



**TOYOTA LEAN MANAGEMENT:
A Guide to Sustained Process Improvement**

“The key to the Toyota Way and what makes Toyota stand out is not any of the individual elements... What is important is having all the elements together as a system. It must be practiced every day in a consistent manner – not in spurts.”

– Taiichi Ohno, the Father of the Toyota Production System

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LEAN MANAGEMENT – ACHIEVABILITY THROUGH SUSTAINED EFFORT

Lean management provides clear avenues to drive efficiency, and many organizations set out to implement lean practices in order to promote continued success. At Toyota Material Handling, we have made lean management the cornerstone of everything we do, in both manufacturing and business. Since 1890, when Sakichi Toyoda invented the Toyoda Wooden Hand Loom and now in our state-of-the-art facilities and dealerships throughout North America, Toyota Lean Management aims to eliminate waste in all processes, continuously improve those processes, and sustain these improvements for long-term impact.

The following pages will guide you as you begin to see lean management as a path forward for your business's success. We view Toyota Lean Management like building a house, where a firm foundation of standard processes built on a bedrock of strong values leads to efficient processes. Consider this document your first blueprint.

WHAT IS TOYOTA LEAN MANAGEMENT?

Toyota Lean Management is a proven, long-term approach to improving efficiency and effectiveness by developing people and organizational culture. TLM focuses on eliminating waste by implementing all of the elements of lean methodology found in the

renowned Toyota Production System (TPS), which can be applied to any industry and any process.

WHERE DO I START?

Toyota Lean Management aims at the total elimination of waste through focused development of people.

“Monozukuri wa hitozukuri”

Making things is about making people.

Embracing that waste elimination is something that is carried out and sustained by people is the first step on your lean journey. Successful change occurs when the people responsible for the activities buy into the new

ideas and those that oversee each operation have the most visibility to potential improvements.

- ▶ Teach your people to identify waste in their processes.
- ▶ Trust the creativity of your people to eliminate waste.
- ▶ Empower your people to implement processes that eliminate waste.

1890



Founder Sakichi Toyoda
invents the Toyota
Wooden Hand Loom



1967



First Toyota
forklift is sold
in the U.S.



1998



Toyota introduces
revolutionary System
of Active Stability



TOYOTA LEAN MANAGEMENT



First Toyota
automobile
is introduced



1935



First American-built Toyota
forklift rolls off the line at the
plant in Columbus, Indiana



1990



Toyota acquires
BT/Raymond
Corporation



2000

2002



Toyota forklifts
become #1
in America



2017



Toyota acquires
Bastian Solutions
& Vanderlande



2020



Toyota Industrial Equipment
& Toyota Material Handling
U.S.A merge



NT: A HISTORICAL SUCCESS



Toyota celebrates
500,000 forklifts
assembled in the U.S.



2015



Toyota acquires
Hoist Liftruck



2019



Toyota celebrates
750,000 forklifts
assembled in the U.S.



