The PAM Series ©

Practical **A**id **M**emoirs for the workplace

PAM 3

Improvements

'Establish and maintain systems of improvement'

Communication Training Improvements

Forward

The decision to write this series of PAMs was taken after witnessing and experiencing the absence of aide memoirs at work to help jog the memory or provide some guidance. Sometimes people just need a reminder, a nudge to get them along the way again. The PAMs provide sufficient information to allow the reader to easily digest the content and put it into practice at the workplace.

Essentially, Practical Aide Memoirs are just that, practical. The PAMs are intended to assist planning, decision making and action. The resultant action is intended to improve the workplace performance of individuals and teams, lifting those Key Performance Indicators, sustainably. The PAMs are about creating an environment of success.

PAM 1 is about laying the foundations. PAM 1 starts with the individual, then places the individual within and around the team. The team function is examined, and we look at motivation. PAM 1 also makes clear the distinction between leaders, managers and roles. Throughout PAM 1 there is an emphasis on communication skills, an orientation towards objectives and outcomes, and reflective practice.

PAM 2 puts the framework in place. It establishes and maintains the learning environment and sets in place a culture of personal and professional development. PAM 2 presents 'Train the Trainer' (TTT) and 'Job Instruction Training' (JIT). Workplace training should be delivered in the most efficient and effective way so that training interventions are beneficial for everyone involved. The company benefits from having staff trained to a high standard, not simply for the sake of training but to add to the quality of work being done and ultimately, profit. Like an accountant, well trained members of staff are a sound investment.

PAM 3 builds on PAMs 1 and 2 and is all about creating an environment of Continuous Improvement. While based on sound Lean and Projects principles, this PAM remains practical due to the principle of being 'applied'; easy to grasp and transferable into the workplace. Applied Lean principles are about keeping things practical, giving ownership and doing what works.

Combined, the PAMs represent a Systems Approach to workplace improvements.

David Browne

Set 1 Foundations

1.1 Lean principles

The Improvements function of the organisation is built on shared Lean principles. These principles can be applied to any work environment, and to whatever range and scope as is necessary.

The key principles that underpin lean are to:

- **Specify value**. Identify the value of the product from the point of view of the customer
- **Map the value stream**. Map out all the steps involved in operations. This is normally carried out using the technique of business process modelling. Once mapped out any steps that do not add value to the process are eliminated
- **Create flow**. Improve the effectiveness of the steps so that the sequence is the most efficient way of getting the product to the customer
- **Establish pull**. Liaise with customers to identify their next desired product and initiate activity meets those desires
- **Seek perfection**. Create an environment of continuous improvement by building in automatic and constant reviews of each of the principles

Why the principles matter. If every individual within supported, co-ordinated teams are operating to these principles, and to well established and co-ordinated workplace systems, the organisation will be operating at its optimum level.

The term *Lean* is often used in conjunction with Six Sigma. Rather than being an approach based on management principles, Six Sigma is an approach based on statistical analysis. The two are often used together because of the desire to optimise operational activities, and to mathematically model processes and measure performance. PAM 3 focuses on operations and Lean disciplines in Sets 1 and 2, then places emphasis on statistical processes in Set 3. Lean discipline coupled with performance monitoring will highlight opportunities for improvement. This approach also ensures PAM 3 remains *practical.*

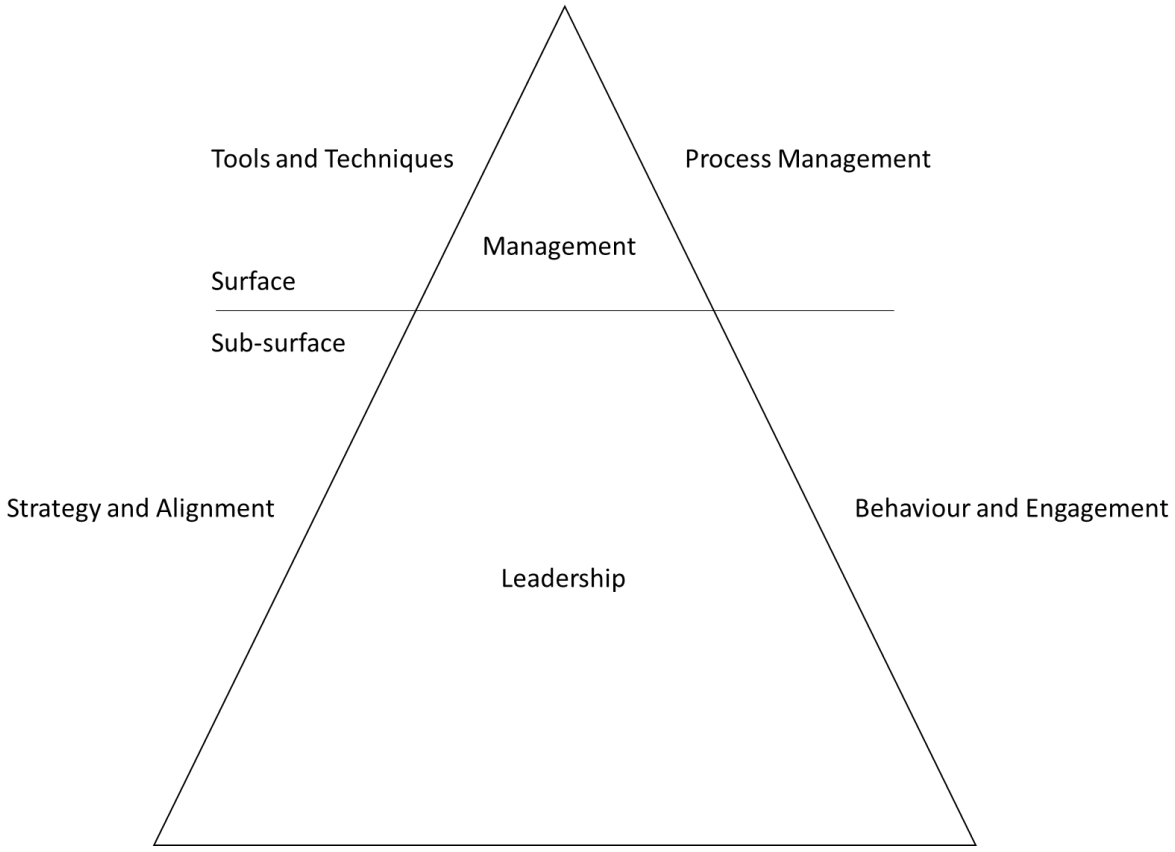
1.1.1 Operating in a Lean environment

Lean principles operate within two main environments. There is the **surface environment**, where implementation of Lean is visible to managers and employees. These are the techniques and process management tools of Lean such as **Policy Deployment** (cascading of Objectives), **Problem Solving tools** (such as DMAIC), **Daily, Weekly, Monthly Routines** (DWMs), and **Standard Work** achieved through effective training interventions. The other environment, **the sub-surface environment**, is far less tangible and is concerned with leadership, behaviours, values and engagement. The Lean environment is illustrated using a variation of the iceberg model:

The Lean Environment-

(Ice-berg Model)

Hines



1.1.2 Capability Change

Change capability is the ability of the organisation to plan, design and implement all types of change efficiently with committed stakeholders; causing minimal negative impacts on people and operations, so that desired business and cultural [outcomes] from change are consistently achieved and integrated [sustainably] and seamlessly into operations to deliver maximum ROI. Sanborn

Capability Change teams are the means by which strategic projects are supported; they are the portal for organisational change.

Common characteristics of such teams are they:

- facilitate a change environment through engagement
- rely on project management
- promote training and development

The **purpose of a Capability Change team** is to help create an attitude of and expectation for continuous improvement throughout the whole organisation.

1.1.3 Change Teams

Capability Change teams normally operate at a strategic level within the company, controlled centrally and drawing on other resources as required. Teams can be formed at a lower level within the organisation. However, this can cause conflict of roles as members of a Capability Change team should be outside the local management structure (due to the nature of the team's change role).

By establishing and maintaining the framework for continuous improvement, Capability Change teams can spread best-practice throughout the company and nurture the development of a culture of organisational learning.

Using the characteristics of a Capability Change team, start making notes on the formation of your team.	Activity
Facilitate a change environment through engagement.	
Rely on project management.	
Promote training and development.	

1.1.4 Operating in the Change environment

In most organisations the management of change and transition is a core activity in the achievement of operational objectives and growth, whether it is the relatively 'light touch' or a more radical transformation. Significant shifts in the political, economic, social, and technological environments mean that organisations need to increase their capability to respond creatively to new challenges and ways of working.

Whether the change processes are unplanned and ad-hoc, planned and strategic, or incremental or dynamic, they have profound implications for workplace management and development. Change of any sort evokes the need for innovation, creativity, learning and *culture change*, all of which lie within the sphere of individual and team development.

Managers are key stakeholders in the delivery of change in such matters as the allocation of supporting resources, provision of learning and development opportunities, reward structures and the development of employee relations.

Managers at a senior level need to demonstrate the contribution they can make in helping people to:

- recognise and interpret the relationship between organisational vision and perceived capability.
- mobilise processes that enable change processes at the appropriate level for the requirements of the organisation.
- promote the new Standard.

