnaroundImprove quote accuracy for projectsReduce time to respond to help desk requests turnaroundImprove quote accuracy for projectsReduce number of security alerts/alarms/false alarms/violationsReduce risk of access to system from non-authorized
employeesImprove data governance, data security, source control processes against best practices/guidelinesReduce amount of resources, hours, or time delays for performing inspection/quality reviews in the processEvent PlanningOnline Retailer / e-CommerceProduct/Service DesignReduce time required to design a product or serviceReduce error
in design or find them earlier in developmentReduce estimated production cycle timesImprove predictions of capability and risk of new products and servicesBankingStreamlining the loan approval process to
reduce the time taken from application submission to final approvalImproving the account opening processDecreasing ATM DowntimeStrengthening the account opening processOptimizing Credit
Card Approval ProcessMinimizing errors in check processing to improve accuracy and reduce the need for manual interventionStreamlining Mortgage Application Processing to improve accuracy and reduce time to answer
and handle phone callsIncrease employee knowledge to reduce response timeReduce number of times customer are put on holdReduce calls that are droppedReduce time to respond to issues and queriesIncrease customer satisfaction scores (survey results)HealthcareManufacturingImprove test yieldsReduce testing time based on sampling and
defectsReduce batch sizesStandardize instructions for performing tasksReduce overtime %Increase capacity at process bottlenecks (steel hardware)Reduce setup time during equipment changeoverImprove communication between shiftsReduce lead time from work order start to
finish (Aluminum Casting)Reduce risk of supplier late deliveries or quality issuesReduce time to respond to problemsReduce variation in manufacturing processes (steel wire capability and cost reduction)Reduce amount of resources, hours, or time delays for performing inspection/quality reviews in the processSportsEvaluate and analyze best
marketing approaches Reduce fan complaints Increase average sales per attendee Reduce time for fans to enter venue Reduce time for fans time for fan
player lineups get the best resultsImprove player performance (accuracy/consistency) on skills tests (4-yard dash, vertical jump, agility drill, throwing accuracy, etc)Reduce weight (more exercise or less calorie intake)Improve scouting or recruiting process based on historical data and outcomes (like the movie, Moneyball)Reduce waste (motion
 waiting, transportation, overprocessing, etc) during practice timeGrocery/SupermarketImprove customer satisfaction scores or flow of customer searching for items (better
 signage, floor markings, etc)Reduce time for customers to make buying decisions (better labels, color coding, etc)Reduce number of lost shopping basketsIncrease number of customer bringing their own bags or reusable containersIncrease sales of local/regional baked goodsReduce stock theft and losses (shrink)Reduce wasted food from prepared
foodsReduce duplication of time refilling excess stockReduce time to manage/handle loose stock (items out of place)Improve space utilization and safety of back dockReduce handling and flow of products into store and onto shelfOptimize use and management of
equipment and assetsNonprofits (Lean nonprofit examples video)EnvironmentCorporate Responsibility, Diversity, Equity and InclusionIncrease employee volunteering in communityReduce gender and racial pay gaps when corrected for experience and educationIncrease employee volunteering in communityReduce gender and racial pay gaps when corrected for experience and educationIncrease employee volunteering in communityReduce gender and racial pay gaps when corrected for experience and educationIncrease employee volunteering in communityReduce gender and racial pay gaps when corrected for experience and educationIncrease employee volunteering in communityReduce gender and racial pay gaps when corrected for experience and educationIncrease employee volunteering in community and inclusionIncrease employee volunteering in community and inclusion in community and
company racial and gender differencesIncrease employee and company donations and fundraising to local nonprofitsReduce employee harassment and inequity complaintsIncrease employee and company donations and fundraising to local nonprofitsReduce employee harassment and inequity complaintsIncrease employee and company donations and fundraising to local nonprofitsReduce employee harassment and inequity complaintsIncrease employee and company donations and fundraising to local nonprofitsReduce employee harassment and inequity complaintsIncrease employee and company donations and fundraising to local nonprofitsReduce employee harassment and inequity complaintsIncrease employee and company donations and fundraising to local nonprofitsReduce employee harassment and inequity complaintsIncrease employee and company donations are supply chain and inequity complaintsIncrease employee and company donations are supply chain and inequity complaintsIncrease employee and company donations are supply chain and inequity complaintsIncrease employee and company donations are supply chain and inequity complaintsIncrease employee and company donations are supply chain and inequity complaintsIncrease employee and company donations are supply chain and inequity complaintsIncrease employee and company donations are supply chain and inequity chain and inequity chain are supply chain and inequity chain and inequity chain are supply chain and inequity chain and inequity chain are supply chain and inequity chain are supply chain and inequity chain and inequity chain are supply chain and inequity chain and inequity ch
applications to job postingsEducationGovernmentOffice Lean manufacturing is a methodology for maximizing customer value while minimizing waste in production. In practice, it means streamlining processes to only use the necessary resources and eliminate activities that don't add value. Originating from Toyota's famous production system, Lean
focuses on continuous improvement (often called Kaizen) and respect for people. The approach isn't about cutting corners or headcount - it's about working smarter so that you deliver quality products faster and at lower cost. Did you know? Over 70% of manufacturers that embraced Lean in 2024 saw around a 15% increase in operational efficiency
This underscores why Lean remains so popular today. Nearly 70% of all factories have adopted Lean methods in some form, from automotive plants to hospitals. Companies turn to Lean manufacturing to reduce delays, improve quality, and respond quickly to customer demand. In fact, when done right, Lean initiatives can yield an average 200% of all factories have adopted Lean methods in some form, from automotive plants to hospitals.
