Lean Paradigm™and Safety Principles for Manufacturing, Mining and Distribution: How to Maximize Customer Value and Safety, While Minimizing Waste

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Abstract

The 1900s marked some of the most important events in the history of lean manufacturing: Japanese industrialist, Sakichi Toyoda,inventedJidoka as a method thatimproves quality of finished goods;Japanese manufacturer, Toyota Motor Corporation ('Toyota'),established just-in-time processing to reduce inventory levels andcut its operating costs; Toyota's Taiichi Ohno created a concept for elimination ofvarious types of waste. For decades, lean proponents contemplated the notion of organized approach to incremental and continuous process improvements, or Kaizen improvements and organizing a safe workplace with Six Sigma. Poka-Yoke framework for error elimination became increasingly popular among the shop-floor workers. The 2000s marked a growing interest by North American manufacturers instrategic lean principles that can maximize customer value and work safety, while minimizing waste. This paper presents a simplified road-map toimplementing a *Lean Paradigm*™in North American organizations, tocreate and sustain customer value.With *Lean Paradigm*™,North American organizations could confidently identify value streams in theirproduction processes,while also eliminatingexpensive waste in time and resources, with the ultimate goal tomaximizetheir organizations' efficiency and profitability.

Lean Paradigm™ is a registered trademark of TheTableau Inc. The concept grew from decades of hands-on experience with building high-performance organizations and working with manufacturing organizations on improving their shop floor and office efficiency with *lean* concepts, agile framework, and rapid application development (RAD) methodologies. Concepts explained in this paper are, among others, part of the Lean Paradigm™ software that is designed to directly support lean transformations of organizations aspiring to become streamlined and more profitable.

First attempts at organized continuous flow in manufacturing were codified in the 16th century, with Venetians adopting a standardized design and interchangeable parts in construction of their ships. With the application of a continuous flow, it was possible to construct a complete galley in less than one hour. With their continuous flow, which meantthe production without stopping, Venetians were producing small and consistent batches at one time. Their manufacturing process contained a number of repetitive but consistent steps.Each step produced exactly those components necessary for the next step, thus supporting the novel design of a continuous flow.

In 1990s, James P. Womack, Daniel T. Jones and Daniel Roos wrote a book on lean production systems, that is still considered one of the best modern lean textbooks.[1]In their work, "The Machine that Changed the World,"the authors reflect on two manufacturing systems—mass production, as the tried model used by General Motors (GM), and lean production[2]—as the new model used by Toyota.[3] Three decades ago, GM was a much larger entity than Toyota, while today, Toyota is statistically much more successful auto-maker than GM.Its lean production systems were studied and emulated by manufacturers in North America and worldwide, in an attempt by other manufacturers to mirror Toyota's success.[4] In 1990s, Womack et al.aptly predicted that the lean productionwill become much more utilized than mass production, but to date, neither Womack nor anyone else, offered a unified platform for lean concepts training, implementation and management.

Lean Paradigm™ software was designed by Irene Jeremic from TheTableau Inc., as a unique enterprise lean and safety training, implementation and management platform, that unifies not only the myriad of lean principles, but also employs the agile framework for project portfolio management, as well as Rapid Application Development (RAD) methodologies, to allow for incremental improvements within organizations, custom-made just-in-time, to fit heir unique organizational culture.

While this paper surveys the key Lean Paradigm™ business systems for manufacturing,[5] distribution and mining,these systems make for an effective management and standardization tool across industries and organizational units.

Lean Paradigm™ - Focus on Customerthrough Value Stream

Lean Paradigm™is a multi-tool platform that supports the deliveryof the product and services to the customer exactly as ordered, when the customer wants it, and where the customer wants it.[6]Its underlying philosophy is that any high-performance organization ends up striving to achieve perfection, which can eb achieved only by continuously improving quality and eliminating waste in processes, from both unfinished components to finished goods.[7] Contemporary organizations comprise multiple divisions, and with the Lean Paradigm™ system, each of these divisionsis mandated to follow the same lean framework, in order to achieve lean results. Lean Paradigm™ guides the organizations' divisionsto gradually reduce costs, shorten