The purpose of promoting the new Standard is to foster *buy in*. People who have bought in to the new Standard will anticipate, and have a better understanding of, the issues that will inevitably arise during the transition.

1.1.5 Limitations of the standard approach to change

Change starts at the top. Being further up the management ladder does not come with a magic skills-set of being able to arrive at all the best ideas. However, that is often the mind-set. *Those closest to the work and the systems shaping the work are equally as likely to have good ideas*.

A top-down approach management culture can make it uncomfortable to speak truth to authority (or power). By the time a good idea is listened to the opportunity may well have passed by. A ***transformational approach*** may be preferred as ***organic change is more likely to succeed, not least because the desire, the will, the passion is already theirs***.

Change is rolled out. 'Here we go, yet another project' is a common enough reaction to change that has not considered or consulted with all those involved. A change programme that is rolled out, or imposed, will meet resistance. A more socially constructed plan, where a framework is put in place*, and* ***owners operate according to their own plan for change*** is an effective alternative approach.

Change is engineered. An extension of rolling out change is to attempt to engineer it to too much detail. This transactional approach assumes change can be prescribed and the environment controlled. *A more transformational approach is more inclusive, flexible, and potentially more radical.* ***A change platform*** *shares the characteristics of a transformational approach to management*.

Activity 1.1 Initial Appreciation

Initial appreciation of the change environment. Potential:	Activity
Barriers:	
Opportunities:	

1.2 Strategy and Alignment

Strategy is the approach adopted for planning and operations. There are a number of strategies to adopt, ranging from ad-hoc, laissez faire through to planned and tightly controlled. The strategy might be aggressive, defensive or consolidating. The work environment and preparedness of stakeholders will dictate where on the scale strategy sits.

Alignment is how the strategy and its Objectives are cascaded throughout the organisation. **Policy Deployment** is the vehicle for alignment that PAM 3 utilises (and is covered later in this section). However, the Policy Deployment vehicle needs a route map- Plan, Do, Check, Act.

1.2.1 Plan Do Check Act

The various functions of strategy are expressed through distinct phases: **Plan, Do, Check and Act (PDCA)**. Workplace activities should be part of a '**Plan**'. A good plan orientates everyone to the task in hand and ensures all necessary structures are in place. Once all the structures are in place a pilot is implemented, this is the '**Do**' phase. Of course, any plan will need to be monitored and changes made where necessary; to *modify the plan*. This is the '**Check** phase'. The final phase of the strategy is '**Act**', where the plan is implemented in full. 'Act' is not really the final phase, but a platform to starting the process over. Thereby, maintaining a process of Continuous Improvement.

Plan Do Check Act is a useful framework within which to formulate your ideas for the future. A main characteristic of PDCA is that it is a continuous cycle that can be applied at any workplace. The **benefits of PDCA** include the establishment and maintenance of helpful routines, a framework for planning and efficiency of effort

There is a stage before PDCA where you identify what the desired outcome is. If the desired outcome has not been identified and agreed, the plan can be predicted to fail. It is also a good idea to be **SMARTER** about the desired outcome or objective by ensuring it is Specific, Measurable, Achievable, Relevant, Time-bound, Ethical and Recorded. A plan can then be developed from firm foundations.

The size and level of detail of the **Plan** will be influenced by a range of factors such as, for example, reactions to change, time available, resources, knowledge of the workplace environment and its various functions. You would have heard of the basis of any plan: What, Why, Where, When, Who and How. (And *what if*, contingency planning).

The plan is executed as a series of phases and in a controlled manner as you and your team **Do** the actions. The capacity of the team to Do the actions would have been considered previously when SMARTER was applied.

In order to ensure the plan remains on course and is performing as anticipated, it is essential to **Check** Key Performance Indicators (KPIs) and other results.

Once you and the team are satisfied the next step is to **ACT**; that is to **standardise and improve** the process within and across shifts.

1.2.2 Plan

The size of the task requires either a detailed, product-based plan or a less-detailed and looser plan. The plan may be contained in documents, spreadsheets, other software such as Microsoft Project, post-its or whiteboard etc. Whichever way the plan is formed, it is essential the plan is communicated to those involved.

The communication of the plan should include information on:

- The Objective/s
- Who owns certain parts of the plan
- The schedule
- Tolerances (What lies within scope, and what falls outside)
- Reporting

1.2.3 Do

The plan will result in activity at the workplace. This will involve individuals and teams doing what the plan has set out to be done. Each individual and team should be given agreed SMARTER Objectives (see PAM 1) to ensure effort remains aligned and focused.

1.2.4 Check

Throughout the workplace activities, and at specified times within the schedule of the plan, data analysis should take place so that results can be measured in accordance with the intentions of the plan. How to measure trends and improvements is visited at Section 3 and is concerned with data collection and analysis.

1.2.5 Act

The 'Doing' and 'Checking' will require the plan to be adjusted. So long as adjustments stay within tolerances, that can be considered an utterly normal and predictable part of the process. Even where events fall outside of the parameters that have been agreed, a strategic level decision may exercise the choice of shifting those parameters.

Here, however, lies the danger of 'group think' (Janis) and mission creep, which in turn may lead to unintended consequences and added costs. Therefore, any decision to continue with parts of a plan, *or the plan itself*, should it fall outside of previously agreed tolerances, should be taken with caution.

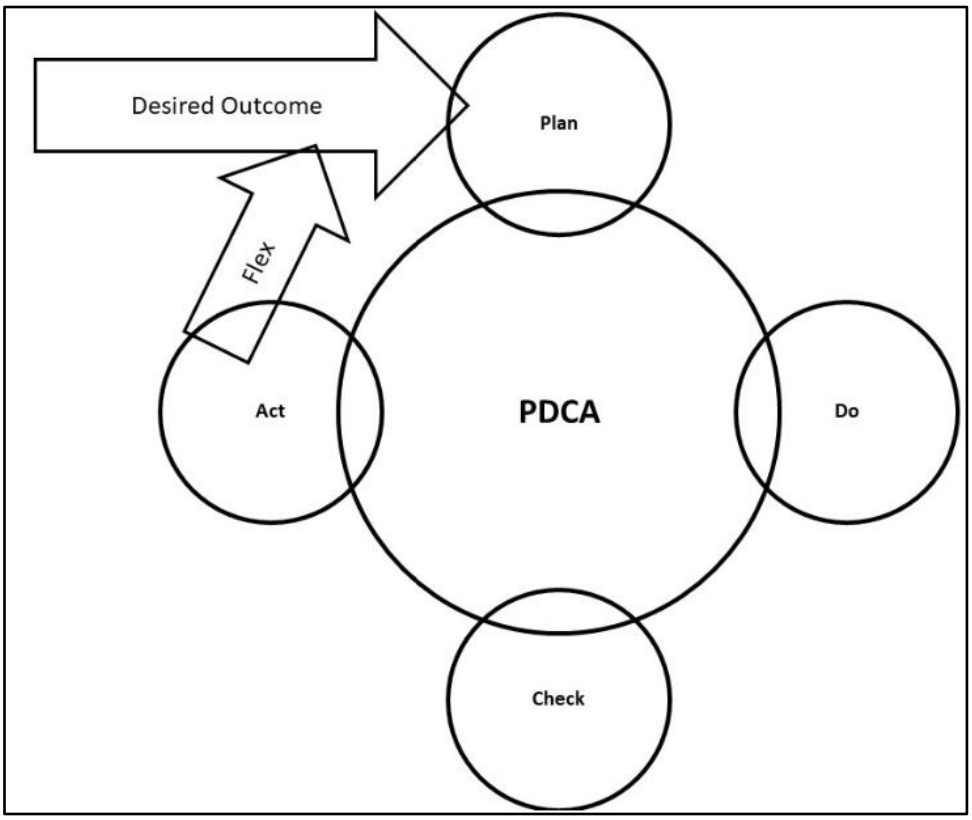
Having adjusted the plan accordingly, the company is to 'Act' on the new insights gained. Acting will necessarily involve change at some level for all those involved (vis. 'The Change Platform'). It is at this point that PDCA can start over, with the 'Plan' element targeting a specific aspect of the Objective of the original plan.

1.2.6 PDCA- Flex

Any plan should have built within it the ability to re-shape in light of events. Re-organisation does not mean a surrender of the overall objective, just a different route to it. In some circumstances it might be necessary to question the continued validity of the objective itself. Some project management models have checking the continued validity of objectives as a central theme, and a deliberate part of the plan itself.