 Return on Investment within 12-18 months - a testament to its power in boosting ROI.( Pro Tip: New to Lean? Watch our 4-minute explainer video for a quick overview of Lean principles in action.) Lean's origins trace back to the Toyota
engineers Taiichi Ohno and Eiji Toyoda pioneered a discipline of eliminating waste and continuously improving processes to do more with less. TPS introduced practices like just-in-time production" wasn't coined until 1988 - John Krafcik used
it in a landmark MIT Sloan article titled "Triumph of the Lean Production System." It gained global prominence with the 1990 publication of "The Machine That Changed the World," in which James Womack and colleagues detailed Toyota's methods. Through the 1990s and 2000s, Lean principles spread worldwide across industries. Manufacturers in
the West adopted Lean to compete with Japanese efficiency, and by 2007 about 70% of US plants were using Lean in some form. Over time, Lean evolved beyond the factory floor. Service sectors, software companies (Lean Startup methodology), and healthcare providers all found ways to apply Lean thinking to eliminate waste in their processes. In
the early 2000s, many organizations also combined Lean with Six Sigma's defect-reduction methods - giving rise to Lean principles with digital
technologies (IoT, AI, automation) to achieve even greater agility and data-driven improvements (more on that later). Is Lean old news? Not at all - Lean manufacturing is more critical than ever in 2025. Organizations face complex supply chain disruptions, pressure for efficiency, and sustainability goals. Lean provides a proven playbook to tackle
these challenges in a data-driven way. Here are a few reasons Lean remains highly relevant:Proven Results: Decades of data confirm Lean's impact. Implementing costs after Lean, thanks to reduced inventory and streamlined
flow. Quality improves as well - defect rates drop dramatically (up to 80% fewer defects on average), boosting customer satisfaction. These gains directly translate into bottom-line benefits and competitive advantage. High Adoption (and Room for Improvement): Lean is widely practiced - as noted, roughly 70% of factories use Lean methods. Even
traditionally "high-mix" industries and small manufacturers have embraced Lean. However, many efforts struggle to sustain. One study found only about one in four companies achieve truly satisfactory results from their Lean initiatives. (Earlier research in 2007 pegged the success rate even lower - just 2% fully met their objectives!). This gap
highlights that while Lean matters, it must be done right to deliver its full value. Companies continue to invest in Lean training and cultural change to get better outcomes in 2025. Case in Point - Stellantis: Lean is still delivering big wins. For example, Stellantis (the global automaker) recently used Lean methods to turn around an underperforming
engine plant. The plant had been one of the worst performers in the company, but by systematically applying Lean, all key performance indicators began trending upward year-over-year. Over a three-year transformation, they slashed equipment breakdowns and improved productivity to bring the plant above corporate benchmarks. This modern case
proves that even in 2025, a strong Lean implementation can revive struggling operations. Aligning with 2025 Priorities: Lean's focus on waste means less energy and material usage - Lean factories typically use 10-25% less energy and produce up to 40% less scrap. Lean
 also builds resilience. Post-pandemic, manufacturers need agile processes and localised supply chains; Lean provides tools for flexibility and quick changeovers. Finally, Lean's people-centric approach resonates with the push for employee engagement and upskilling on the shop floor. In short, Lean still matters because it delivers tangible
improvements and addresses contemporary challenges. The key is understanding and applying Lean's core principles correctly - which brings us to those foundational ideas. Lean manufacturing is built on five core principles first articulated by Womack and Jones in Lean Thinking. These provide a roadmap for any Lean transformation, from defining
what's important to creating a system of continuous improvement. The five principles (in order) are: Value - Define What Customers Value from the customer pay for? This principle forces you to distinguish value-adding activities from non-value-adding ones (waste). For a car manufacturer, for
instance, value might be "a reliable vehicle delivered on time." Any process step that doesn't contribute to that - e.g., excessive storage or rework - is not creating value, map out the value stream: all the steps required to deliver
that value across your organization. This is where Value Stream Mapping (VSM) comes in (more on VSM in the toolbox section). The goal is to visualize the entire flow of materials and information – and identify every instance of waste (redundant steps, delays, defects, etc.). Often, 95% of total lead time is non-value-added, and mapping makes these
wastes visible. By analyzing the value stream, you pinpoint where to apply Lean tools. Flow - Make the Process Flow: Now, redesign the production process, products move in a continuous flow through production, rather than sitting idle. This might involve
rearranging equipment into cells, balancing workloads, or breaking down tasks so that work can flow one piece at a time. A key concept here is takt time - matching the pace of production to customer demand. By creating flow at the takt time, you eliminate bottlenecks and waiting. The result is shorter lead times and higher efficiency, as work
progresses in a steady rhythm instead of the stop-and-go of batch queues. Pull - Let Customer Demand Pull Production: Lean systems use pull production; meaning nothing is made or moved until the next process (or customer) needs it. This is the opposite of mass production in the next process. (or customer) needs it. This is the opposite of mass production in the next process.