[1]Lean Enterprise Institute, www.lean.org.
[2] Pascal Dennis. 2015. Lean Production Simplified: A Plain-Language Guide to the World's Most Powerful Production System. Productivity Press.
[3] James P. Womack, Daniel T. Jones, and Daniel Roos. 1990. The machine that Changed the World. Free Press.
[4] Toyota Global, www.Toyota-global.com.
[5] Denish B. Modi and Hemant Thakkar. 2014. Lean Thinking: Reduction of Waste, Lead Time and Costs Through Lean Manufacturing Tools and Techniques, International Journal of Emerging Technology and Advanced Engineering, ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 4, Issue 3.
[6] Badr Haque and Mike James Moore. 2004. Applying Lean Thinking to New Product. Journal of Engineering Design, Volume 15, Issue 1.
[7] Brunilde Verrier, Bertrand Rose, and Emmanuel Caillaud. 2016. Lean and Green Strategy: The Lean and Green House and Maturity Deployment Model. Journal of Cleaner Production, Volume 116, pages 150-156.

cycle times, create flow to reduce batch sizes, identify the value stream[8] to expose waste, and make or buy only what the customer has ordered.[9]

Lean Paradigm™ is best described as thelean transformation toolkit developed through decades of TheTableau's Irene Jeremic's hands-on experience in building high-performance organizations and working with manufacturing and distribution companies. Lean Paradigm™ unique objective to improve organizational effectiveness, through structured and measurable betterment of the organizations' shop floor and office operations. Lean Paradigm™ framework combinesthe abundance of first-hand experience with the generally accepted lean and safety principles, agile framework, and rapid application development (RAD) methodologies, to yield a unique and comprehensive platform for implementing and tracking systematic organizational improvements.

In particular, Lean Paradigm™ offers a structured approach to managing customer relationships and identifying what constitutes value for a customer. Once the customer's perspectives and expectations are fully understood, corporate teamsuse Lean Paradigm™ framework to identify the steps needed to create value—they map a *value stream*. Because identifying a value stream lists all activities the employees undertake within a certain timeframe, it appears to be easy to decipher useful work activities from work waste, that would be piecemeal eliminated.

Organizations that employ Lean Paradigm™ tools can implement and sustain the leanconcepts faster,[10]andtypically increase workplace organization, workplace capacity, inventory turnover, floor space, and gross margins, in the first year of the lean transformationimplementation.

By eliminating wasteful activities, organizations also reduce utilization of resources, and may be in a position to lower the price a customer pays for finished goods, without compromising quality. Organizations thus become more competitive and more attractive to customers.

Additionally, Lean Paradigm™trains the employees how to streamlines their work processes. For production workers, this means theylearn to employ a continuous flow, making the production flow ideal for smaller batch sizes and faster throughput. While the framework focuses on the customer specifications and dictates that organizations produce only as much as ordered, it also yields a continuous quality and process improvements. With optimal cycle times and optimal inventory turns, the production teams learn how to increase throughput, augment production capacity, release the storage and floor space previously used for production waste, and generally reduce the production costs. As evidenced, Toyota benefited from the lean processing advantages,[11] while GM used the traditional mass production that was characterized by

[8] Beau Keyte and Drew A. Locher. 2015. The Complete Lean Enterprise: Value Stream Mapping for Office and Services. Productivity Press.
[9] James P. Womack and Daniel T. Jones. 2003. Lean Thinking: Banish Waste and Create Wealth in Your Corporation. Productivity Press.
[10] James P. Womack and Daniel T. Jones. 2005. Lean Solutions: How Companies and Customers Can Create Value and Wealth Together.Free Press (Reprint Edition August 18, 2015).
[11] Phillip Ledbetter. 2018. The Toyota Template: The Plan for Just-In-Time and Culture Change Beyond Lean Tools. Productivity Press.

prolonged product design times, larger batch sizes, and extra space for in-process inventory, including their finished goods. In addition, the GM's traditional production suffered from a higher defect rate in finishedgoods, coupled with significant waste. Lean Paradigm™ solidifies the techniques used by Toyota, and adds other management, monitoring and measuring tools, with a special emphasis on occupational safety.

Waste Elimination and Reduction: From Production to Office Management

Once the customer specifies value, organizations are encouraged to use Lean Paradigm™ checklist to verify the following: (i) that their finished goods and corresponding office procedures are adequately competitive; (ii) that the total costs to the organization (cost of finished goods, including the costs of order management by the office employees) do not exceed a budgeted overhead; and (iii) that the customer order can be delivered on time. The checklist also provides for change management techniques that may adapt to the unique procedures in line with the specific organizational culture.