2021

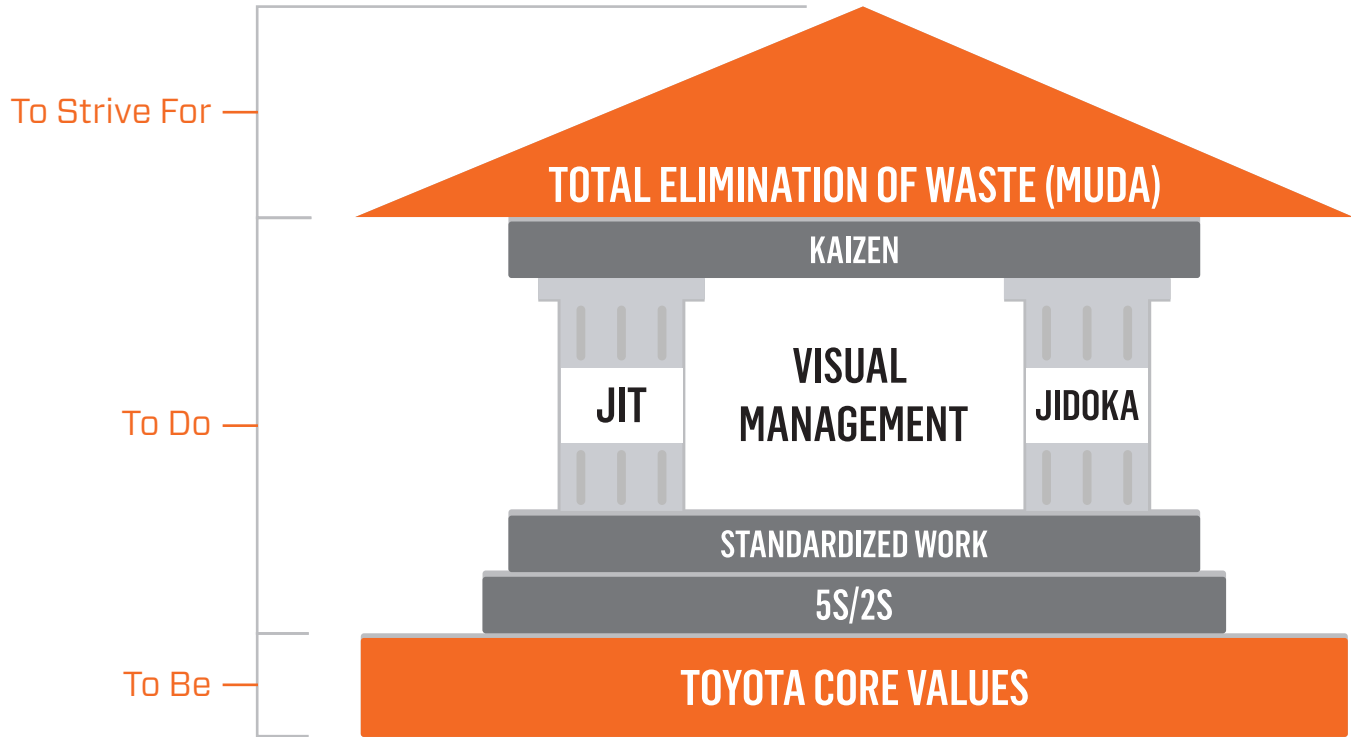
THE TOYOTA HOUSE

Lean management is cultural change that can only be implemented in your business with focused effort and sustained practice over time. It's like building a house. And Toyota's tried and true lean management practice is aimed at building The Toyota House – where total elimination of waste is supported by important key values and practices.

As we look more carefully at the construction of the Toyota House, it might help you to think of the

bedrock, “Toyota Core Values”, as goals for what your organization aspires to be. That vision of what you are trying to be will guide your construction of the remaining parts – those things you want your organization to do in order to achieve what you want to be.

My Lean Journey: What are the foundations and central pillars of my current business practice?



BUILDING THE HOUSE ON TOYOTA CORE VALUES

Building an effective “house” of lean management requires durable bedrock that can support the growth and empowerment of people to achieve success. At Toyota, we have practiced our Core Values in earnest for nearly 100 years; they uphold our success and set us soundly on our path to eliminate waste.

My Lean Journey: What are the core values of my organization? Can I articulate those goals to people within and outside of my organization? What evidence can I provide that my organization is motivated by those goals? Are the goals strong enough and pervasive enough in my company culture to support process change and sustained practice in eliminating waste?

**ALWAYS BE STUDIOUS
AND CREATIVE**

striving to stay ahead of
the times.

**ALWAYS STRIVE TO BUILD A
HOMELIKE ATMOSPHERE**

at work that is warm and friendly.

**ALWAYS BE FAITHFUL
TO YOUR DUTIES**

thereby contributing to the company
and to the overall good.

ALWAYS BE PRACTICAL

and avoid frivolousness.

**ALWAYS HAVE RESPECT
FOR GOD**

and remember to be grateful
at all times.

ELIMINATE WASTE BY KNOWING WHERE TO LOOK

With values firmly established, a business can focus on installing the building blocks that support the elimination of waste. But before you start building, you need to know what kinds of waste you're looking for. Using the Toyota Lean Management methodology, we look for three key types of waste.