producing "just enough, just in time." Tools like Kanban cards are used to signal demand and control production (one of the worst wastes) and reduce excess inventory. Think of a supermarket shelf that is restocked only as shoppers buy items. In a factory, pull systems ensure each station only
works on an item when requested by the next station, which in turn is driven by real customer orders. The outcome is minimal inventory, less working capital tied up, and a production system that can quickly adapt to changes in demand. Continuous Improvement (Perfection): The final principle is seeking perfection through continuous improvement
Even after streamlining value streams and implementing pull, the work isn't done - Lean is a journey, not a destination. Organizations must cultivate a continuous improvement culture where employees constantly hunt for better ways and incremental improvement. This involves regularly conducting Kaizen events (focused improvement workshops)
using root cause analysis (e.g., 5 whys), and empowering front-line teams to implement ideas. The mindset is that there is always room to improve quality, cost, delivery, and safety. By looping back and iterating, you systematically approach the ideas. The mindset is that there is always room to improve ment (often referred to by the Japanese term Kaizen) is what
sustains Lean in the long run - it turns one-off changes into an ongoing, company-wide practice of excellence. These five principles - Value, Value Stream, Flow, Pull, and Continuous Improvement - provide a high-level guide to implementing Lean. Next, we'll dig into some specific tools and concepts (the "Lean toolbox") that support these principles
day-to-day. While Lean is fundamentally a philosophy, it's supported by a rich toolbox of techniques to identify and eliminate waste. Practitioners often combine multiple Lean toolbox:5S is a foundational Lean method for creating and maintaining an
organized, efficient workplace. It stands for Sort, Set in Order, Shine, Standardize, Sustain - five steps to declutter and standardize a work area: Sort: Remove unnecessary items from the workspace, keeping only what is required. (If in doubt, move it out!) Set in Order: Arrange the remaining items logically and label everything so it's easy to find
(often using shadow boards, tool outlines, floor markings, etc.). Shine: Clean the work area thoroughly and routinely. A clean environment helps reveal problems (like leaks, spills, wear) early and boosts morale. Standardize: Establish standards for the above three steps - create routines, schedules, and visual controls to keep the area organized and
clean consistently. Sustain: Ensure the 5S habits stick by training staff, doing regular audits, and making 5S part of the culture. This is about discipline and continuous improvement. A well-implemented 5S program can dramatically improve safety, quality, and efficiency. Workers spend less time searching for tools and supplies, and problems (like
excess inventory or machine issues) become immediately visible in an ordered environment. As one Lean practitioner noted, 5S might seem basic, but "it's amazing how such fundamental changes can cascade into measurable gains in productivity." In many companies, 5S is the first Lean tool deployed because it builds discipline and sets the stage for
other improvements. At the heart of Lean is the relentless elimination of waste. "Waste" in Lean is any activity that does not add value to the customer. Originally, Toyota identified 7 wastes (muda) in manufacturing, and later an 8th waste (related to underutilized talent) was added. These are commonly remembered by the acronyms TIMWOODS or
DOWNTIME:T - Transport: Unnecessary movement of materials or products. For example, excessive forklift trips moving parts around a factory due to poor layout. Transport adds cost and risk (damage, loss) but no value. I - Inventory: Excess inventory of raw material, work-in-progress (WIP), or finished goods. Inventory ties up cash and can hide
problems. Lean aims for just-in-time levels of inventory - only what's needed, when it's needed. M - Motion: Unnecessary movement by people. This could be operators walking back and forth to fetch tools, or excessive ergonomic strain. Poor workstation layout or processes cause extra motion, which is wasted effort. W - Waiting: Idle time when people
or machines are waiting for the next step, materials, or information. For instance, an assembly line that's frequently stopped due to bottlenecks causes workers to stand waiting - pure waste. O - Overproduction: Producing more or earlier than the next process or customer needs. This is considered the worst waste, because it leads to many other
wastes (inventory, extra handling, etc.). Making 100 parts "just in case" when only 50 are needed is overprocessing: Doing more expensive processes than required. Examples: overly tight tolerances, unnecessary polishing of a surface, or multiple signatures where one would do. Overprocessing often stems
from not clearly understanding quality requirements.D - Defects: Any work that is scrapped or requires rework. Defects are obviously waste - they consume resources and materials without delivering value. Plus, defects can lead to unhappy customers and warranty costs. Lean emphasizes "building quality in" (e.g., poka-yoke mistake-proofing) to
prevent defects at the source. S - Skills (Unused Talent): The waste of not engaging or leveraging people's skills, ideas, and talent. For example, frontline employees may see problems and solutions every day, but if their input is ignored, that potential improvement is lost. Lean cultures seek to tap into employees' creativity through suggestion systems
cross-training, and empowerment. Identifying these eight waste sis a core Lean skill - you train your team's eyes to spot waste everywhere. A helpful exercise is a "waste walk": go to the gemba (work floor) and observe processes specifically to catch TIMWOODS in action. For instance, you might notice an operator waiting 30% of the time for parts
(Waste of Waiting), or stacks of inventory piling up between departments (Waste of Inventory). Once wastes are identified, you can apply other Lean tools to reduce or eliminate them. Many companies post an "8 Wastes" infographic (like the one above) in work areas as a daily reminder. By systematically removing TIMWOODS wastes, processes
become far more efficient, cost-effective, and agile. Value Stream Mapping (VSM) is a powerful visualization tool for analyzing and improving an entire process flow. It involves creating a diagram of every step involved in delivering a product or service, from start to finish, and categorizing each step as value-added or non-value-added. Unlike a basic
process map, a VSM also captures key data such as cycle times, wait times, inventory levels, and information flow (e.g., orders, schedules) between steps. The result is a big-picture view of your value Stream" principle). Teams will
draw a Current State map to understand how things currently operate. This often reveals eye-opening facts - for example, you might discover that a product spends 95% of its time in queue and only 5% in actual work, or that there are redundant approval steps. From there, the team designs a Future State map with Leaner flow (fewer handoffs,
balanced workloads, pull systems, etc.). The VSM essentially becomes the strategic plan for improvement: it shows where to apply Lean tools like Kanban or 5S to have the biggest impact on overall lead time and waste. VSM is typically done with pen and paper or sticky notes on a board, but there are also software tools. It uses standardized symbols
(for processes, inventories, transports, electronic information, etc.) which makes it easier to interpret. A key part of mapping is calculating takt time, process cycle efficiencies, and identifying the critical path. By visualizing takt time, process cycle efficiencies, and identifying the critical path. By visualizing takt time, process cycle efficiencies, and identifying the critical path.