Waste identification begins with the value stream mapping, where all work activities are sequentially graphed on the time axes.

Value Stream Mapping Helps Pinpoint Waste

A value stream lists all activities required to develop a product or service and deliver it to the customer. Enterprise value streams include order-to-cash as a financial function, concept-to-launch as an engineering function, and raw-material-to-customer as a manufacturing function. Mapping follows a product or service from the beginning to end, and draws a visual representation of every step in the information and material flow. An effective map outlines the future state of the process, how the value should flow, and which steps are extraneous.

Source: Lean Paradigm™ | LeanParadigm.com | TheTableau.com

By graphing all work activities, including those that do not add value to the finished goods, organizations can effectively measure their process efficiency and the waste rate, relative to the total cycle time.

Measuring Process Efficiency and the Waste Rate in Lean Paradigm™

All Work Activities = Value Added Activities (VAA) + Wasteful Activities (WA)

VAA = production, quality control, reporting to customer..
WA = waiting, underutilization, defects, overproduction and storing excess product ..

Total Work Effort = VAA + WA (in days)

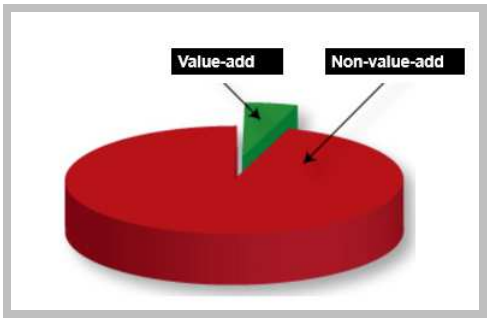
WA= Waste (in days)
Process Cycle Efficiency= VAA/Total Work Effort * 100%

Waste Rate (%)= 100 % – Process Cycle Efficiency %

Source: Lean Paradigm™ | LeanParadigm.com | TheTableau.com

Notably, not all activities that do not add value to the final work outcome are waste. There are necessary non-value-added activities in every process and every organization, that still contribute to the
final delivery of the service or product. In a non-lean organization, non-value-added activities may amount to up to 85% of the total work effort, which indicates that up to 85% of resources may be wasted. Lean Paradigm™ both trains the employees to understand the pitfalls of their own work inefficiencies, and then to use the system to implement corrective steps in their own work.

Lean Paradigm™ helps pinpoint the non-value-added activities that may waste up to 85% of valuable resources



Source: Lean Paradigm™ | LeanParadigm.com | TheTableau.com

Categories and Sources of Waste

After the WWII, Toyota's engineer Taiichi Ohno, focused on developing various methodologies for elimination of waste, while also improving productivity and increasing the workers' job satisfaction through empowerment.

Ohno recognized three broad categories of waste as Muri (unreasonable waste), Mura (waste from inconsistency) and Muda (waste from the activities that do not add value to the customer product). Ohno thus identifiedthe wastes that should be eliminated from any streamlined manufacturing process, as follows: defective goods, overproduction, waiting on others or on the machine to complete a step, excess transportation, over-produced inventory, extraneous processes and unwanted motion.

Lean Paradigm™ software trains the workforce on how to recognize and avoid all three categories of waste, and how to distinguish inherentlywasteful activities from those that—although they do not add value to the final product or service to the customer, they are necessary for the final outcome.

Organizing Workplace with no Clutter or Waste: 6S Framework

Workplace organization with a 6S approach eliminates searching for tools and waiting for others, along withthe nearly all forms of waste.Workers who follow 6S framework keep their work area clean, organized and safe. Their productivity levels are high, as they use visual management toreduce waste, while enforcing standardized work procedures. Organizations can use Lean Paradigm™ to train the workforce on 6S framework, to enforce the workplace organization for improved profitability and to keep the manufacturing equipment clean and free from defects.