MUDA – Any material in your process that does not add value to production. Excess inventory, over production, and quality defects are a few versions of muda.

MURA – Unevenness in processes that occurs because of inconsistent practices, unclear forecasting, or misused time.

MURI – Overburden on people and process occurs when demand on both the individuals and business grow too difficult to bear, leading to waste through avoidable mistakes or process breakdown.

My Lean Journey: Have I been thinking of waste beyond physical materials or equipment?

5'S TO ELIMINATE WASTE: CREATE FLOW AND DEVELOP STANDARDS

Once you've established a firm bedrock of values and know what you're looking to eliminate, it's time to begin the actual practice of waste elimination. Toyota Lean Management relies on a process called "5'S", and while other management philosophies include it, we recognize that 5'S is much more vital to our business success than simple housekeeping. Instead, when implemented as part of your enduring business makeup, it is structured to help Associates recognize and correct visual abnormalities in the work flow. And it serves as the foundation of the Toyota House.

My Lean Journey: As I begin my journey, what unnecessary items exist in my processes today that I can easily eliminate? Are there any unnecessary items that would be complicated to eliminate, but doing so would support an improved flow of work?

- 1 | SORT** | REMOVE THE UNNECESSARY ITEMS FROM THE WORK AREA. 
- 2 | SYSTEMATIZE** | ORGANIZE ITEMS TO SUPPORT THE FLOW OF WORK. 
- 3 | SHINE** | CLEAN SO PROBLEMS CAN BE IDENTIFIED AS YOU WORK. 
- 4 | STANDARDIZE** | SHARE PROCESSES TO GAIN POSITIVE RESULTS. 
- 5 | SUSTAIN** | MAINTAIN CONSISTENCY AND STRIVE FOR CONTINUED IMPROVEMENT. 

STANDARDIZING YOUR EFFICIENT PROCESSES

The first two steps of 5S (Sort and Systematize) may seem like the heavy lifting of Toyota Lean Management. And, in fact, they constitute the nitty gritty work where you're likely to see the most visible impact. But if you don't standardize what you've done to improve process in steps one and two, you're likely to quickly revert to old habits.

Standardizing work relies on three elements: Standard Materials, Working Sequence, and Takt Time.

STANDARD MATERIALS:

To successfully standardize, you need to deliver the right amount of materials needed for each worker to complete their job, at the exact right time. Having

the materials readily available will allow the worker to do her job continuously in a set sequence of sub processes, repeating the same operation over in the same order. Standard materials and process are an absolute pre-requisite to improvement.

“Without a standard, there can be no improvement” - Taiichi Ohno

WORKING SEQUENCE:

This is the sequence of operations in a single process that leads an Associate to produce quality goods or complete tasks in the most efficient way.



TAKT TIME:

Takt Time is the time it takes to produce one component or, at Toyota, vehicle. But it can be widely applied to any process with an achievable goal, and it's calculated as follows:

Total Daily Operating Time ÷ Total Daily Production Requirement = Takt Time

Takt Time is more than just your expected daily output based on what you could potentially do. Effective understanding of Takt Time takes into account market fluctuations and outside factors that will impact production requirements – it helps you understand your daily output based on what you should do considering the context of production.

In this equation, Total Daily Operating Time is calculated using 95-98% efficiency in order to encourage Associates to stop when they experience a problem. If they believe that the goal is to never stop the line, they may be inclined to pass along their problems to the next process. It is important to build time into the plan that supports a culture of stopping to correct errors as they are uncovered. This is the concept of Jidoka which we will explore in our next section.

My Lean Journey: What steps can I take to standardize successful operations at my company using standard materials and work sequence approaches? How can implementation of Operational Time expectations help direct my workforce and business decisions?

JIT AND JIDOKA: THE PILLARS OF THE TOYOTA HOUSE

With the bedrock and foundation of the Toyota House in place, you're now ready to implement two process management techniques that are key to the total elimination of waste: Just-In-Time delivery and Jidoka.