improvements, value stream maps are living documents - Lean teams revisit and update them periodically as processes improve. Equipment downtime and breakdowns are huge sources of waste in manufacturing. Total Productive Maintenance (TPM) is a Lean toolset aimed at maximizing equipment downtime and breakdowns are huge sources of waste in manufacturing.
maintenance. The goal of TPM is often summarized as achieving "zero breakdowns, zero defects, zero accidents." In practice, TPM programs empower machine operators to perform routine maintenance technicians. This operator
involvement, combined with scheduled preventive maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Kaizen (focused improvement to eliminate root causes of downtime), Planned Maintenance (operators caring for their machines), Planned Maintenance (operators caring 
work), Quality Maintenance (preventing defects through equipment care), and Training (developing multi-skilled, equipment that factors in availability, performance, and quality. In a successful TPM
implementation, companies see dramatic reductions in unplanned downtime, longer equipment lifespan, and a safer workplace. For example, one study found TPM and Lean manufacturing, TPM complements other initiatives like flow and pull - there's no
point in creating a smooth flow if machines keep breaking down unexpectedly. Thus, many Lean organizations treat maintenance as everyone's responsibility. A simple TPM practice is the daily "gemba walk" by managers to inspect equipment and ensure maintenance routines (like 5-minute 5S cleaning) are done. TPM also fosters a sense of
ownership among operators, which increases engagement. By aiming for zero downtime, TPM eliminates a major category of waste (Breakdowns = unplanned Waiting + Defects) and keeps the Lean machine humming. (Tip: Consider implementing a basic TPM checklist for operators, which increases engagement. By aiming for zero downtime, TPM eliminates a major category of waste (Breakdowns = unplanned Waiting + Defects) and keeps the Lean machine humming.
to get you started.) Now that we've covered key Lean tools and concepts, the next section outlines how to put it all together - a step-by-step roadmap to implement Lean in your organization. Implementing Lean manufacturing is a journey that requires careful planning and cultural change. Below is a 7-step roadmap to guide a Lean transformation.
These steps will help you systematically introduce Lean principles and sustain them for long-term success: Secure Leadership Commitment - "Top-down support" is the first ingredient for Lean success. Begin by obtaining buy-in from senior leadership.
This means leadership doesn't just approve of Lean; they actively champion it. When management is visibly involved - attending Lean trainings, participating in Kaizen events, and recognizing teams' improvements - it sends a powerful message. Without unwavering leadership support, Lean efforts risk stalling when faced with the first obstacles. So,
Step 1 is educating leaders on Lean's long-term benefits (beyond cost-cutting) and ensuring they are aligned with the cultural changes ahead. Assess Current State - Before jumping into solutions, take a hard look at where you stand. Conduct a thorough Lean assessment of current processes. This often involves Value Stream Mapping (VSM) of your
key value streams, as well as gathering baseline metrics (cycle times, defect rates, inventory levels, etc.). Identify obvious wastes - e.g., is there a lot of WIP sitting around? Long queues? Frequent rework? Engaging an experienced Lean coach or performing a Lean audit at this stage can be very insightful. The goal is to pinpoint the biggest gaps
between current performance and customer expectations. By quantifying things like lead time or scrap percentage now, you'll have a baseline to measure improvement to systematically observe and note wastes in each department.) Build Lean Team & Knowledge - Lean is a team
sport, so form a cross-functional Lean team to drive the implementation. Include members from different departments (production, quality, maintenance, supply chain, etc.) and levels (operators, supervisors, engineers). This team will be your core change agents. Invest in Lean training for them and for the wider workforce. Everyone from the CEO to
the shop-floor should learn basic Lean concepts. Consider certifying key individuals through Lean Six Sigma belts (e.g., Green Belt training) to deepen expertise. Knowledge building also involves communicating the "why" behind Lean to all employees - emphasize that Lean is about empowering workers to improve processes, not about layoffs. By
creating understanding and a sense of ownership, you prepare the cultural soil in which Lean can take root. Identify Quick Wins (Pilot Projects) - Rather than changing everything at once, start with a pilot project in a focused area. Look for a process that is high-impact but manageable - for example, a particular assembly line, a product family, or one
shift. Ideally choose an area with clear pain points (quality issues, backlog, etc.) where Lean tools could make a visible difference. Work with the local team there to apply Lean techniques (maybe 5S + standardized work, or a Kanban system to address a material shortage issue). Quick wins are improvements that can be achieved in a few months and
clearly demonstrate Lean's benefits - e.g., reducing changeover time by 50%, or improving on-time delivery from 85% to 98%. These wins are crucial for building momentum and skeptics' confidence. Celebrate and publicize the pilot success company-wide. It will generate enthusiasm and make it easier to roll out Lean to other areas. Implement Core
Lean Tools - With lessons from the pilot, develop an implementation plan for broader rollout of Lean tools and practices. This typically starts with 5S across the facility to organize workspaces (if not done already). Next, tackle specific wastes identified in your current state assessment: for instance, implement Kanban pull systems to replace push