The 6S components are sort, straighten, shine, standardize, sustain and safety. Sorting means removing unnecessary equipment and clutter from the work area. Straightening means placing things in order and making it obvious where they belong, by using lines, labels and signs (thus creating visual factory). Shining means cleaning the machinery, tools and environment to reduce breakdowns. Standardizing means establishing uniform procedures that support other 6S steps. Sustaining means training staff to consistently practice the 6S framework. Practicing safety is making sure that the tools and equipment are clean and free of defects that otherwise compromise safety. Lean Paradigm™ trains the staff on how to implement the 6S frameworks in

their workplace, and provides the platform for organizing visual factory and keeping track of the implementation progress.

Lean Paradigm™ with 6S framework should be used whenever (i) the floor space should be minimally used; (ii) work clutter yields waste and needs to be removed; (iii) workers do not have the time to look for equipment or material needed for production and feel overwhelmed with the way they work; and (iv) production is inconsistent and may lead to wasteful work duplication.

Six Sigma Visual Management for Safety and Process Flow Control

Visual tools are signs, labels, charts, colors, boards,and other management elements thatcan help shop floor workers follow the steps in the information flow,in order to control their batch processing better. Signs with intense colors, such as yellow and orange, or yellow and black, are typically used in manufacturing to mark machinery, assembly lines, and navigational lines. Under the Lean Paradigm™ framework, the workplace labels are standardized to enhance the workplace appearance, reduce downtime related to maintenance, and reduce accident rates. The most significant aspect of visualizing a factory is increased safety throughout the production processes.

Organizing the equipment, materials, tools and work information (such as goals and projects, projected-versus-actual metrics), so that the information become visible to all workers, means good visual management. Workplace organization leads to the best practice +QDIP workplace under Six Sigma defect-elimination approach,[12] which means that the organization increased safety, quality, delivery, and productivity, while optimizing its inventory levels.

Safe and visually well-managed workplace includes the following:

(i) status boards areas,
(ii) facility maps with color-coded special-purpose and work areas,
(iii) marked off locations for machines, equipment, inventory, and storage;
(iv) marked off walkways, aisles and entrances in action areas, and
(v) flow-direction arrows that keep the forklift drivers and others safe and organized.

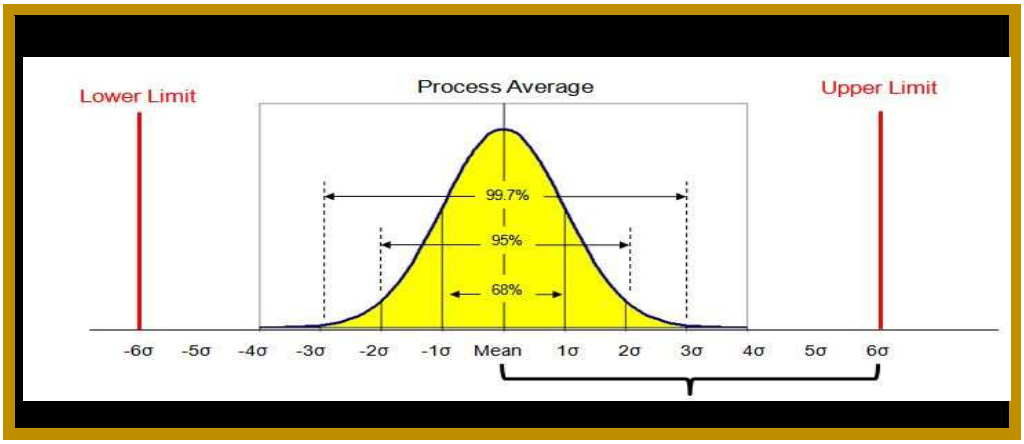
Sigma in the Six Sigma[13] approach signifies the variation in a data set relevant to the process for which the data is collected. Where a defect is defined by the limits that divide good and bad process outcomes, the process mean is six standard deviations from the nearest limit. This creates a cushion between the process variation and the defined limits. What has been created in the Lean Paradigm™ system is a process performance measure, where the defects are tracked per million, and every next process iteration is a sigma-level improvement, striving to achieve the

[12] Six Sigma is a disciplined, data-based methodology that employs six standard deviations between mean and the closest limit in a process. Six Sigma is used to eliminate defects, not only in manufacturing but also in the service industries.

[13]Michael L. George Sr., John Maxey, David T. Rowlands and Malcolm Upton. 2004. The Lean Six Sigma Pocket Toolbook: A Quick Reference Guide to Nearly 100 Tools for Improving Quality and Speed. McGraw Hill Education.

ultimate six sigma benchmark. When applied to manufacturing systems of practice, 3-5 sigma improvements yield significant cost reduction and improvements in customer satisfaction.

