

3 Forms of Waste	<p>There are 3 forms of waste in any organisation; <i>muda</i> (tasks with no value add), <i>mura</i> (where things are done inconsistently) and <i>muri</i> (where excessive effort is used).</p> <p><b>Benefit</b> of thinking about waste in these ways: it allows your people to more readily associate their experiences with their processes to how to improve the performance of the business. Helping them define what each of these terms means to them on a day-to-day basis is the foundation of performance improvement.</p>
3 Phases of Improvement	<p>These tend to be sequential, and offer increasing levels of efficiency to an organisation.</p> <p>The first is to <i>STANDARDISE</i> the way work is done. It can involve the processes, procedures, management practices and physical layout, depending upon the type of environment and work processes.</p> <p>The second is to <i>MECHANISE</i> those activities that can be better done mechanically or electronically. Tends to be mechanisation of discrete activities within the overall process.</p> <p>The third is <i>AUTOMATION</i>. This occurs when all processes and systems are stable and consistent, allowing the end-to-end automation. It should only be done when it can be demonstrated that human intervention is minimally required. If done too early, it can build in inefficiencies at best or skip critical steps or cause failure at worst.</p> <p><i>The trap: think about how many IT or outsourcing projects skip the first phase. What is the cost?</i></p>
5 S	<p>This is a process of housekeeping, aimed at keeping workplaces clean and tidy, to facilitate the efficient delivery of work processes and to ensure nothing gets lost. It comprises:</p> <ul style="list-style-type: none"> <li>&gt; <i>Sort (seiri)</i> where things not immediately needed are removed or stored.</li> <li>&gt; <i>Straighten (seiton)</i> where things are organised and placed in the most appropriate spot – for efficient use.</li> <li>&gt; <i>Shine (seiso)</i> is about keeping the workplace neat at all times, putting away items or equipment not in use.</li> <li>&gt; <i>Standardise (seiketsu)</i> involves developing standards and rules for keeping the place neat, maintaining the first 3 S's.</li> <li>&gt; <i>Sustain (shitsuke)</i> involves the ongoing management of the improvements. Who ensures that it is done consistently?</li> </ul> <p><b>Benefit</b> of 5 S can be in the way it formalises a range of work practices for a group and sets a norm for new employees. It helps to mitigate each person defining how THEY want to work, regardless of the impact on the customer. It also allows for more effective management of teams and processes.</p>
Andon	<p>A form of visual control which displays the current state of work, such as abnormal conditions, work instructions, progress made. It forms part of <i>jidoka</i>.</p> <p><b>Benefit</b> of the andon concept: provides parameters for what is acceptable and what is not, and allows people to be held accountable for the consistent execution of their work process. Provision of clear instructions, with a clear definition of a successful output, allows for each person to measure in real time whether they are working to the organisation's and the customer's expectations.</p>
Andon Line	<p>In manufacturing, is a means for any worker to stop production when an error or abnormal condition appears. It aims to give control of quality to those working directly in the process and provides accountability down to the front line.</p> <p><b>Benefits</b> include accountability at the point of execution and the rapid identification of a process drifting away from standard. It minimises the cost of rework and improves customer service, by catching a problem before it becomes a major issue.</p>
Autonomation	<p>This is typically a complex or high tech solution to preventing defects, usually some form of sensing equipment. Particularly relevant in high speed or critical environments, where the sensor will stop the line to allow the operator to fix it. See the Japanese term <i>jidoka</i>.</p>
Baka-Yoke	<p>Fool proofing. Tends to have been replaced by the term poke-yoke.</p>

FIFO	<p>First in, first out. Process (work or orders) or use (inventory) what has arrived first.</p> <p><b>Benefits</b> include always working on oldest items, forcing the organisation to manage the build of backlog of work. With inventory, helps mitigate aging of stock (when it can degrade) or going out of date.</p>