scheduling and reduce inventory, or introduce Standard Work documents to stabilize process variability. Kaizen events (rapid improvement workshops) are a great way to engage employees in blitzing a particular problem (like setup time reduction via SMED). Also consider layout changes to create flow - for example, reorganizing machines into U-
shaped cells to minimize transport and waiting. Each tool you implement should tie back to a problem in the value stream map. It's often helpful to follow a structured model like PDCA (Plan-Do-Check-Act) for each change: plan the improvement, do it (on a small scale), check results, and act to standardize if successful. At this stage, you may be
running multiple Lean projects in parallel (under the coordination of your Lean team). Don't forget the "soft" tools too - establish daily team huddles, visual management boards, and suggestion systems. These encourage communication and make performance visible (e.g., display KPIs on a team board so everyone can see progress). Gradually, Lean
thinking will shift from isolated tools to "the way we do things." Establish Pull & Flow - As processes are synchronized to customer demand. Introduce
Kanban cards or an electronic e-Kanban to manage inventory replenishment - this will turn your production control into a pull system triggered by actual consumption. You may need to work with suppliers to ensure they can deliver JIT as well. Additionally, focus on leveling the workload (Heijunka) to avoid feast-and-famine production cycles. Another
aspect is quality at the source - use jidoka and error-proofing so that defects don't stop flow. By the end of this step, you're moving closer to a "one-piece flow" ideal: items progressing smoothly from one value-added step to the next without detours or delays, and production volumes being pulled by real orders. The mathematics of Kanban and buffer
sizing can be used to calculate optimal inventory levels (e.g., see formula for determining Kanban quantities). This step typically yields big gains in throughput and lower inventory - for example, companies often see 30-50% inventory reductions after converting to pull. Sustain & Continuously Improve - The final (and ongoing) step is to embed a
culture of continuous improvement so that Lean gains last. This involves several things: standardizing the new processes (update SOPs, checklists, training materials to reflect the "new way"). Set up metrics and tracking for key performance indicators (more on this in the next section) and review them regularly in management meetings. Many firms
establish a Lean promotion office or appoint a Lean coordinator to monitor progress and coach teams, ensuring that focus doesn't drift. Importantly, continue running Kaizen events and encouraging daily improvements - this keeps the momentum. Recognize and reward teams for improvement ideas implemented. Also watch out for backsliding - audit
processes to make sure 5S is being maintained, standard work is followed, and old habits aren't creeping back. Visual controls (like safety-cross calendars, throughput graphs, etc.) can signal when performance strays so you can react quickly. Another great practice is conducting regular "Lean health checks" or maturity assessments yearly to
benchmark your progress. Remember, Lean is a journey of gradual perfection. By making continuous improvements year after year. Lean manufacturing and Industry 4.0 (the fourth industrial revolution of digital tech) are highly
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complementary - together they can unlock smarter and faster operations. While Lean provides the process discipline and waste-elimination mindset, Industry 4.0 technologies provide real-time data and automation to enhance decision-making. Here are some ways Lean and advanced technologies (AI, IoT, etc.) intersect in 2025:Real-Time Data for

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Continuous Improvement: Traditionally, Lean relies on observation and periodic data (e.g., time studies). Now, inexpensive IoT sensors and connectivity allow streaming data from machine cycle times, queues, or
environmental conditions. Advanced analytics and AI can then analyze this data to highlight inefficiencies or predict issues. As one expert noted, smart factories can now "identify inefficiencies in real-time" using sensors and analytics. This supercharges Lean's find-and-fix approach - issues that might have taken weeks to surface via manual audits
can be spotted instantly via dashboards. Predictive Maintenance (AI + TPM): Lean's TPM strives for zero breakdowns, and AI is a game-changer here. Using machine will likely fail or when it needs maintenance - this is predictive maintenance. Instead of fixed schedules,
maintenance becomes condition-based. For instance, an AI system might analyze vibration or temperature data from a motor and signal an alert before a breakdown occurs. This aligns perfectly with Lean's goal of eliminating unplanned downtime. In practice, firms combining TPM with AI have seen huge drops in breakdowns and maintenance costs.
As Stellantis's Asif Khan highlighted, "predictive maintenance powered by AI ensures minimal downtime" on top of Lean's traditional methods. Digital Kanban and Automation: Industry 4.0 enables more sophisticated pull systems. Instead of physical Kanban and Automation: Industry 4.0 enables more sophisticated pull systems.
inventory runs low (e.g., sensors on bins or RFID tags that trigger orders). Similarly, AGVs (Automated Guided Vehicles) or autonomous mobile robots can handle material transport, delivering parts just-in-time to the line without human intervention. These technologies ensure that Lean principles (like JIT and one-piece flow) operate smoothly, even in
very complex or large-scale operations. Automation can also take over highly repetitive tasks - which reduces motion waste and frees up humans for more value-added work. The key is to automate waste-free processes; in other words, first use Lean to streamline, then add automation to amplify efficiency (so you're not automating a wasteful
process). Enhanced Visualization and Training: Augmented Reality (AR) and other visualization tools help with Lean training and standard work adherence. For example, an AR display can guide operators through assembly steps with visual cues (reducing defects and training time).