Six Sigma Standard Deviations in Manufacturing Processes used in Lean Paradigm™



Source: LeanSixSigmaDefinition.com

Kaizen Approach of Continuous Improvements

Kaizen approach to gradual betterment means rigorousorganizational discipline and culture of continuous improvements.[14] Kaizen shop-floor operations continually look to reduce inventory;organizations sell useful inventory, liquidate or repair defective items, and eliminate waste.Further, organizations shorten processing and lead time, and piecemeal, improve quality.[15] For each Kaizen event of incremental improvements in processing, management should keep event statistics on the bulletin boards, that are further tracked in the Lean Paradigm™ system. The bulletin boards should be placed in the high-visibility locations in the workplace to support the concepts of the safe visual factory, enforced by the culture of continuous improvements. Lean Paradigm™ software automates Kaizen events and tracks the organization's lean formalizationand standardization.

Just-in-Time Processing for Reduction of Inventory Levels: Push and Pull Systems

Push and pull are logistical concepts that describe the movement of the product between a supplier and its customer. Push systems are based on forecasted demand, and work well with minimal demand uncertainty. A supplier stores make-to-stock inventory for its best-selling items or parts and expects to receive customer orders. Pull systems are make-to-order systems, with the production based on actual demand and confirmed customer orders. In pull systems, demand planning relies on just-in-time processes—the framework supported by Lean Paradigm™. Just-in-time is an inventory strategy used to improve the company's return on investment by reducing

[14] David Mann. 2014. Creating a Lean Culture: Tools to Sustain Lean Conversations. Productivity Press.
[15] Masaaki Imai. 2012. Gemba Kaizen. A Common-sense Approach to a Continuous Improvement Strategy. McGraw-Hill Education.

in-process inventory and cycle time. Because inventory is kept to a minimum, products can be supplied with short lead times.

Lean Paradigm™ Supports Pull Systems with Takt Schedules

An efficient pull system reduces complexity and variations in customer orders and handles unwanted process exceptions. A link between the customer and capacity planning with process planning (production, inspection, repair) is takt time. Takt is defined as a selling rate, relative to processing or production, in consideration to capacity planning. Typical pull-takt workplace scenario,as supported by Lean Paradigm™, involves the pull from the organization's Enterprise Resource Planning (ERP) system, where the work orders (WO) are then planned accordingly under the organization's taktschedule.

Work Orders are Pulled from ERP and Completed by Takt Schedules

An example of a work order pulled from an ERP is the basic purchase order in a manufacturing organization. If the process parts are available, the order flows into the company's takt schedules. Takt schedules act as a capacity filter and a communication tool for the work order sequential elements. The work order is completed with work centres using in-and-out boxes as visual markers for any work-in-progress (WIP). The process improves quality and shortens the work time.

Source: Lean Paradigm™ | LeanParadigm.com | TheTableau.com

Jidoka – Improving Quality of Finished Goodswith Inexpensive Failure-Proofing Devices

Sakichi Toyoda, founder of the Toyota Group,was credited with invention of a method that allowed machines to operate without human monitoring and intervention when the machine had to stop. Hence, Jidoka is often called "automation with human intelligence." Machines are programmed to detect abnormal conditions and immediately stop the work. The approach enables built-in quality in every process step, for eachprocess. It also separates the machine work from human work. Benefits of Jidoka are best explained with an instant and temporary stopping part of the production, so that the entire production never stops.

Toyota Production System (TPS) combined Jidoka with just-in-time processing to give stability and consistency to their lean operations, and realize the key lean goals: achieve the highest quality with lowest cost and shortest lead time. Jidoka identified a defect, stopped the production

at the affected process, and isolated the issue so it could not affect other production steps. Toyota teams then implemented remedial steps to address the current defect and prevent new defects from happening due to the same issue. North American manufacturers commonly employ cold saw, CNC drills and HAAS with machine intelligence to stop at the first occurrence of the problem.

Lean Paradigm™ provides for adequate employee training and organization of the recommended tools under the Jodoka framework. With these Lean Paradigm™ tools, the companies can serve their customers with higher quality, at lower cost, quicker. Jidoka improves quality through four distinct steps: detecting the problem, stopping the machine, correcting the problem and finding the root cause of the issue to prevent new defects to occur due to the same issue.