Gemba	<p>Means the actual place or the shop floor. It is an indication that if you want to understand an issue fully, it can only be done at the point where it occurs. No point in theorising in a meeting room somewhere – go to the gemba, and find out for yourself.</p> <p><b>Benefits</b> include developing a true understanding of the issue in real time as it actually occurs. Also builds engagement with those working 'on the floor', who are often a solid source of information.</p>
Genchi Genbetsu	<p>Go see the problem. Practical experience – at the gemba – is of more value than any theory.</p>
Heijunka	<p>Within the production schedule, this refers to the overall levelling of the number of items to be produced/worked on and the variety or mix within a specified timeframe. This is a critical input to Just-In-Time (see definition below).</p> <p><b>Benefits</b> involve a smoothing of work to ensure balanced allocation and output. Helps to provide certainty to the people doing the work. It ensures that the customer gets what they want, when they want it, reducing the level of unsold goods. It also smooths the demand for upstream suppliers and processes.</p>
Hoshin	<p>Setting of goals with targets, and how to achieve them; it is the operationalisation of strategy. It is designed to realise improvements in performance. It tends to be annual or across a longer period; it can change from year to year.</p> <p><b>Benefits</b> involve a link between an organisation's strategy and the activity of the people working in the process; it provides visibility of what is deemed important, allowing all employees to work to common strategic directions.</p>
Jidoka	<p>It is one of the 2 critical elements of the Toyota Production System, which is where Lean has sprung from; the other is just-in-time. It refers to the ability to stop the work or the production line (which can be automatic) when issues with quality, missed schedules or equipment malfunctions are detected. This contributes to stopping defects either building or being passed on (mitigating rework levels) and allows for the identification of the root cause of an issue – whether it is a process, material, equipment, people, skill – and where it is occurring. It prevents the despatch or sign off of faulty materials or processes.</p> <p>See also Autonomation.</p> <p><b>Benefits</b> include a minimisation of poor quality work, a culture of fixing it at the source and an expectation that all people have a role in meeting quality targets. It sets accountability organisation-wide.</p>
Jishuken	<p>These tend to be continuous improvement teams, working on specific problems. It can include suppliers, to ensure a wide spread.</p>
Just-In-Time	<p>It is one of the 2 critical elements of the Toyota Production System, which is where Lean has sprung from; the other is jidoka. It means to only produce or work on 'what is needed, when it is needed and in the amount needed'. It has 3 main principles:</p> <ul style="list-style-type: none"> <li>&gt; The Pull System</li> <li>&gt; Continuous Flow Processing</li> <li>&gt; Takt Time</li> </ul> <p><b>Benefits</b> include people only working on organisational priorities, ie what the customer has asked for specifically. It can prevent building of unneeded inventory, working on items that are not needed yet – or may never be needed – and missing out on delivering what the customer has actually committed to. In manufacturing, it also has a role in keeping inventory levels low, both of raw materials/componentry and finished goods.</p>

Kanban	<p>A key control for Just-In-Time processes. It provides instructions on production and how it is to be moved, controls (usually visual) to ensure that only the right amount is made or produced and that work proceeds at the standard rate and contributes to continuous improvement.</p> <p>It involves 'pulling' an order for work through the system. When a customer asks for something, then componentry is pulled and the product made (compared to making to stock, or building something to store in a warehouse for when an order is received). It usually involves some form of kanban card, specifying volumes of components and what is to be done to them. It also ensures that re-ordering is done in the same 'drip' or 'to demand' pattern.</p> <p><b>Benefits</b> involve people only working on what is required. It minimises stock and componentry on hand but provides disciplined re-ordering to prevent stock outs. It requires good visibility of all elements of the value chain and a supply chain that is well-oiled. Can drive continuous improvement due to its fine balance exposing operating problems.</p>