updated in real-time when a process changes, ensuring everyone follows the latest standard. These tools support Lean's emphasis on standardized work and guick response to change. Decision Support and Strategy: At a higher level, AI and digital twins (virtual simulations of the factory) allow for scenario planning. Managers can simulate how a line
would perform with different lot sizes or layouts (supporting Lean experiments virtually). Some factories have digital Lean coaches - software that analyzes processes and suggests kaizens. While human insight is still vital, these tools provide data-driven guidance that analyzes processes and suggests kaizens. While human insight is still vital, these tools provide data-driven guidance that analyzes processes and suggests kaizens.
fact, studies show many early Industry 4.0 projects failed to deliver value - only 14% of companies rated their smart factory initiatives successful as of 2019. Often this is because they adopted tech without a Lean mindset, ending up "digitizing waste". The consensus now is that Lean should guide digital transformation: get processes right, then apply
technology to enhance them. When done together, the results can be impressive. For instance, manufacturers with mature Lean practices tend to implement more Industry 4.0 tech successfully, and those technologies in turn reinforce Lean (e.g., automating routine tasks so people can focus on kaizen). This symbiosis is sometimes called Lean 4.0.
Companies that integrate Lean and digital report higher productivity gains than doing either alone. In summary, Lean + Industry 4.0 = Smart Lean Manufacturing. Use Lean principles to decide what processes need improvement, and use Industry 4.0 = Smart Lean Manufacturing. Use Lean principles to decide what processes need improvement, and use Industry 4.0 = Smart Lean Manufacturing.
on the line, or real-time production analytics, the guiding question remains: "Does this technology help us eliminate waste and create value?" If yes, it likely fits well in a Lean enterprise. After implementing Lean changes, it's vital to measure results and ensure the effort is paying off. Lean success isn't just a feeling - it should show up in your key
performance indicators (KPIs). Here's how to measure and communicate the impact of Lean KPIs to Track: Lean affects multiple aspects of operations, so a range of KPIs should improve. Common ones include: Lead Time: The total time from order to delivery (or from start of production to finish). Lean's impact on lead time can be huge - as
noted earlier, companies often cut lead times by 50-70% through waste elimination. Shorter lead times mean customers get products faster, and you're more responsive to market changes. Cycle Time: The time to complete one unit or cycle of a process. Reducing cycle times at bottlenecks is a direct focus of Lean (e.g., via SMED for quick
changeovers). Track this on critical equipment or processes.On-Time Delivery or OTIF: The percentage of orders delivered on time (and in full). This is a customer-facing metric that Lean should improve thanks to better flow and scheduling. Inventory turns:
by reducing excess stock through JIT. For example, if you go from 4 turns/year to 8 turns/year
without rework or defects. FPY (or overall defect rate) measures quality. Lean's emphasis on root cause problem solving and quality at the source should raise FPY. An 80% average defect reduction has been reported when Lean methods are applied thoroughly. Overall Equipment Effectiveness (OEE): A composite metric (Availability × Performance >
Quality) for equipment productivity. If you started with an OEE of 60% on a critical line and Lean/TPM brings it to 85%, that is a massive gain in capacity. Productivity (Labour or Machine): Output per worker or per machine hour. Lean improvements often result in more output with the same resources - e.g., a 35% increase in labor productivity in the
first year is achievable by eliminating wasted motions and wait time. Cost per Unit: The total cost to produce one unit. As Lean cuts waste, the cost per unit should drop (through reduced overtime, scrap, inventory carrying cost, etc.). Many companies see 20-30% cost reduction after Lean. Safety Incidents: Lean workplaces tend to be safer (due to 5S,
visual controls, and error-proofing). Track OSHA recordables or incident rate - improvements here are a critical (often overlooked) benefit of Lean. Employee Engagement: Harder to quantify, but you can use surveys or suggestion rates as a proxy. A vibrant Lean culture often correlates with higher employee morale and engagement (e.g., increase in
implemented suggestions per employee per year). Benchmarking and Targets: It helps to set targets for these KPIs based on industry benchmarks or best-in-class. For example, if industry average 0EE is 75%, you might target 85% if you're starting at 60%. If competitors average 6 inventory turns/year and you're at 4, aim for 8+ with Lean.
Benchmarks give you a tangible goalpost (but be sure they're realistic for your context). You could create a simple before-and-after table of key metrics to highlight improvements. For instance:MetricPre-Lean (2024)Post-Lean (2024)Post-Le
Yield92%99%99% (best in class)Inventory Turns386 (industry avg)OEE (Critical line)60%85%80% (world-class)(The above is an example - your results will vary. But notice how Post-Lean metrics, translate improvements into
financial terms for leadership. Calculate the ROI of Lean projects: e.g., reduction in inventory = freed up $X working capital; defect reductivity gain = avoided hiring or added capacity worth $Z. Earlier we mentioned an IndustryWeek study where proper Lean programs averaged 200% ROI in under 18 months. You can
replicate this analysis internally by summing up all the cost savings and revenue improvements and comparing to the investment (training, consulting, etc.). Often, Lean efforts pay back very quickly - many companies see payback in a year or less for their initial Lean initiatives. Visual Management of Metrics: A Lean practice is making performance
visible. Use dashboards or scorecards that are shared widely (on the shop floor and in management meetings). For example, a daily cell board might track production vs. target and any downtimes (often using simple red/green markers). At higher level, monthly Lean progress reports can show trends of key metrics. The transparency keeps everyone
aligned and accountable. Also, consider engaging an external auditor or joining a Lean benchmarking group (like an industry consortium) to get external validation of your progress. Finally, remember to celebrate success! When you hit that lead time reduction goal or safety milestone, communicate it. Share a "before and after" case study internally
(or even externally at conferences if appropriate). This not only rewards the team's effort but also reinforces the value of Lean was critical to their future success - so showcasing your wins helps ensure ongoing support for Lean as a
strategic initiative. To see Lean in action, let's shine a spotlight on a real-world success: the Stellantis (formed by the merger of Fiat Chrysler and PSA) operates many powertrain factories. One particular North American engine plant turnaround. Stellantis (formed by the merger of Fiat Chrysler and PSA) operates many powertrain factories.