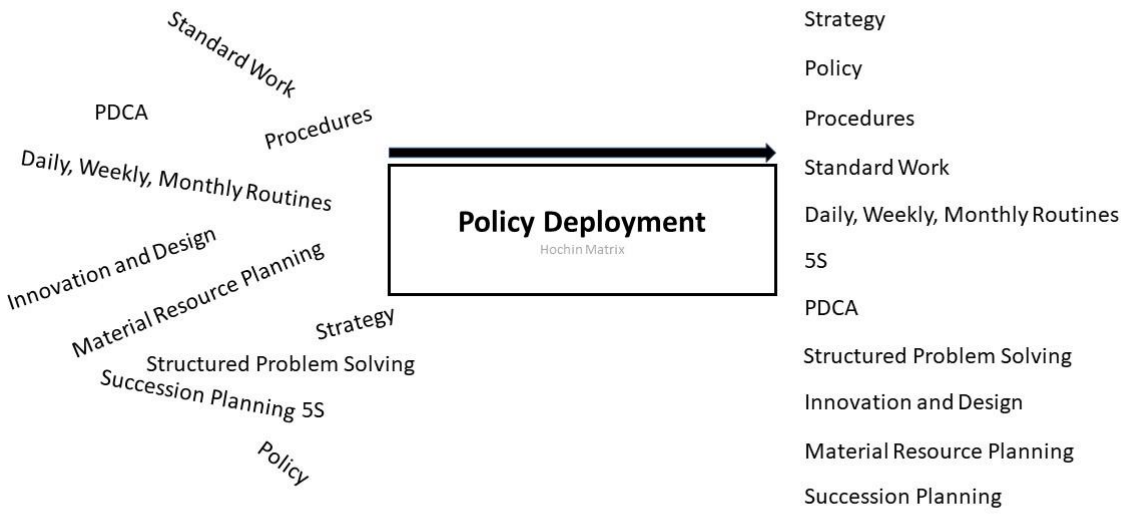
If the objective is no longer valid, why invest time, effort, resources in it? Here may lie a dilemma. Having gone this far, having invested all this time, effort and resource at this project, the argument might be, 'we can't stop now'.

Judgement, and a management decision is required. There is a natural tension between the ability or will to flex, and strict adherence to the plan.



1.2.7 Policy Deployment

Policy Deployment, a Visual Management tool, is a Lean management process that is about the cascading of objectives throughout the company from Directors to the individual member of staff. Through Policy Deployment it is possible to see how objectives at each level are linked, often referred to as *the golden thread*. This cascading of objectives ensures activities are aligned throughout the company, resulting in increasingly effective operations. The objectives are reviewed regularly ('regularly' as defined by the company) and, in line with the principles of Continuous Improvement, updated as required.



The illustration above shows how **alignment of objectives, focus and effort** is achieved through effective Policy Deployment. Meetings held around a Management Board displaying objectives, ensures managers have sight of the direction of each of the departments in the company. This means that **priorities** can be more easily identified, and **plans agreed** in a way that builds in confidence of success, where waste is eliminated, value added and profit increased.

Furthermore, due to **increased cross-functional understanding** between managers (and everyone else involved) Policy Deployment results in a much more **effective use of resources**. Availability and priority over the use of resources ensures they are deployed by the right people, at the right time and at the right place.

Policy Deployment does have some **pitfalls, or risks**. **Lack of access** could result in managers not having sight of necessary information, further resulting in resources being used inefficiently and plans quickly becoming obsolete. Even with all the up-to-date information being made available, a consequence of a **lack of understanding** could mean risks or opportunities are missed.

Policy Deployment has clear lines of responsibility, thereby avoiding the issue of a **lack of accountability**.

The next risk is about commitment, a **lack of commitment** is addressed through effective leadership. The final two are a **lack of a proper realisation of the consequences**, and a **lack of a sense of reality**. These two characteristics appearing in any deployment ought to raise some concern and the deployment re-considered.

Policy Deployment, team management and leadership ensure there is proper realisation of the consequences and a proper sense of reality.

The end result being the attainment of aligned activities.

A Policy Deployment matrix is derived from the Objectives of the next level up, and so starts at the strategic level. It is, however, possible to create a Policy Deployment matrix without formal receipt of company objectives.

A manager should be able to derive their objectives from an analysis of company statements and KPIs.

Part 2- Policy Deployment Notes on Policy Deployment: (Ctrl)	Activity

Activity 1.2 PDCA

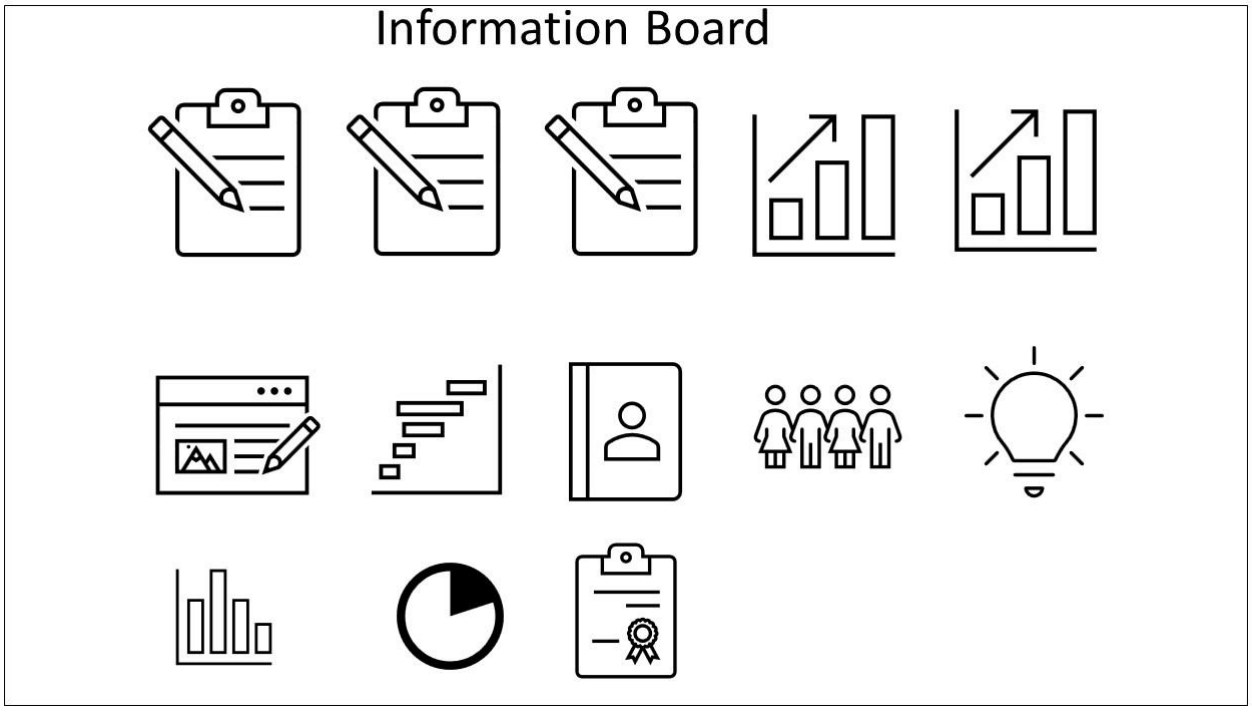
Part 1 Apply PDCA by getting started with some notes:	Activity
What is the desired outcome?	
SMARTER Objective: S M A R T E R	

Plan (What, Why, Where, When, Who and How)
Do (Execute in phases)
Check (Monitor performance)
Act (Standardise improvement)

1.3 Visual Management

Visual Management provides a means of ensuring the whole team is kept informed of what affects their ability to perform well. A simple management board (or computer **dashboard/portal**) orientates team effort to achieving those **Key Performance Indicators**, or KPIs. An up-to-date management board is a quick and easy way of giving feedback to the team on where improvement is necessary and where the team is achieving its KPIs, or even excelling.

The content of a board dedicated to Visual Management is decided on by careful consideration of what affects the team. No two boards necessarily have the same information on them. It is up to the manager and the team to identify what matters to them.



1.4 Daily, Weekly Monthly routines (DWMs)

DWMs are about structuring the routines of the owner, co-ordinating those routines with others, and continuously seeking to improve business operations.

1.4.1 Characteristics of DWMs

There are two main aspects to DWMs:

Management routines (Daily, Weekly, Monthly, Annually)

Improvement activities (Structured Problem Solving)

DWM routines are **agreed and created** between the manager and the report. This ensures **clarity of Objectives and agreement on those activities necessary to achieve the Objective**. A DWM routines *is not* a complete list of everything the owner does during the working day.

There are ***must do, should do*** **and** ***could do*** **routines**. The *'Must Do'* routines will always be done (if not by the owner, then delegated) as these represent systems checks that protect the company. '*Should Do* activities are less urgent and will be done as soon as an opportunity arises. And '*Could Do'* activities are those that will be done in due course. There is also a '***Would Do'*** category of routines. These are tasks or opportunities that will be given attention given favourable conditions in all other areas.

The owner will work through the routines, **recording progress** as they do: routines completed, not completed, and those not started. By doing this, **patterns can be identified**, and **interventions made where barriers to success are met**.

The application of DWMs means managers are able to work within a structure while continuously seeking to improve workplace methods.

DWM routines are not 'in addition to the normal job'. It ***'is'*** the job.

The DWM method to workplace activities is also referred to as '**Leader Standard Work**'. The principles are the same, and the format remains fluid.