Kaizen	<p>It is a form of continuous improvement, whereby operating problems are eliminated as part of the pattern of the day-to-day business. Particularly focussed on waste or muda. It is the role of all people in the organisation to work within a kaizen mindset. It tends to focus on small, recurrent problems rather than large, ugly ones.</p> <p><b>Benefits</b> include involving all people, not relying on specialists and the opportunity to pick away at the myriad of small operating problems that, when added together, can be large issues for any organisation.</p>
Kaizen Blitz	<p>Refers to workshops focussed on gathering data/evidence of as many small problems as possible. More formal than the day-to-day implication of kaizen, it requires facilitated sessions rather than being part of the organisation's business as usual management approaches. A Kaizen Event tends to refer to a week-long kaizen blitz.</p> <p><b>Benefits</b> are reflected in an acceleration of continuous improvement activity or it can be used to motivate a group of people who cannot or no longer see the opportunities for improvement.</p>
Muda	<p>Non-value added or waste. They tend to be things that a customer would not be prepared to pay for</p> <ul style="list-style-type: none"> <li>&gt; <b>Overproduction</b> where more is made than ordered or it is made too early and there are holding costs.</li> <li>&gt; <b>Waiting time</b> where people or machines are idle or product is lying around, waiting for the next step.</li> <li>&gt; <b>Transportation</b> where you move things around too much. Can be equipment and labour costs.</li> <li>&gt; <b>Inventory</b> involving holding excessive componentry or WIP, involving excessive input and holding costs.</li> <li>&gt; <b>Motion</b> where excessive activity occurs to get something done, often involving complex workarounds. It usually implies that nothing has changed intrinsically in the product – it's just been shuffled about.</li> <li>&gt; <b>Over-processing</b> where excessive activity has occurred that is unnecessary or unwanted.</li> <li>&gt; <b>Defects</b> where a faulty product or item is passed to the next phase and which at some point will need to be fixed or reworked.</li> </ul> <p><b>Benefits</b> of focussing on muda involve articulating for staff the reality of what it means in their specific environment and creating a culture where muda is always looked for and people are trying to remove or mitigate it. To get rid of it, you first have to identify it.</p>
Mura	<p>Refers to performing a job inconsistently. It has downstream costs if there are defects or if it is difficult to perform subsequent steps if the initial ones are done too differently. Process variation – and its removal – underpin the Six Sigma thinking about process improvement.</p> <p><b>Benefits</b> involve being able to deliver a product or process quicker and more cheaply if consistency is achieved. It makes the process easier to execute, has less potential defects and allows for greater flexibility of scheduling of staff.</p>

Muri	<p>Involves having to go to a lot of effort to do something. Most tasks should be designed to be done by as wide a range of people as possible.</p> <p><b>Benefits</b> of reducing muri involve greater flexibility amongst staff and being able to respond to changes in conditions (absenteeism, spikes in demand). It also facilitates the scheduling and allocation of work and if the work is physical, can reduce the risk of harm.</p>
Nagara	<p>Refers to performing more than one task at a time in a single motion. Involves the simplification of processes to the point where someone can pick up more and more activity without stress or risk of failure. May involve some significant job/process re-design, often leveraging technology.</p> <p><b>Benefits</b> involve lesser cost as more is done with less. Also indicates simpler, more consistently executed processes, meaning less re-work.</p>
Nemawashi	<p>Working with other areas to gain their input or insight before you make changes.</p> <p><b>Benefits</b> involve gaining their support and engagement, particularly if it impacts them, as well as their insights. Sometimes it is your customers or suppliers who have a clearer view or different perspective on an issue than you do. For instance, you may be seeking to reduce turnaround time when your customer is not really concerned about that. They may be more interested in you performing more consistently than more quickly.</p>
NVA	<p>Non-Value Added – or what your customer does not want to pay for. There may be elements that your customer does not want to pay for, but can't avoid – for instance, they do not see any value in contributing to the costs of running your finance function. However, you cannot operate without it, so it is non-value added, but a critical component. The true NVA sits in the arenas of muda, mura and muri.</p>