Lean Paradigm™ Supports Poka Yoke for Error Elimination

Jidoka prevents defects, but not the human errors too. Lean Paradigm™supports the Poka-Yoke approach to eliminate inadvertent errors that are different from defects. Poka-Yoke error elimination includes using inexpensive devices to detect process anomalies. Some of these devicesare radial roll jigs and wet paint gauges. In production, Poka-Yoke may flag or address: (i) missing process steps, (ii) the wrong action applied in the accurate process sequence, (iii) missing or incorrect components, (iv) machine faults, (v) incorrect machine set-ups, and (v) wrong tools. If used correctly, this approach can also inaugurate continuous and consistent shop floor maintenance, where the reliability of machines is drastically improved, for no extra cost.

Lean Paradigm™ supports the best Poka-Yoke practices,with the usage of the following tools and devices:

(i) specialized routers to address the missing process steps;

(ii) work orders and drawings to follow the correct sequence of process steps and apply the correct action every time;

(iii) work instructions to enforce the correct components being used from the first attempt in all production steps;

(iv) work instruction to list all tools that will be used at a particular production step, (for each production step, for every production process);

(v) pick lists to collect all components at the first attempt;

Lean Paradigm™ additionally enables the shop floor workers empowerment,by training each employee to be accountable for his own production area, and to conduct inspections of their own work outcomes.[16] With multiple self-checks that the workers undertake, errors are drastically minimized and the conscious workers' efforts to be involved in every step of their own work creation, yield an easier detection of the root cause of the issue.

Pragmatic Poka-Yoke Tips that Support Jidoka in Your Organization

[16] Shiego Shingo. 1986. Zero Quality Control: Source Inspection and the Poka-Yoke System. Portland, OR, Productivity Press.

Problem: How to prevent omissions related to the number of holes drilled in a product part?

Solution: Put a limit switch on the drilling machine! An alarm will sound as soon as an incorrect

number of holes have been drilled.

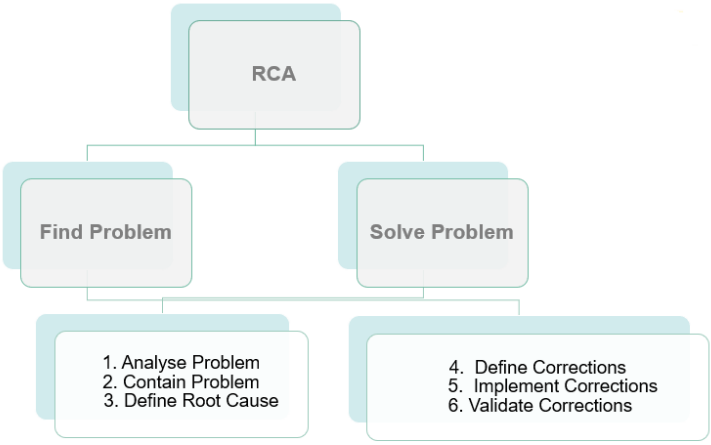
Source: Lean Paradigm™ | LeanParadigm.com | TheTableau.com

Successful implementation of Poka-Yoke with the Lean Paradigm™ system, means all shop floor employees are trained to use Poka-Yoke, and are involved in the process of continuous improvements. All workers are fully aware of their individual roles in the production process and are trained to use 6S methodology to organize their workplace, keep equipment clean and free from defects, and can make the entire process they are responsible for error-free.

Lean Paradigm™ Supports Root Cause Analysis (RCA): What, Why, When, Where, and Who

Root cause is the cause of defect, that after being corrected, remove the chance of the same problem reoccurring.In the high efficiency manufacturing organizations, shop floor workers are directly involved in the root cause analysis and suggest how to arrive at a permanent solution that yields process improvements. As a standardized process that first identifies a problem and then solves the problem, root cause analysis (RCA) efficiently contains the problem in its natural area, not allowing it to spread to other components. While the problem is contained, the worker is able to define its root cause, identify corrections, try out the corrections and validate whether the problem is solved. Only after it has been confirmed that the problem no longer exists, the process can resume its usual flow. Lean Paradigm™ system trains employees on all RCA steps, and provides a platform for the RCA implementation, along with the monitoring and reporting of achieved results.