1.4.2 Benefits of DWMs

- Provides a visible structure for the owner
- It lets others know what the owner is focused on at specific times
- Routines are coordinated with others
- Quickly identifies issues and opportunities
- Triggers regular meetings with other owners

1.4.3 Creation of DWMs

Prepare DWM routines:

- Identify Performance Indicators
- Identify the **data/systems information** that informs you about the performance of your department.
- Identify the **critical points** that affect that performance.
- Identify the **behaviours** and tasks necessary to maintain and improve performance.
- Identify the **controls** in place to ensure the behaviours are there all the time.

Create DWM routines:

- List the essential routines that *keep the system safe*. These are the **scheduled** tasks, or ***must do's***.
- Leave space for **other activities**. These are the **unscheduled but predictable** tasks, or ***should do's***.
- Leave space for **events**. These are the **unscheduled and unpredictable** tasks, or the ***could do's***.
- Remove the probably of having to fire-fight. Include time for the would do's.

Coordinate DWM routines with others

Implement DWM routines. Adjust as required.

Identify opportunities for improvements

1.5 Standard Work

An essential element of factoring out variances in workplace activities is to ensure work is being carried out in the same way by everyone involved in the process. This approach is 'Standard Work' and is achieved through effective training delivery.

Two approaches to training delivery that inform PAM 2 are:

- **Train the Trainer** (Delivery of training using a range of methods)
- **Job Instruction Training** (Delivery of training using Job Instruction)

Refer to 'PAM 2 Training' for further information.

1.6 Five S

5S is all about having an organised workplace and has the following benefits:

- It is a safer place to work.
- Productivity is better as the layout is more conducive to getting the job done efficiently.
- Delivery of quality products to customers is more assured.
- Unnecessary activity is reduced/removed.
- Preventive maintenance is made easier.

1.6.1 5S and Visual Management

5S utilises **visual management** though the use of information, shadow or equipment boards. You would have heard the saying, '**A place for everything, and everything in its place'**. **5S** is a system of good housekeeping that is standardised, and everyone adheres to. The workplace is a cleaner and more pleasant place to be, where ownership of and pride in the workplace is encouraged.

1.6.2 5S Ownership

5S is an approach to our work designed to encourage people to **take ownership of their own work environment** so that they can perfect their **standardised work**, their **workflows**, have **easy access to equipment** needed, and more easily identify opportunities for improvement.

1.6.3 5S Efficiency

5S reduces time lost to avoidable, wasteful activities such as *looking for or waiting for items*. Even without conducting a Time and Motion study to measure the improvement, **better results from smoother flow of activities** will be evident in KPIs.

1.6.4 5S Philosophy

5S is a **way of thinking**. It is **a philosophy** around **shared expectations of how the workplace and work is organised**. It is a philosophy everyone subscribes to.


5S
Sort
Retain, Return, Re-cycle
A philosophy of workplace organisation
Sustain
Make 5S Our Business
Routines and Improvements
Set
A place for everything
Standardise
Within and between shifts
Shine
Cleaning schedule
Ownership of the space

Activity 1.6 5S

Part 1 **Early plan for establishing and maintaining 5S:**	**Activity**
Preparation. Consider the following: Who is involved? How and when will you brief the team? What is the timescale? What will success be like?	
Sort. Retain what is needed; Return what is not needed; Re-cycle anything unnecessary ('Red Tag').	
Set (In Order). A place for everything, and everything in its place. Use of Shadow Boards.	
Shine. Introduce a cleaning schedule. Make the schedule 'Visual'.	
Standardise. Everyone involved, everyone doing it the same way.	
Sustain. Demonstrate leadership by maintaining the new standard.	

Part 2 **Carry out a '5S Audit':** ('N' responses are immediate Actions)	Activity

Category	Item	Y/N
Sort	1. Is the area free from obstacles?	
	2. Is the area free from unnecessary items?	
	3. Is there a designated area for waste/recycling?	
	4. Is there a designated area for 'Red-Tag' items?	
	5. Does the area appear generally free from clutter?	
Set (In Order)	6. Does the workflow appear 'smooth'?	
	7. Are necessary items easily at hand?	
	8. Are shadow boards in use?	
	9. Are administration areas orderly?	
	10. Does there appear to be 'a place for everything, and everything in its place?	
Shine	11. Are floors free from rubbish, spillages etc?	
	12. Are walls free from splashes etc?	
	13. Are surfaces free from rubbish, spillages, dust etc?	
	14. Are parts, tools and equipment free from debris?	
	15. Are cleaning materials and equipment readily available?	

1.7 The rate of operations

It is desirable to optimize workflow, resources, and work time. It is the responsibility of managers to understand and measure the rate and duration of the various processes within their areas. This to ensure an **optimum** rate is being maintained, labour is not being under-utilised and work is being carried out in the most efficient manner

The main methods of measing the rate of operations are:

'**Lead Time**' '**Takt Time**' '**Cycle Time**'

1.7.1 Lead Time

This measure refers to the time it takes to fulfil the order: **from receipt of the order to delivery**. The point of receipt may vary, from online orders, email or telephone calls. From the customers' point of view the order is considered placed at that point. Therefore, irrespective of internal administrative tasks that are required to process the order, the time may start from that point.

Similarly, the order is not fulfilled at dispatch but on receipt at the delivery address. Further customer distribution is not directly considered but may have an indirect effect on Lead Time due to, for example, the onward shipment (or further processing) outside of the company's own processes.

An alternative measurement of Lead Time is to end at the point where payment for order fulfilment is received.

Lead Time: 'Time from order to delivery'.

1.7.2 Takt Time

This measure refers to 'the rate' (or pulse) at which work should be carried out. Takt time is usually expressed in terms *units, pots, pieces or sleeves per minute*. Once the optimum rate has been identified it is possible to monitor that rate and measure efficiency.

Monitoring takt Time is the means by which under or over-production is eliminated or reduced.

Calculate Takt Time:

- Takt Time = Time Available (Hours or minutes and excluding breaks) / Units

Therefore, The team contributing to the Time Available need to make [.....] Units p/Hr (or Min)

Takt Time: 'The rate of operations required'.

1.7.3 Cycle Time

This measure refers to the average time it takes to achieve a finished product, from start to complete. Cycle Time can measure the whole process or interdependent parts of the process in isolation but sequentially. It may take judgement to be exercised to decide on the proper 'start' and 'complete' points as preparation (for example, cooking) or logistics (for example, packing) could be considered.

Calculate Cycle Time:

- Cycle Time = Time Available (Hours or minutes and excluding breaks) / Unit made

Cycle Time: 'The average time it takes to finish one unit'.

1.7.4 Takt and Cycle Time

Benefits of optimised Takt and Cycle Time include:

- Improved Material Resource Planning
- Minimum labour variance (Performing and under-performing teams more easily identified)
- Steady 'Flow' of operations
- Standard Work
- Better efficiency
- Predictable outcomes (Order fulfilment)

If the Cycle Time is less than the Takt Time, the order will not be met. Conversely, wasteful over-production will occur if the Cycle Time is more than the Takt Time.

1.7.5 Value and Non-value-added

Managers can predict outcomes (Lead) by monitoring the rate of operations (Takt) and average time taken to complete a unit (Cycle). By doing so, managers are able to remove or reduce Non-value-added activities from the process and make Value-added activities as efficient as possible.

'The easiest of all wastes and the hardest to correct is the waste of time, because wasted time does not litter the floor like wasted material.' Ford.

Activity 1.7 Rate of Operations

Product Description: _____ Or **Service Description:** _____ **Calculate:**	**Activity**
Lead Time	
Takt Time	
Cycle Time	

Set 2 Structure

2.1 Business Process Mapping (BPM)

2.1.1 Map the Process

A characteristic of Lean management is to *map the process*. To map the process is to make visual how the operation is and what it should be. Business Process Mapping lays out the territory on which operations are carried out.

The illustration below represents a key to Business Process Mapping. The illustration uses standard symbols for this sort of mapping. The most common software used is 'Visio'. However, basic functions can be found in Microsoft PowerPoint.

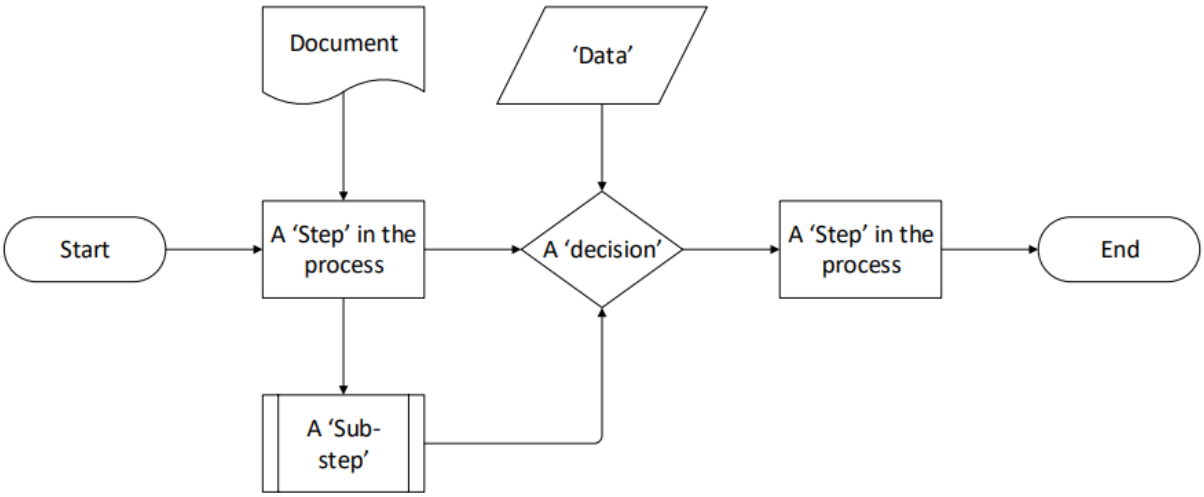
2.1.2 Benefits of Process Mapping

Benefits of creating a BPM include:

- Improved team understanding of the intricacies of the operation
- A basis on which agreement can be made
- Identification of unnecessary, diverting activities, or 'blockers'
- Identification of Opportunities for Improvement
- Provision of evidence of due diligence in management decision making

Mapping is seldom completed in a single workshop and so may require several sessions and iterations of the map until a usable map is arrived at.