OEM	<p>Manufacturing term meaning original equipment manufacturer. They make componentry or equipment purchased by another company who is the one selling the final product to companies or consumers.</p>
Pokayoke	<p>Low cost, highly reliable devices used in the jidoka system, often manual. They will stop the process to prevent defects. They are used typically at operator level and are usually simple tools.</p> <p>See also Jidoka and Autonomation.</p> <p><b>Benefits</b> involve the low cost, pragmatic nature of the solution. They are able to be readily updated and dispersed widely. Provide the operator with the tool.</p>
Pull	<p>Something is only done when there is a customer demand, ie the customer 'pulls' the order through. You only make or do what has been asked for.</p> <p><b>Benefits</b> involve reduced costs of inventory and componentry/WIP. It saves on space, rework, labour and there tends to be much lower error rates. The focus is on what has been ordered.</p>
Push	<p>Production based capacity, ie making what is physically possible with the equipment, resources and manpower available. Tend to make to inventory and you hold significant items in WIP. Most efficient in high volume industries and where the production line is perfectly balance. Or where the supply chain is complex/poor and you have inconsistency in its performance.</p> <p><b>Benefits</b> exist if there is a premium on having to be able to immediately despatch the product. You pull from stock at a moment's notice.</p>
Seiketsu	See 5S
Seiri	See 5S
Seiso	See 5S

Seiton	See 5S
Shitsuke	See 5S
Standard In-Process Stock	This is the minimum amount of stock or parts on hand for processing on and between processes. It allows the people working in the process to be able to work continually without delays associated with the supply of componentry.
Standardised Work	In the Toyota Production System, all work is organised around efficient human motion without muda. This is standardised work. It has three elements: <ul style="list-style-type: none"> <li>&gt; Takt-Time</li> <li>&gt; Working Sequence</li> <li>&gt; Standard In-Process Stock</li> </ul>
Takt-Time	<p>From the German for rhythm, it refers to the time it should take to produce an item. It is based on the monthly production schedule, with the daily total operating time assuming all machinery operating at 100% efficiency during regular working hours. The takt time allows us to produce many parts of many different types for use in whatever is being assembled from the production schedule and to supply those parts to each process on the assembly line at the proper time. This keeps production on schedule and permits flexible response to change in sales.</p> $\text{Takt Time} = \frac{\text{Straight Time Work Time (Seconds)}}{\text{Required Number of Production based on Demand}}$
Value Add	<p>Anything a customer is prepared to pay for. The opposite of Non-Value Add or Waste. When considering value, we often assume that because a process is required to assure a quality product or outcome, then the customer is willing to pay for it. However, most customers would prefer to pay for a product or service without all of the processes that are required to deliver it error free, such as QA inspections. The challenge is to continually design out the errors or root cause of error so that issues such as the cost of quality (QA inspections) can be minimised or eradicated.</p> <p><b>Benefit</b> of focussing on value or value add is that it requires everyone to focus on what the customer is prepared to pay for. As this is not a constant, the organisation which can stay ahead of the customers' expectations will tend to succeed.</p>
Waste	<p>Any activity or process which a customer is not willing to pay for. There are 3 forms of waste: muda, mura and muri. See the definitions of them.</p> <p><b>Benefits</b> of understanding waste in this level of detail is that if an organisation and its people first understand the range of waste that they may be experiencing, then they can work to eradicate or mitigate that waste – continuous improvement.</p>
Yamazumi	<p>A 'Yamazumi board' is a chart tracking takt-time and is used to balance a process to takt time. It tracks relative time to complete a task and allows shifting of activities based on whether an area or process had capacity or a lack of capacity. It can ensure optimum utilisation of resources.</p> <p><b>Benefits</b> occur as unbalanced processes will not meet customer demand. Balanced processes allow production to occur at the required rate.</p>
Yokoten	Meaning across everywhere – that is across the operation or operations associated with the process in question. It is used to provide feedback across the operations.