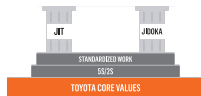
JUST-IN-TIME:

Just-In-Time refers to the conveyance and delivery of just the right amount of materials to complete one's job, at just the right time. Think about the surgical approach – in order to allow an expert to focus on their repeated task, they get the utensils they need at exactly the right time. The optimal approach is one item, used immediately for one need, eliminating any work outside of the standard. For a manufacturer,

this means only delivering the necessary parts a person needs to complete their job, and doing so just when they need them. For a warehouse, this may mean never allowing the number of boxes to be labeled pile up because they arrive too fast for the labeler.

To achieve Just-In-Time production, you must first achieve Level Work (Heijunka). Level work is the overall leveling in the production schedule of the variety and volume of items/work produced in given time periods.

My Lean Journey: Where in my processes am I delivering too much material for my people and processes to efficiently handle? What bottlenecks exist in my workflow?



JIDOKA:

Jidoka means “Automation with a human touch.” Jidoka requires that when abnormalities are discovered in a product or production, any problems with automated processes be stopped until the cause is resolved. Jidoka empowers all Associates to be quality controllers. In fact, one of the key practices of Jidoka is the Associate’s responsibility to Stop. Call. Wait.

Associate responsibility in the “Stop. Call. Wait.” method:



STOP – Associates are required to stop a process when they notice an abnormality.



CALL – Associates are required to call for help in resolving the issue.



WAIT – Associates are required to wait on supervisor assistance before proceeding.

What motivates this approach? Zero downtime should not be the goal. The best quality should be. If you don’t correct quality flaws immediately, everything you produce will carry that flaw. Also, remember that if you need to create a work around to get production back on track, that the workaround should not become the standard – you need to come back for deeper analysis so that proper kaizen can occur.

Ingrain this in your operation and culture: I will not accept bad quality. I will not create bad quality. I will not pass on bad quality.

My Lean Journey: Have I empowered my people to stop processes if they see poor quality?

VISUALIZATION – YOU CAN'T MANAGE WHAT YOU CAN'T SEE

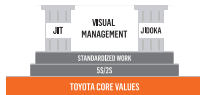
Visualization or Visual Management is the window in the Toyota House. And now that you've provided the right tools to your Associates at the right time and empowered them to call out abnormal conditions it's time to strive for a shared vision.

Visualization ensures everyone has the same understanding. This has a deeper meaning than shared goals. It means openly displaying the current condition of Key Performance Indicators (KPIs) versus the goals to accelerate improvement. KPIs are available where all Associates can visually assess them together – so that everyone can see problems and take action with greater velocity. We see together, we learn together, we take action together.

EXAMPLES OF VISUAL MANAGEMENT

- ▶ 2S/5S, Shadow Boxes, Color Coding
- ▶ Standard Work In-Process Indication
- ▶ Obeya Room
- ▶ Key Performance Indicator (KPI) Tree
- ▶ Daily Win / Loss Display for Safety, Quality, Productivity
- ▶ Kamishibai Visual Audit System
- ▶ Andon or Production Scoreboards
- ▶ Floor Management Development System (FMDS) Boards
- ▶ PDCA Boards
- ▶ Weak Point Management

My Lean Journey: What methods do we use to monitor our progress? How might we benefit from increased visual representation of our problems and successes?



GENCHI GENBUTSU:

What's the key to visualization? You can't always do it from behind a desk. Genchi Genbutsu means "go and see." By investigating this issue in person and, ideally, with a group of people, you can quickly improve shared understanding and communication of the current condition, with the intention of reducing waste and closing gaps in the process.

My Lean Journey: Thinking back to my most recent problem, did I go and inspect the problem myself? If so, how did that help? If not, how might things have gone differently if I had practiced Genchi Genbutsu?