Business Process Map-



Activity 2.1 BPMs

Create Business Process Maps for your areas. This should be carried out collaboratively, including all stakeholders.	**Activity**
Level: (Site / Departmental / Team) **Function**: (e.g. Quality Assurance) **Cross-functional**: (other functions/Stakeholders) _____ **BPM**...] (E.g. Warehouse) _____ **BPM**...] (E.g. Orders) _____ **BPM**...] (E.g. Waste Management System)) _____ **BPM**...] (E.g. Engineering) _____ **BPM**...] (E.g. New Product Development)	

2.2 Value Stream Map (VSM)

2.1.1 Purpose of VSM

A fundamental approach in Lean management is to focus all aspects of the operation on the needs of the customer. Activities being carried out that the customer does not value should be eliminated, or at least reduced.

Identification of Value-added and Non-value-added activities is achieved through the use of a Value Stream Map (VSM). A VSM allows the user to **exploit Opportunities for Improvement in the value-added activities, and to remove the Non-value-added ones**.

Both instances create the opportunity for Kaizen (improvement) events. A VSM utilises standard symbols (see below).

2.1.2 Valued Added Activities

Value-added activities are **those the customer is willing to pay for**. These are the aspects of a product or service that is found in the agreed specification. The product specification (or Service Level Agreement) states the requirement and tolerances.

:

2.1.3 Non-Valued Added Activities

Non value-added activities can include everything else. However, there are some activities that are necessary for the business to function, such as training, maintenance and activities concerned with compliance with regulations.

Customers expect their products or services to be provided by appropriately trained, and not just adequately trained, personnel. While these activities might not be directly valued by the customer, an indirect value does exist.

2.1.4 Indirect Value-Added Activities

While the customer may not directly value such activities with regards to their interests in their orders, an **indirect value is placed on** training, maintenance and activities concerned with compliance with regulations **by way of due diligence** on their part.

Compliance with regulatory requirements, while not directly of value to the customer, can be viewed as an Indirect Value-Added Activity, as **non-compliance can be harmful or costly** (to the company and customer).

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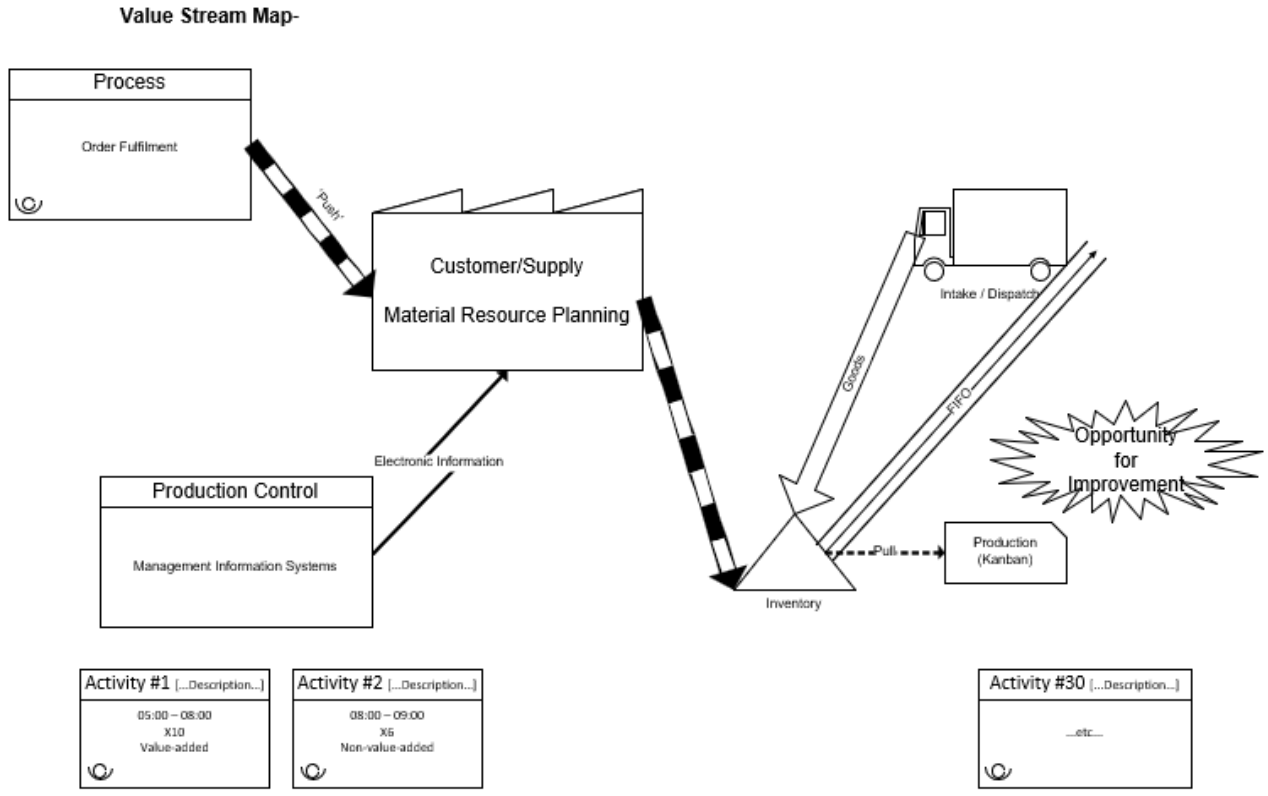


2.1.5 Benefits of a Value Stream Map

- A focus on the customer
- Identification of Value and Non-value-added activities
- Opportunity to improve Vale-added activities
- Opportunity to eliminate or remove Non-value-added activities
- Improved Lead, Takt and Cycle Times
- Improved 'Flow'

Activity 2.2 VSMs

Create Value Stream Maps for your areas. This should be carried out collaboratively, including all stakeholders.	**Activity**
Level: (Site / Departmental / Team) **Function**: (e.g. Quality Assurance) **Cross-functional**: (other functions/Stakeholders) _____ **VSM**...] (E.g. Warehouse) _____ **VSM**...] (E.g. Orders) _____ **VSM**...] (E.g. Waste Management System)) _____ **VSM**...] (E.g. Engineering) _____ **VSM**...] (E.g. New Product Development)	

2.3 Precision Change-over (PCO)

2.3.1 Purpose of PCO

A Precision Changeover describes the most precise, efficient and repeatable way to successfully change from one product to the next, while at the same time ensuring the integrity of the product.

2.3.2 'External' Tasks

As much preparation should be done prior to the need for the changeover; these are the 'External' activities or tasks.

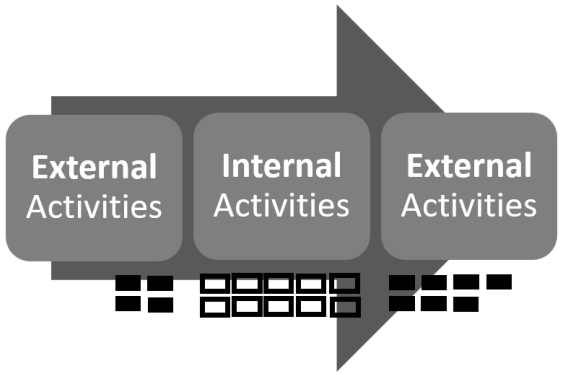
2.3.3 'Internal' Tasks

Tasks required to be completed when production has stopped should be reduced to the minimum; these are referred to as 'Internal' activities.

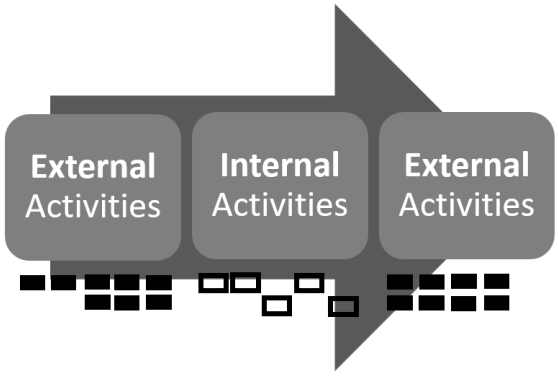
2.3.4 Analysis of Changeovers

An analysis of the operation will identify the External and Internal tasks required. A study of the analysis will result in the identification of those tasks that can be move from Internal (when production has stopped), to Internal (where production is running/resumed).