was the worst-performing plant in the network. In 2020, a new continuous improvement lead (Dr. S. Asif Khan) was tasked with implementing Lean manufacturing to rescue the plant. The transformation that followed offers valuable lessons. Here's a brief timeline of what happened: 2020 - Assessment & Leadership Buy-In: The new plant manager and
CI lead conducted a full assessment. They mapped the value stream for engine assembly and found excess WIP, long changeover times (8 hours), and high defect rates on a critical line. Leadership openly acknowledged the problems and committed to a Lean overhaul, communicating to all employees that "we're in this together" to fix the plant.2021 -
Laying the Foundation: The plant launched a comprehensive 5S program on the production floor and in the maintenance shop. Over 50 tonnes of obsolete inventory and junk were "Sorted" out. Team leads were trained in 5S audits (with a friendly competition between departments for best 5S scores). They also formed cross-functional Kaizen teams.
One Kaizen event focused on the changeover process for machining centers, applying SMED techniques - this cut changeover time from 8 hours to 2 hours, significantly increasing available capacity. Maintenance crews, guided by Lean's TPM principles, instituted daily machine checklists and eliminated a chronic source of breakdown (coolant system
issues) by addressing root causes. 2022 - Implementing Pull & Standard Work: Building on early wins, the plant moved to a Kanban system for internal material flow. They set up visual kanban boards and electronic signals to manage parts feeding to assembly, replacing an inefficient push system. This reduced average in-line inventory by 40%,
freeing space and cash. Assembly processes were analyzed and re-balanced to create smoother flow - the line configuration between shifts. By the
end of 2022, the plant's on-time delivery improved dramatically and defect rates had dropped by about 30%. The workforce, initially skeptical, started to see the positive changes and morale improvements. They established a daily gemba walk
where managers and engineers go to the line, review performance metrics (displayed on new digital boards), and discuss any issues with operators. This daily rhythm kept focus on problems and quick fixes. They also introduced a suggestion program - over the year, employees submitted 250 improvement ideas, of which ~70% were implemented
(ranging from ergonomic fixes to cycle time tweaks). TPM efforts paid off with unplanned downtime reduced by 50% versus 2020. All key performance indicators trended in the right direction for three years in a row. By late 2023, the plant that was once the laggard had exceeded its production targets and was winning internal awards. In terms of
numbers, management reported: productivity (engines per worker) was up ~25%, defect scrap rate down from 5% to 1%, and order lead time cut from 10 days to 4 days. Equally important, the plant's culture had transformed - employees at all levels were engaged in finding ways to improve. "Strong leadership and team buy-in are essential to making
Lean work." - Dr. Asif Khan, Stellantis CI LeadThe Stellantis CI LeadThe Stellantis case highlights a few takeaways: consistent leadership support, worker involvement, and persistence were crucial. The changes didn't happen overnight - but with each success, the momentum grew. Also, they combined various Lean tools (5S, SMED, Kanban, TPM, Standard Work, Kaizen)
in a coordinated way, rather than one-off efforts. This aligns with Lean best practice: apply a system of tools toward a common vision. Finally, the use of visual management and daily accountability ensured that improvements sustained over time. Today, the Stellantis engine plant continues to refine its processes, exploring Industry 4.0 enhancements
like predictive analytics on equipment - truly becoming a model of Lean in the modern age. Lean manufacturing is not just a set of tools - it's a mindset and continuous journey toward operations can achieve dramatic improvements in quality,
speed, and cost. We've seen why Lean remains vital in 2025: it's helping companies achieve 200%+ ROI, adapt quickly with Industry 4.0 tech, and even meet sustainability goals by eliminating waste. From the 5 principles to the toolbox techniques like 5S and Kanban, Lean provides a proven framework that 70% of plants worldwide have embraced in
some form. For your organization, the path to Lean may seem challenging, but the payoff is well worth it. Start small, learn by doing, and cultivate that continuous improvement culture. As you remove waste, you'll not only boost your bettom line - you'll engage your team in creating a better workplace, and deliver more value to your customers. Next
Steps: Ready to kick-start your Lean journey? Here are two concrete actions: Request a Free Lean Assessment: Our experts can visit your facility for a free Lean audit. We will identify major wastes and opportunities, and provide you a roadmap with practical recommendations (no obligation). It's a great way to spot quick wins and build a case for Lean
in your organization. Download the Lean Starter Toolkit: Grab our free Lean Manufacturing template pack, which includes a 5S implementation worksheet. These templates will save you time and guide you through the initial steps - consider it a jump-start to
your Lean program. Lean manufacturing is a journey of learning and improving. As you take your next steps - whether it's organizing that first 5S area or scheduling a kaizen blitz - remember to keep it simple, involve your people, and focus on the customer. In the spirit of Lean, "small improvements, every day" will lead to big results. Here's to
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Continuous Improvement in Engine Manufacturing. Presented at the North American Manufacturing Excellence Summit (NAMES). [Presentation] Available at: [Accessed 18 May 2025]. Thanks for your feedback! Audio conversion provided by OpenAI Ask for a definition of Lean management from three different people and you will likely get three
different answers. Experts tells us that lean organizations have better systems and experience improved profitability. Customer satisfaction, of course, is considered the central focus in the lean approach and the idea is to remove any activities that the customer will not be willing to pay for (i.e. does not add value to the customer). Some commonly
stated goals of Lean are improving quality, increasing efficiency by eliminating "waste" and decreasing costs. However, beyond these goals, which most everyone would agree on, the strategic elements of Lean management as a fixed state