- 1** WHEN A PROBLEM ARISES, GO TO THE WORKPLACE FIRST
DON'T TRY TO MAKE A DIAGNOSIS ON THE PHONE
- 2** CHECK THE PROCESS (INVOLVE ALL STAKEHOLDERS)
BECAUSE SEEING IS BELIEVING
- 3** TAKE TEMPORARY COUNTERMEASURES ON THE SPOT
TO ULTIMATELY RESOLVE THE PROBLEM
- 4** IDENTIFY THE ROOT CAUSE OF
THE PROBLEM AT HAND
- 5** LASTLY, STANDARDIZE THE PROCESS
TO AVOID AN UNWANTED RECURRENCE

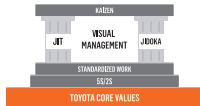
KAIZEN: THE DEDICATION TO CONTINUOUS IMPROVEMENT

You've built the bones of your house from foundation to pillar to window. But you're not done. While the foundation is set in the bedrock of your cultural values and the structure in standardized practices for identifying waste in processes, the ceiling in your house is an undying dedication to innovation and evolution.

Kaizen. It means continuous improvement. It's the realization that no process can ever be declared perfect, but can always be improved. If you adopt the spirit of continuous improvement, as a lean manager and a company, then you understand that your lean journey is never over and that you can always improve.

When kaizen is a part of your company culture, you'll realize that kaizen doesn't always have to be a company-wide corrective initiative (although it can be). Kaizen is about small, incremental change that helps people develop and process improve. Kaizen is to be carried out by everyone, everywhere, every day.

My Lean Journey: After my big wins, have I refocused on how to further improve those processes? Have I included others through the improvement process so they can support the change? Have we looked for ways to apply what we have learned in other areas (Yokoten)? Have we become and helped others to be better problem-solvers?



5S A CULTURE OF CONTINUOUS IMPROVEMENT



SITUATION RECOGNITION

To begin Kaizen, you must first recognize and identify the gap between your current situation and your desired situation. Kaizen requires team members to think about their individual process and make timely decisions in order to keep it running smoothly. This involvement creates shared responsibility for the success of not only the individual process, but of the company, increasing both quality and morale.

5 “WHYS” ANALYZE ROOT CAUSE

Kaizen requires that the logic and benefit of all improvements are carefully evaluated before being implemented. Before an improvement plan can be determined, the root cause needs to be found.

This is achieved by employing the concept of the “5 Whys?” This is the process of questing “why?” at five levels to ensure that the root cause is clear. This process can also be used to test the logic and value of an improvement plan.

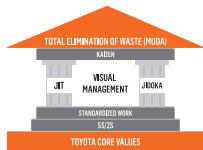
THE TOTAL ELIMINATION OF WASTE

As you continue to practice Kaizen to solve problems big and small, you will begin to notice a cultural shift. Your team will build comradery and confidence as you develop a culture of continuous improvement.

While following the principal of Kaizen tells us that processes can always be improved, the ideal state, the roof of your house, is the total elimination of waste and every action that does not provide customer value.

Apply your lean principles as you look at each of the following places where waste may occur.

My Lean Journey: I'm thinking of many opportunities to eliminate waste – but which are the most important? Knowing that not all changes can occur at once, where should I start so that my actions have the biggest impact on my business?



THE 8 BASIC CATEGORIES OF WASTE

- 1 | TRANSPORTATION** | MOVEMENT OF PRODUCTS THAT ARE NOT ACTUALLY REQUIRED TO PERFORM THE PROCESSING.
- 2 | INVENTORY** | ALL MATERIALS AND FINISHED PRODUCT NOT BEING PROCESSED.
- 3 | MOTION** | PEOPLE OR EQUIPMENT MOVING MORE THAN REQUIRED TO PERFORM THE PROCESSING.
- 4 | WAITING** | WAITING FOR THE PRECEDING PROCESS.
- 5 | OVERPRODUCTION** | PRODUCTION AHEAD OF DEMAND, WHICH CREATES OR AMPLIFIES ALL OF THE OTHER FORMS OF WASTE.
- 6 | OVER PROCESSING** | DOING MORE TO A PRODUCT THAN IS REQUIRED BY THE CUSTOMER.
- 7 | DEFECTS** | INSPECTING AND FIXING DEFECTS.
- 8 | SKILLS** | UNDERUTILIZATION OF AN INDIVIDUAL'S OR ORGANIZATION'S ABILITIES AND TALENTS.

INNOVATION TO CHANGE THE BUSINESS – THE IMPORTANCE OF HOSHIN KANRI

Organizations large and small can improve their processes through a dedication to lean management. But if individual managers throughout an organization are pursuing their own lean goals, very soon you might find an opposite effect – where well-intentioned but uncoordinated efforts lead to increased waste. How do you combat this as a leader?