PCO- Current State



PCO- Future State



Activity 2.3 PCOs

Observe a series of changeovers. For each:	Activity
Step 1. Identify those involved (and assign a number).	
Step 2. List the tasks carried out by each member.	
Step 3. Map the tasks, chronologically.	
Step 4. Group similar tasks together.	
Step 5. Remove unnecessary tasks.	
Step 6. Re-order the tasks.	
Step 7. Re-assign the tasks.	
Step 8. Brief the team. (***Plan***)	
Step. 9. Apply the Precision Changeover. (***Do***)	
Step 10. Observe a series of changeovers: (***Check***)	
Adjust as required. (***Act***)	

2.4 Kanban

2.4.1 Kanban 'System'

The term 'Kanban' refers to a visual system that is in place with the purpose of authorising movement of items/units in each step in the process. The system may take the form of a 'card', 'sheet' or the appearance of a 'Batch'.

2.4.2 The purpose and Aim of Kanban

The purpose is to:

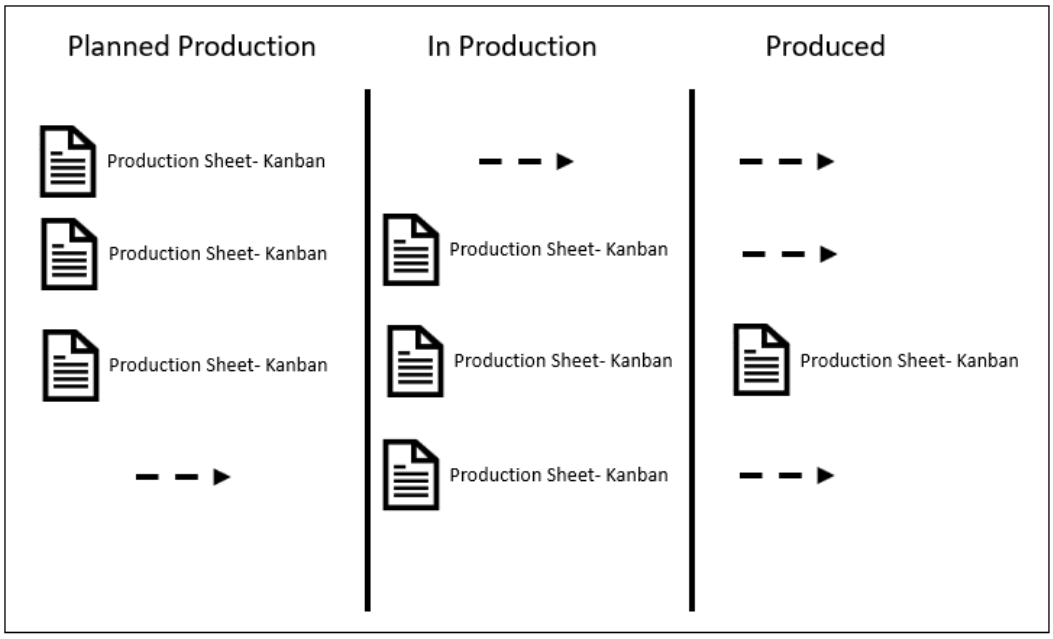
- maintain control through authorisation of movement.

The aim is to:

- maintain flow and to eliminate waste.

2.4.3 Kanban and Value Stream Mapping

When illustrated in a Value Stream Map, movement of items or units will only take place as required by a 'Pull' factor originating downstream in the operation. The quantity authorised for movement should meet the requirements of the next step in the (production) plan.



Activity 2.4 Kanban

'The purpose is to maintain control through authorisation of movement' 'The aim is to maintain flow and to eliminate waste'	Activity
Current State System of control over movement (Authorisation): 'Flow' efficiency: Waste:	
Future State: Kanban control over movement (Authorisation): 'Flow' efficiency: Waste:	

2.5 Failure Mode and Effects Analysis

Throughout this section the term, 'process' will be used to describe a process, product or service.

2.5.1 Purpose of FMEA

A good management practice is to anticipate events that could adversely affect operations. One method of formalising this is to carry out a 'Failure Modes and Effects' (FMEA) analysis. The FMEA is a means of anticipating undesired events or consequences occurring, and the means of identifying preventative and counter measures as a result of the analysis.

2.5.2 Method

A FMEA examines each step in the process under observation, identifies what could fail in the process (or design) and cause defects, what effect that failure mode would have on the operation, and gives that failure mode a risk rating (following an analysis of the failure mode).

If a FMEA becomes too large it may be worth considering breaking the process under review down into more manageable integrated sub-processes.

The FMEA may take any practical form but is usually created as a spreadsheet. Ease of access and practicality should be considered when deciding on the level of detail required. More complex, interdisciplinary processes are likely to require considerably more detail than relatively simple processes.

2.5.3 'Risk Rating'

The risk rating is an indicator of the need for preventative and counter measures to be in place. The risk rating also provides a means of prioritising effort. The FMEA should form part of any process, making the process more robust.

2.5.4 Uses of a FMEA

A FMEA should be used:

- During the development of a new process
- When a change to a process occurs because of, for example, changes to:
    - Legislation
    - Compliance
    - Customer requirements
    - The nature of the work: modifications to the route, method
    - Plant/Equipment configuration
- As part of Continuous Improvement activities
- As part of a scheduled review throughout the life of the process

2.5.5 FMEA Procedure

Preparation:

The following is a list of activities that should take place prior to completing a FMEA:

- Identify the topic. This becomes the title for the FMEA.
- Assemble a Cross-functional Team (CFT); for example: Customer Relations, Product development; Operations, Engineering, Technical/QA, Information systems
- Appoint a Lead for the team
- Identify stakeholders, including non-members of the CFT
- Decide on the Project approach: Project structure, Schedule, Communications plan
- Confirm the Range (including limitations) of the FMEA. How much of the whole business function is the FMEA to cover? What areas/departments are to be included?
- Confirm the Scope (including limitations) of the FMEA. How much detail is required? How much will the CFT be expected to *drill down* at each step in the process? At what level of detail will the FMEA stop? An assessment only can be made at this stage as analysis of findings invariably lead to a reassessment of the Scope and possibly a requirement for more detail.

FMEA Workshop:

List the 'Steps' in the process. For each Step:

- **Identify the 'Failure Modes'**; in other words what could go wrong

For each Failure Mode:

Identify the 'Effects', in other words the consequences of the failure. Consider, for example, the immediate effects on the process under topic, related processes, the availability and performance of equipment, induced defects. Identify the 'Effects by rating the '**Severity**' '**Occurrence**' '**Detection**':

2.5.6 Determine the 'Severity' (S) rating

How detrimental the failure would be?

Severity (S)	Description	Rating
Minor	Fixable in up to one hour	1
Interrupting	Fixable in up to 24 hours	2
Major	Fixable in up to 72 hours (3 Days)	3
Severe	Fixable in up to 168 hours (7 Days)	4
Catastrophic	Not fixable; Not viable	5

Alternative 'Severity' ratings:

1 Insignificant
2 Minor/Delaying (e.g. Less than 30 minutes Downtime)
3 Disrupting (e.g. Greater than 30 minutes Downtime)
4 Major. Changes to the plan required.
5 Catastrophic. The plan is no longer attainable (e.g. as a risk to People Safety or Food Safety)

2.5.7 Determine the 'Occurrence' 'O' rating

The probability of the failure happening:

Occurrence (O)	Description	Rating
Extremely Unlikely	Has not failed before	1
Unlikely	Not expected to fail	2
Likely	Could fail	3
Highly likely	Has failed before	4
Inevitable	Prone to failure	5

Alternative 'Occurrence' rating:

1 Extremely unlikely
2 Unlikely
3 Possible
4 Probable
5 Inevitable

2.5.8 Determine the 'Detection' 'D' rating

The ability for control measures, working practices and/or mechanisms to prevent or capture a Failure Mode event:

Detection (D)	Description	Rating
Control Measures are in place and observed	Absolutely certain to detect	1
Control Measures are in place	Should detect	2
Some Control Measures are in place	May detect	3
Ineffective Control Measures in place	Unlikely to detect	4
No Control Measures in place	Absolutely certain not to detect	5

Alternative 'Detection' ratings:

1 Certain
2 Likely
3 Probable
4 Unlikely
5 No controls in place

2.5.9 Calculate the FMEA Rating

$S \times O \times D$

- Identify actions:
  - Additional control measures
  - Preventative measures
  - Reaction plans (Actions on the event occurring)

Activity 2.5 FMEA

Identify a topic that would benefit from a FMEA. Schedule and facilitate a series of FMEA workshops.	Activity
Notes:	

2.6 Formal Writing- Procedures

2.6.1 Characteristics of formal writing

Formal writing sets the Standard for communication within the company. Formal writing should be accurate, concise and unambiguous in its instruction. The level of detail required is dictated by the level at which for the product (document) is being produced. The level of detail should also be carefully considered so that the finished document remains accessible and manageable.