or goal (being lean). Lean management as a continuous improvement process (becoming lean). Lean management as a philosophy for application (lean thinking). The key is to have a plan and get started. The path to lean will not be straight and it never ends. Do not let the
pursuit of perfection get in the way of being "better" today. However, the biggest mistake that some people make is looking at Lean as only a set of tools or something that you do and then are done with - a bit like a project. Instead, the real gains come when it becomes a way of managing and is part of the fabric of your company. Here are a few ideas
on how you can successfully implement. In order to make a strategic Lean approach work, process operators have to become truly self-directed, allowing problems to pick the people required to solve them from within the teams rather than
management picking the problems and assigning them to people to solve. This means starting with the tools but quickly realizing that Lean requires a change in thinking and managing. Most lean implementation failures are not due to failure to grasp the tools and techniques but a failure of change management. This avoids conflict and delivers a
management group that can facilitate change with the teams working for them and so remove waste efficiently. In practice, this means learn by doing first and training second. Unfortunately, you cannot PowerPoint your way to Lean. The Toyota Way - often held up as the epitome of Lean - is about learning by doing. In the early stages of lean
transformation there should be at least 80% doing and 20% training and informing. The Toyota approach to training, for instance, is to put people in difficult situations and let them solve their way out of the problems. The Oliver Wight Approach, on the other hand, is to run an action-based learning event to both educate the team in Lean and its
application to a process. This is achieved by facilitating the team in creating value stream maps of the current process, along with an implementation plan and budget. One of the key lean tools is that of "Value Stream Mapping". This tool when used correctly enables us to create a map of
both value and waste in a given process. This map can then be used to understand the waste and its causes before moving on to remove it so that value flows without interruption of waste When developing the current state map, future state map, and action plan for implementation, use a cross-functional group consisting of managers who can
authorize resources and doers who are part of the process being mapped. Value stream mapping should be applied only to specific product families that will be immediately transformed. Use a talented and experienced facilitator who has a deep understanding of lean tools and philosophy but keep training focused on a specific product families that will be immediately transformed.
keep the training relevant to real-world situations and ensures that there are tangible outcomes from training activity. The kaizen might have an objective to reduce setup time from 80 minutes in four days, for instance. In most organizations, management is organizations and ensures that there are tangible outcomes from training activity. The kaizen might have an objective to reduce setup time from 80 minutes in four days, for instance. In most organizations, management is organizations, management is organizations.
in a process but nobody is responsible for the entire value stream. In the second edition of Lean Thinking (2003), the authors recommend a matrix organization where there are still heads of departments but also value stream managers, similar to Toyota's chief engineer system. Someone with real leadership skills and a deep understanding of the
product and process must be responsible for the process of creating value for customers and must be accountable to the customer. This will aid in get support through involvement of people at various level by sharing their ideas to built synergy to move positively ahead in the lean journey. If a company looks at Lean transformation as a "nice to do" in
spare time or as a voluntary activity, it will simply not happen. It needs to be mandatory and people need to be given the space to think about improvements they can make. A crisis may prompt a lean movement, but may not be enough to turn a company around. Once the crisis has passed it can be all too tempting to go back to business as usual.
Company leadership has to stay focused on Lean for the long term - not just to solve one problem. Middle management resistance to change is the number 1 obstacle to implementing lean production, according to a survey conducted by the Lean Enterprise Institute (LEI), a nonprofit management research centre. Over 36 percent of respondents to
LEI's annual surveys about lean business system implementation cited middle management as the top obstacles lack of implementation know-how [31 percent], and employee resistance [27.7 percent]). This was in contrast to last year's survey, which found backsliding to the old ways of working as the
primary obstacle to introducing lean management principles, followed by lack of implementation know-how and middle management resistance. Backsliding dropped to sixth place in this year's survey. Learn more about Lean concepts and tools here. When a company does not yet believe in the lean philosophy heart and soul, it is particularly
important to achieve some big wins. Make sure you have dedicated time to identifying those opportunities - they will be important for convincing people that Lean really can make an important difference. Eliminate non-lean metrics that are wreaking havoc with those seriously invested in improving operational excellence. Next measure a variety of
value stream metrics from lead time to inventory levels to first-pass quality. Toyota has its way. You need to have your way. When Toyota works with companies to teach TPS, they insist that the companies develop their own system. Someone did something right to get you to this point. Build on that. Build on your company's heritage to identify what
you stand for. Lean will cut across functional/departmental boundaries that will eventually lead to a restructuring of responsibility for the major business processes rather than the current functional ownership of a department's activity. The key here is not to take ownership of the plan but to provide conditions in which the team can implement Lean.
The aim of this approach is to create a nucleus of people who are trained in the Lean tools and techniques, who have experienced Lean through hands-on application and who can then with some external support move on to help others create lean processes by transferring their knowledge. Ready for more? Click here for another eight ideas Topics:
Lean Six Sigma Process Excellence
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