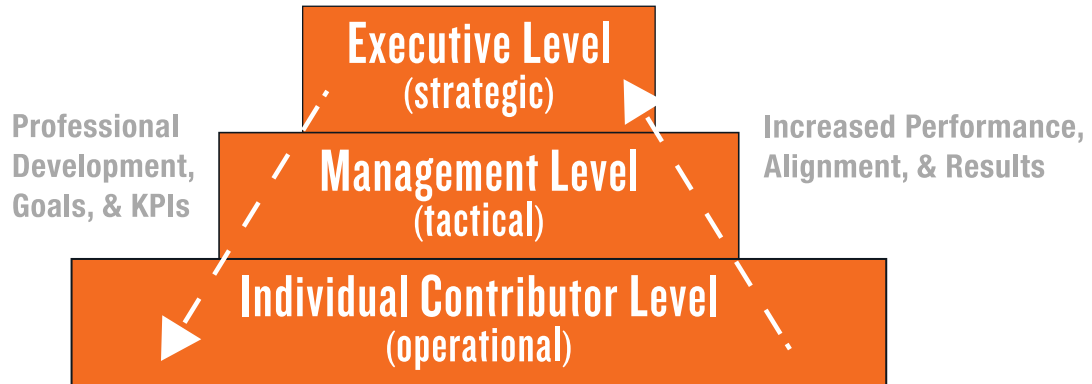
Our answer is Hoshin Kanri. These are big dreams and means for achieving them that promote business priorities and increase the level of an organization's performance. The vision is cast by executive management and can be rendered across annual or multi-year timelines, depending on need. Hoshin Kanri is different from other strategic planning models in that it emphasizes Associate development

as much as goal attainment. The ideas and contributions of all levels of the organization are sought. Through Hoshin Kanri your organization can achieve:

- ▶ Clarity of purpose so that everyone in the organization can identify focus areas.
- ▶ Visualizing progress, which leads to making timely adjustments and ensuring success.
- ▶ A fostered sense of unity.
- ▶ Eliminated sense of obligation and stronger commitment to success.
- ▶ Promotion of proactive thinking and development for all Associates.

My Lean Journey: Do all levels of the organization understand the goals and how they impact them in their daily work?

STRATEGIC HOSHIN KANRI



TOYOTA LEAN MANAGEMENT SERVICES

DISTRIBUTION AND SERVICE PARTNERS

▶ **Lean Champion Training**

Toyota Material Handling provides a 3-day “Basics of TLM” training course at our factory in Colubus, IN. Afterward, you will return to your organization inspired with your own ideas of how to make improvements in your business.

▶ **Quarterly Support**

Our experienced team of Lean Advisors will coach, provide feedback, and recommend next steps along your lean journey. This support includes using visual management to solve problems and

improve efficiencies as well as improving strategic planning and project management.

▶ **Value to Customers**

Your organization’s lean journey will support customer service through timely and efficient delivery of equipment and services, first time fix rate improvements, and lead-time reduction. You will also be uniquely positioned to share your experiences with customers and advise them in their journey. As the source of original lean, this customer service is unique to Toyota’s DNA!

CUSTOMERS AND COMMUNITY

▶ **Toyota Lean Factory Experience**

You can enjoy an intimate tour of our facility in Columbus, IN — focusing on lean tools, culture, and attending daily management meetings.

▶ **Customer Site Visits**

TLM Advisors can come to your facility to observe and recommend next steps on your lean journey.

▶ **1-Day Lean Training Course**

Our “Basics of TLM” course will help you understand the real purpose of lean and the value of 5S,

visualization, and standard work and Just in Time through impactful teaching and hands-on exercises. This can be completed either at your facility or at our Columbus, IN, factory.

▶ **3-Day Training at the Toyota Factory**

This 3-day course in Columbus, IN, incorporates all of the elements of the 1-day course, but also digs deeper into lean topics and culture and allows you to see practical lean examples in our factory firsthand. Management or first line supervisors will benefit most.