2.6.2 Content

Procedures provide the order of activities (**at the appropriate level**), systematically recorded and documented from preparation to end, and includes as a minimum content:

- **An Introduction**, **including the purpose**. The 'Purpose' should include a brief description of why the document exists, the rationale. For example, a purpose might be to *provide useful information on Lean Management*
- **Aim**. The 'Aim' should describe what is to be achieved out of the purpose. For example, *Improve workplace performance*
- **Objectives.** A series of Objectives may be provided. Objectives describe what is to be carried out in order to achieve the Aim
- **Range**. Where the document refers to a 'Range' it is providing information on who, or which departments are involved
- **Scope**. The 'Scope' describes the level of authority and may provide information on what may be included. The Scope may also define 'Limitations'
- **Background information**. Any other information the author considers useful
- The **details** of the Procedure. A clear, concise, unambiguous and complete list of instructions, written at the appropriate level in relation to the operation. These may include the **Performances** to be carried out, the **Conditions** under which they are to be performed, and the **Standards** to be achieved
- **Maintenance** schedules
- **Routines** (including management and inspections). Expressed within 'Daily, Weekly, Monthly' routines
- **The training requirement**
- **Related Procedures**
- A history of **amendments**: Amendment number, date and description of the change
- Procedure **review**: How often the Procedure is to be reviewed, and by who

2.6.3 Procedure style

A business writing style is to be adopted when formal writing is applied. The main characteristics of formal writing are:

- Application of a standard format (Nomenclature, Font, Layout)
- Short sentences wherever possible
- In the third person, present tense
- Use of phrases that include such words as 'is to' or 'will' are instructions and so are targeted deliberately
- The use of phrases that include such words as 'should' or 'may' permit the exercise of discretion
- The avoidance of references to gender
- Initialisms and acronyms in parentheses after first use of the phrase or joined words
- Initialisms and acronyms written without parentheses after their first use
- Numbers one to nine in are written in text form; numbers 10 and on in numerical form

2.6.4 Benefits

The benefits of well-written Procedures include:

- The maintenance of a safe environment
- The dissemination of essential, concise and detailed information in a standard manner, with clarity
- Standard operations
- Consistency and reliability of quality products
- Compliance with business standards
- Evidence of due diligence
- A platform for Continuous Improvement

2.7 Supporting Documentation

2.7.1 Purpose

Company systems documents provide a reference and resource underpinning all functions of the business.

2.7.2 Strategic, Company, Team

Strategic

Strategic-level systems documentation and statements share a similar characteristic, they are short statements of intent. Each would normally be expected to be a single sentence or short paragraph. They are concise in nature and their purpose is to shape the character of the company. The first set are:

- **Mission**. Why the company exists
- **Values**. What the company believes in and how colleagues will behave
- **Vision**. Where the company wants to be; What the company wants to be
- **Strategy**. How the company is going to get there; What the company's over-all plan is

Company

Company level documentation provides more detail. The shared characteristic here is that they describe the environment in which the system will function. Policy Statements are normally no more than one page. The size of a Procedure will depend on the type of operation and the level at which the Procedure is being written.

- **Policy**. A statement or set of statements declaring the rules within which the company will operate. Policy Statements set out how the over-al plan will be monitored in order to ensure it stays on course.

- **Procedures**. Procedures are instructions on what is to be done so that the overall plan is executed. Procedures describe the whole operation.

Team

Team level documentation provides the tools used to equip personnel to be able to carry out the needs of the company. Their shared characteristic is that they sit within the domain of training and development: Examples are:

- **Work Instruction**. A list of instructions on how to carry out a specific task.
- **Single Point Lesson**. A one-page 'A3' aid made up of illustrations and with minimal text to illustration content (80-20)
- **Job Breakdown Sheet (JBS)**. A training aid for On-the-Job Training (OJT). A JBS details the 'Important Step' 'Key Points' 'Reasons' and has the following characteristics: All the necessary information is collected; explanations and demonstrations are structured and instruction is delivered in manageable (though time-consuming) chunks. A JBS can be used for any repetitive, manual Job.
- **Instructional Specification**. A detailed lesson plan that may cover a range of topics and include a range of methods for training delivery.

Set 3 Improvements

3.1 Forms of waste

In order to deliver products or services most beneficially and effectively, for both the customer and the business, it is necessary to target and remove waste inherent within the business. In order to focus attention onto waste it is categorised as:

3.1.1 The Seven Deadly Wastes

Acronym	Area of Waste
T	Time
I	Inventory
M	Motion
W	Waiting
O	Over-processing
O	Over-production
D	Defects

PAM 2 provides signposts to an eighth waste, '**Talent**'. A workplace with an inadequately trained workforce will accelerate waste events in any of the 'Deadly Seven Wastes'. A workplace with a trained workforce will reduce waste to an absolute minimum.

Activity 3.1 Target Waste

Draw up a loose plan to target waste: TIMWOOD	Activity
Notes:	

3.2. Voice of the Customer (VOC)

3.2.1 Definition of a Customer

A customer can be *classified as the recipient of a product or service*. However, the product or service may be part of a longer logistics chain that involves an 'End User' (as the final customer).

3.2.2 Types of Customer

There are 2 types of customers, wherever the customer is sited within the logistics supply chain. These are

- Internal
- External

Internal Customers

Characteristics of the Internal customer are they:

- Are usually from within the company (and may be further sub-classified by function within the company)
- Enable concurrent operations
- Are usually involved in the production of component parts of the finished product or service

External Customers

Characteristics of the External customer are they:

- Usually exist outside of the company
- Reside at the end of the process
- Use the product the end-product or service
- Modify or pass on the received product or service to the *End User*

Irrespective of the type of customer, it is essential to identify the customers' desired outcome. The outcome may be expressed quickly. For example, as part of a conversation. Alternatively, the outcome may be expressed in more detail. For example, within the tendering process.

3.2.3 Knowing the VOC

A range of methods can be deployed in order to gain a greater appreciation of the needs of the customer. These include:

Meeting/Workshop. A schedule should be in place where the company and customer meet with the intention of improving business with mutual benefit. Ideally, the event should be facilitated, relieving stakeholders from internal pressures.

Focus Group. Obtaining the views of a representative group of people with knowledge of the product or service may provide valuable insights.

Survey. A cost-effective alternative to the facilitated Focus group is to design and disseminate a targeted survey. Design of the survey will require careful consideration so that *Group Think* (Janis) is avoided.

Customer Complaint Information. The company should already have in place a means of capturing, retaining and learning from customer complaints. Management routines should include dedicated time given over to the analysis of such information.

3.2.4 Critical to Quality

Critical to quality (CTQ) is a process or aspect of a product that is essential, in accordance with the wishes of the customer. CTQ parameters can be found in product specifications and are usually expressed in terms of quantity, weight, size, time, occurrences etc.

Rather than a series of checks and re-checks, 'Quality' should be built-in to activities wherever possible. Standard Work is a most effective method of controlling activities critical to the quality of the product.

Activity 3.2 VOC and Quality

Build in time to review a product or service and confirm aspects that are Critical to Quality.	Activity

3.3 DMAIC- Define the topic

DMAIC is a methodical problem-solving tool available for Teams when dealing with issues. DMAIC may also be used to anticipate potential issues. Cross Functional Teams are established to tackle and resolve problems using DMAIC as the foundations for their work.

3.3.1 Define the problem

Before a problem can be addressed there must be clarity about what, exactly, the problem is. The manager could ask, '…and why is that a problem?' a number of times until the real problem is identified. (Vis. The 5Ys Fishbone diagram). Such an approach avoids the manager addressing the wrong issue and focuses on the ***root cause***. The ***Problem Statement*** is a product of this stage and includes:

- A project 'Title'
- A definition of the problem
- An explanation describing why the problem is important to the business and/or customers
- Identification of Cross Functional Team members
- A description of a successful outcome for the project

3.3.2 Defining a Process

The next task is to ***map the territory***. This is to illustrate the process within which the problem resides. Three key aides to successfully defining the process include '**Business Process Maps**', '**Value Stream Maps**' and '**Failure Mode and Effects Analysis**' work previously carried out.

Activity 3.3 Define

Part 1 Define the problem	Activity
Problem Statement:	
Part 2 **Define the process**	**Activity**
Notes for mapping the process:	

3.4 DMAIC- Measure trends

3.4.1 Data collection

Once the topic has been defined, the next stage is to decide on how to measure current and future performances. Here, a switch of focus is made to what data is collected, and by who. Data collection will allow an objective, quantitative evaluation to be made. In turn, helping to make **future decisions to be evidence based and more robust**.

A decision on the type of data collection and method will depend on such factors as:

- Time available
- Management Information Systems (MISs) in place
- Company culture

These factors are not data-specific but are more structural in nature. There is a risk these structural factors can be overlooked when a about to embark on the 'Measure' phase of DMAIC. Time invested in preparation at this stage will ensure more efficient data collection.

3.4.2 Cause and Effect Diagrams

The 'Cause and Effect Diagram' (also referred to as *the Fishbone diagram*) was introduced in PAM 1, and as an element that forms part of Daily, Weekly and Monthly routines (DWMs). When used in conjunction with DWMs, a Fishbone diagram acts as a springboard:

- To getting to the root of a problem
- For exploring potential opportunities for employment

The Fishbone diagram can also be used to help identify areas where performance measurement might prove beneficial.