Root Cause Analysis for Standardized Problem Solving



Source: Lean Paradigm™ | LeanParadigm.com | TheTableau.com

Systematic root cause analysis (RCA) avoids pitfalls of the ad-hoc problem-solving approach, that only creates temporary patches rather than permanent solutions. Cost savings from the permanent solution that does not allow propagation of issues are remarkable. RCA analysis is often called fault tree analysis or a cause-and-effect tree, developed on a questionnaire with as many questions asked as necessary to detect the origin of the issue.

Root Cause Analysis Questionnaire

A machine stopped working. Shop floor workers could determine the root cause of a machine stoppage by asking (at least) the following questions:

1. Why did the machine stop working?
2. There was no power. The worker will now check why there was no power.
3. There was a short circuit in the plant.Why was there ashort circuit in the plant.
4. No two units running on high voltage canbe plugged onto the same breaker.
5. Why were those two units plugged on the same breaker?

Source: Lean Paradigm™ | LeanParadigm.com | TheTableau.com

The solution is to identify the maximum voltage per breaker, and then balance the machine load per breaker. The units will then be plugged to different breakers to avoid the same stoppages from the over-usage. Lean Paradigm™ helps employees understand the RCA philosophy and implement it in their ordinary workflow. By doing so, employees get engaged in permanent self-regulations with gradual but constant improvements of their work outcomes.

Standard Work and Safety

Standard documentation uses tables, flow charts and status boards to outline work objectives, work instructions for theintended use, troubleshooting and maintenance. Tools that help

standardize work are 6S with an emphasis on safety, visual management, Poka-Yoke mistake-proofing, pull production with Kaizen improvements, Kanban signals, and total productive maintenance. Workforce training with Lean Paradigm™ includes:
(i) standardization aspects for the customers (quality-cost-time triangle);
(ii) standardization aspects for the employees (work satisfaction, job security and stable income); and
(iii)standardization aspects for the enterprise (market-profit-cost triangle).

Standardization inLean Paradigm™means training the workforce to standardize continuous improvements and quality principles, and to maintain short lead times.

LEAN PARADIGM™ SUPPORTS STANDARDIZATION		
For the Customers	**For the Workforce**	**For the Enterprise**
Highest Product Quality	Job Security	Market Flexibility
Lowest Finished Goods Costs	Stable and Consistent Income	Increased Profits
Shortest Lead Times and On-Time Delivery	Work Satisfaction	Ultimate Cost Reduction
ELIMINATION OF WASTE		
RESPECT FOR OTHERS		
PRIORITIZING CUSTOMERS SPECIFICATIONS		

Source: Lean Paradigm™ | LeanParadigm.com | TheTableau.com

Lean Paradigm™ Supports Kanban

Just-in-time processing is driven by a number of signals, called Kanban signals or signs. These signals can be organized into a meaningful board, as part of the visual factory.Under agile framework[17] and RAD methodologies,[18]all embedded in the Lean Paradigm™ system, Kanban assists shop floor personnel to visualize their tasks, organize their work flow, and maximize their work efficiency. Kanban signals determine when to produce the next component. The components are pulledwhen and where the customer needs them, without storing unneeded inventory. Just-in-time approach obviously improves the overall work efficiency and quality. Organizationscan use Lean Paradigm™to organize their just-in-time processing and regulated batch flow, along with visual techniques for a continuous flow and shorter lead times, to keep their operational costs low andgradually improve quality.

Conclusions

While lean, agile and RAD concepts each offer an indispensable framework that can be used to build high performance organizations, their implementation results may be difficult to organize, track and measure manually. Lean Paradigm™ provides a centralized platform and software for

[17] Project Management Institute, Agile Framework. www.pmi.org
[18] Rapid Applications Development (RAD), www.ProjectManagement.com

implementation of the key lean transformation concepts, generally covered in this paper. For successful implementations, it is recommended to use Lean Paradigm™ to firsttrain the workforce and thenuse thecutting-edge lean technology to streamline organizational processes and employ constant and continuous improvements, with preferably zero waste. Lean Paradigm™ is designed to create and sustain customer value, while offering the platform for employing lean operations, safely. For more information on Lean Paradigm™ contact info@thetableau.com.

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