3.4.3 Quality Tools

Quality Tools are a means of quantifying activities and comparing results against expectations. The tools take the form of a range of statistical measurements as a means of monitoring performance. **The classic '7 Quality Tools include**:

- '**Cause and Effect**' (or Fishbone) diagram. See previous sections in this PAM
- '**Check Sheet**'. A structured form used for the data collection
- '**Histogram**'. An illustration of the frequency of distribution.
- '**Pareto Chart**'. A bar chart configured to arrange the factors being measured in a way that highlights those factors that are most significant.
- '**Stratification**'. The separation and categorisation of data into groups so that patterns and relationships can be identified.
- '**Control Chart**'. An illustration showing changes over time, allowing comparison between current and past states. The comparison allows an assessment on the stability of the process to be made: Under control or out of control.
- '**Scatter Diagram**'. A graph presenting data arranged as a plot along the two axis.

Which 'Quality Tool' to use is dependent on the data/information collection method and how the results are to be presented. Presenting the data in different ways can offer insights that could be missed.

3.4.4 Systems Approach

Prior to setting up data collection activities, care must be taken to ensure the right operations are being observed and measured. When an adverse event occurs at the workplace, people will naturally work to put it right. Unfortunately, people then quickly move on and the event is almost certain to occur again and those people doomed to have to act to put things right, in the same way, again. It would be too easy to start recording those events, and miss what lies behind them, the **root causes**.

It is necessary to move beyond 'reacting' to events, to identifying and assessing inputs to those events (**the contributing factors**).

Contributing factors do not simply materialise out of nowhere. For example, **structures, practices, 'management practices', procurement, maintenance, Quality Assurance**, and how these interact would each of played a part, operating as part of an **organisational system**.

Data collection activities should take a broader perspective on events and seek to **identify interrelationships between inputs** to **identify the underlying influences**.

Identifying patterns in systems at work, **variation** will be more easily identified. It is usually these variations that cause the (undesired) effect elsewhere in the operation.

In addition to variation in areas such as those above, the **psychology** of the workplace is another key aspect of organisational systems. How people **conduc**t themselves, **expectations, standards, values** and **leadership** will have a direct influence on the product (or service).

A systems approach will also examine the structures in place that **enable effective and efficient transfer ok skills and knowledge** at all levels throughout the organisation. Workplace learning is often the poor relation at the workplace, with a reluctance to invest in training and development frequently evident, accompanied with an unrealistic expectation of achievement of results as though investment *had* been made.

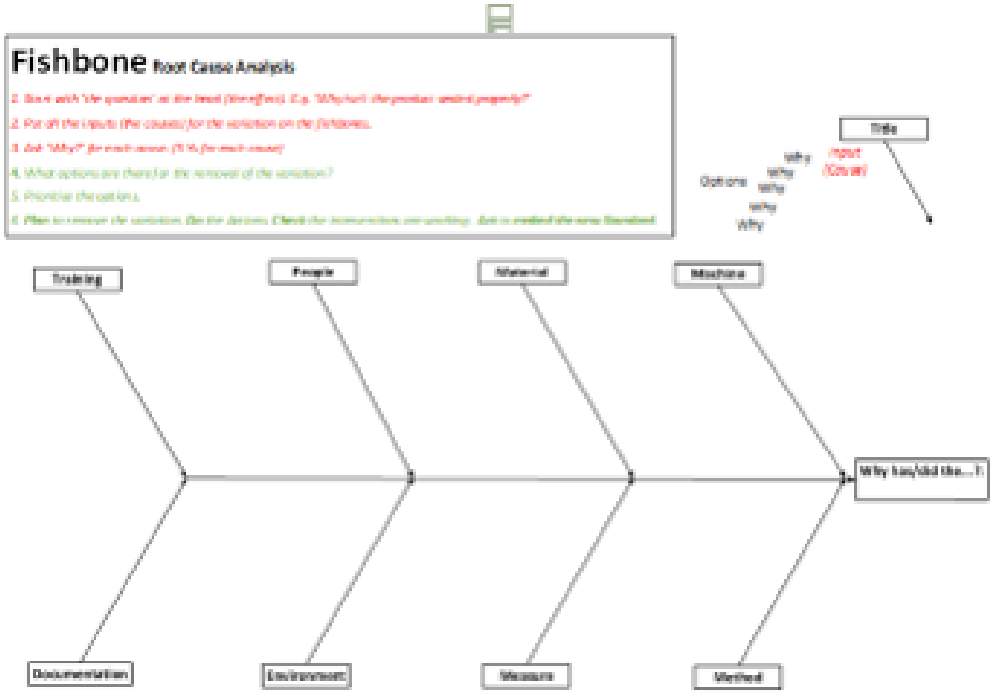
Displacement must be considered too. Teams need to be aware that fixing a problem in one area could cause problems elsewhere. There is a tension between performance measurement by KPI, and displacement. **Systems thinking should be applied to KPIs** so that displacement does not occur.

'Rolling' KPIs within the system may also have an adverse effect, contributing to variation. A short-term gain might be achieved for the manager by '**raising the bar**' when the current KPI is achieved. However, if not carefully considered the impact may be felt elsewhere. For example, poorer Quality can be anticipated following an increase in the target for 'rate'.

Activity 3.4 Measure

Part 1 Use the Fishbone diagram to identify areas where performance measurement might prove beneficial.	Activity

Notes:



Part 2 Identify a topic that could benefit from the application of Quality Tools. Arrange for the data collection.	Activity
Check Sheet Histogram Pareto Chart Stratification Control Chart Scatter Diagram	

3.5 DMAIC- Analysis

3.5.1 Trends and visual management

Schedule periods for Data Analysis: (Charts and Graphs)

As data is collected it is necessary to analyse the information gained from all the activity. Applying the principle of Visual Management, charts, and graphs etc are displayed so that insights may be more easily identified.

3.6 DMAIC- Improve

3.6.1 PDCA

When sufficient information has been gained the Cross Functional Team should arrive at an Action Plan. The plan should be trialled prior to implementation. The **Action Plan** is a product of this stage, and sits within the process of Plan, Do, Check, Act.

Any improvements should be communicated to the whole team. In addition to good general management practice, communication of the plan contributes to the successful migration to the new Standard.

3.6.2 Improvement and Change

The subject matter of PAM 3, 'Improvements', inevitably moves people from a current, known state to a future predicted but unknown state. Some may welcome the change, the current situation being far from satisfactory. It can also be anticipated that some may not welcome the change, and from these two extremes there will be everything in between. PAMS 1 and 2 are about preparing the environment for the change initiatives that will be the outputs of PAM 3.

3.6.3 Transformational improvement

The PAM Series ethos is all about adopting a transformational approach, and so at this stage of organisational development it would be expected that people would be **'invited'** to participate rather than be told. Furthermore, being invited to participate and with appropriate support being provided, is beyond 'selling' the change about to come. It is **an example of the workplace philosophy of engagement**. PAM 1 introduced various methods and models underpinning engagement. In addition, an essential quality for the manager is to be able to conduct operations and work relationships with complete integrity.

3.6.4 Level of Complexity

Some change events will be relatively simple, requiring perhaps an easy-to-achieve reallocation of (local) resources. Other change events will be more complex, potentially requiring capital expenditure, structural or procedural changes within and between departments, teams or disciplines. More complex change events will require a degree of Project Management.

PAM 3 does not include or recommend any particular Project Management approach or model, which range from Agile/Scrum to PRINCE2. The content of the PAMs can be applied in any Project Management environment.

The responsibility for managing the Continuous Improvement change/ event lies with the managers, and not with those 'at the sharp end' carrying out the operation. Those employees are likely to require additional levels of support and guidance at this phase, and the manager should rely more on facilitation skills

3.6.5 Improvement/Change Plan- Outline

Checklist:

Process

Product

People (Enablers/barriers)

Culture (State/Readiness)

Long-term strategic plan

Short-term detail plans

Communications plan

Decision-making plan (Risks, Quality)

Cross-functional Teams Plan

3.7 DMAIC- Control

3.7.1 Control Approach

Once an Action Plan has been executed control measures need to be in place so that improvements are maintained.

Control measures might include further data collection, changes to Operating Procedures and Job Breakdown Sheets or amendments to Daily, Weekly Monthly (DWM) routines.

3.8 Review

3.8.1 The need for review

Improvements need to be reviewed once implemented. The company will want to confirm the intended outcome has been achieved, projected benefits realised and there are no unintended consequences.

3.8.2 Feedback Loops

Feedback can be achieved through further data collection and analysis. A feedback loop should be established to confirm the desired outcomes have been achieved.

There could be a delay within the system, and so this must be considered. The benefits of a small improvement may not be realised until later in the operation.

3.8.3 When to Review

The time to review the improvement will depend on the size and nature of any intervention. In principle a review should be carried out:

- immediately after implementation
- after one work/shift cycle
- after a process period
- as part of regular Continuous Improvement activities

PAM 3 'Improvements'

Notes: