Process Improvement Techniques and Tools

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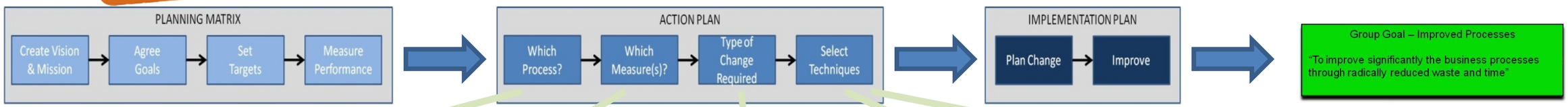


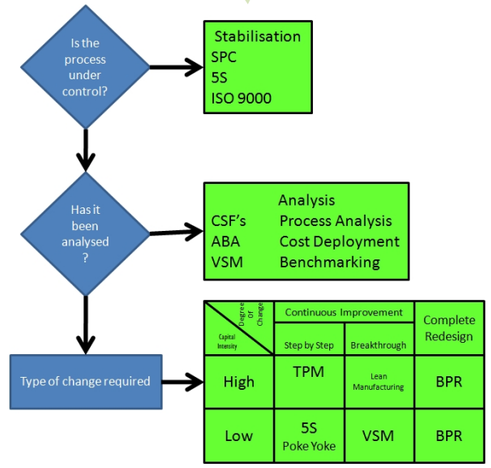
Which Process?

Techniques \ Processes	Product Development	Order Winning	Sourcing & Manufacture	Delivery & Distribution	Support Processes
TPM			+		
Concurrent Engineering	+				
Lean Manufacturing			+		
Benchmarking	+	+	+	+	+
Value Management	+	+	+	+	+
SPC		+	+		+
Poke-yoke	+		+	+	+
ABA		+	+	+	+
5S			+		+
AQP	+		+		
VSM		+			
DFM&A	+				
BPR	+	+	+	+	+

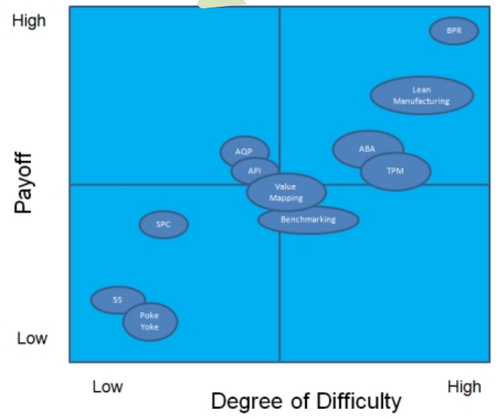
Which Measure?

Techniques \ Measure	Qualith	Cost	Time
TPM	+	+	+
Concurrent Engineering	+	+	+
Lean Manufacturing		+	+
Benchmarking	+	+	+
Value Management	+	+	+
SPC	+		
Poke-yoke	+		
ABA		+	
5S	+		
AQP	+	+	
VSM	+	+	
DFM&A	+	+	+
BPR	+	+	+

Type of change Required?



What's the potential and what does it cost?



Which Tool?

Techniques \ Tools	TPM	Concurrent Engineering	Lean Manufacturing	Benchmarking	Value Management	SPC	Poke-yoke	ABA	5S	AQP	VSM	DFM&A	BPR
FMEA	+	+			+		+			+		+	+
SMED	+		+	+	+							+	
Project Planning	+	+		+	+	+	+	+	+	+	+	+	+
Taguchi		+								+		+	
PDCA	+	+	+	+	+	+	+	+	+	+	+	+	+
CEDAC	+		+		+		+						
Process Mapping	+	+	+	+	+			+	+	+		+	+
Process Analysis	+	+	+	+	+	+		+	+	+			+
Distance Diagram	+	+	+	+	+				+				+
Pareto	+		+		+			+		+	+		
QFD		+										+	+
Affinity Diagram	+				+		+						+

'Techniques' and 'Tools'

The difference between tools and techniques
Techniques are ways of achieving improvements and will if properly executed, lead to improvements in the performance of the process in question. So, for example, Concurrent Engineering can properly be regarded as a potential technique to improve NPD lead times.
Tools are simply implements for progressing a technique. They tend to be more general in purpose but are not usually solutions in themselves. So for example, process mapping can be used as part of a Concurrent Engineering initiative, but by itself will not solve a time to market problem. Therefore a technique is likely to utilise a number of tools.
We can draw a simple analogy with a physical process such as improving the appearance of a building. A number of techniques could be used such as painting, cladding or rendering. If we select painting then we will need to deploy a number of tools such as paint brushes, ladders, scaffolding Etc.
This is not a black and white issue. In certain circumstances some tools can be regarded as techniques and vice versa. The key point though is when planning an improvement, the techniques must be selected first and then the tools form part of the action plan.

The Techniques	TPM	Concurrent Engineering	Lean Manufacturing	Benchmarking	API/Value Management	SPC	Poka-Yoke	ABA	5S	AQP	Value Mapping	DFM&A	BPR
DESCRIPTION	The aim of TPM (Total Productive Maintenance) is to maximise the effectiveness of equipment. The primary driver is Overall Equipment Effectiveness (OEE). It is well suited to companies and processes with a high capital intensity and can improve quality, cost and lead time.	Concurrent Engineering is a product development philosop time to market pressures.hy which aims to compress timescales by allowing activities to take place in parallel. This also leads to benefits in product quality and cost. It is well suited to any company with significant product development costs and time to market pressures.	Lean Manufacturing aims to increase throughput and reduce costs and WIPby simplifying processes and eliminating wastes in the processes. It embraces a number of tools such as SMED, JIT and kan ban. It is suited to any manufacturing organisation which needs to achieve step change improvements in quality, costs and lead time.	Benchmarking is a continuous and systematic process for identifying better practises in industry leading companies and then analysing, adapting and implementing them to improve a company's own performance. Done properly it is rigorous and requires considerable effort, but it can deliver major benefits in quality, costs and time in any type of organisation.	API (Accelerated Process Improvement) and value management are techniques for achieving very rapid improvements. They involve short bursts of concentrated effort coupled with good preparation, facilitation, and follow-up. They are suited to processes with low capital intensity and products in any company and can achieve step change improvements in quality, cost and time.	SPC (Statistical Process Control) is the application of statistics to achieve high levels of process capability and control quickly, simply and at minimal cost. A particular strength is its suitability for self inspection and operator empowerment. Although traditioally used in manufacturing it can be applied to any repetetive and measurable process.	Poke-Yoke means fool proofing and as implied is a method of improving the quality of products and processes by ensuring that errors cannot be made. It employs warnings that highlight when an error is made. It embraces simple low cost design changes to product and tooling to make errors impossible to make. Poke Yoke is quick and simple to learn and it can be applied to products and repetetive processes in any company.	ABA (Activity Based Analysis) is a way of analysing the true cost of a product or process and why they arise (ie the cost drivers). It is useful for identifyinf and eliminating non-value adding activity. It requires a great deal of effort, but can form the basis of a very effective costing system. It is particularly suited to companies with low direct to indirect ratios.	5S is a systematic methodology for organising the workplace. Although rooted in Japanese, the 5S translates to sort out, arrangement, clean for inspection, setting standards and maintaining the discipline. It is quick and simple to learn and use and can be applied to any workplace in any company.	AQP (Advanced Quality Planning) is a technique to prevent defects prior to volume production. It uses tools such as flow charts, feasability studies, FMEA, gauge planning, capability studies, process monitoring and control instructions, packaging planning and others. It is suited to companies in medium and high volume production and can make a major contribution in product quality and cost.	Value Mapping is a technique to help position the perceived value of a product or service against the perceived price. This helps in identifying pricing opportunities and/or where additional value needs to be added to the offering. It is suited to the Sales/Marketing processes to optimise customer perception of cost and quality.	DFM&A (Design for Manufacture & Assembly) evaluates the suitability of product design proposals for manufacture and assembly by awarding an efficienct rating This rating is increased by: -identifying product concepts that are inherently easy to manufacture -focusing on component design for ease of manufactue and assembly -integrating manufacturing process design and product design to best match needs and requirements Tools are available which allow an objective assessment of such criteria.	BPR (Business Process Re-engineering) is the complete redesign of any business process. It requires huge amounts of effort and resources coupled with careful planning and execution. Therefore the need and commitment must be very high. It is better suited to large companies for whom the benefits in quality, cost and time can be enormous.

The Tools	FMEA	SMED	Project Planning	Taguchi	PDCA	CEDAC	Process Mapping	Process Analysis	Distance Diagrams	Pareto	QFD	Affinity Diagrams
DESCRIPTION	A disciplined analysis of the possible failure modes judged on the grounds of seriousness, probability and liklihood of detection, thereby assisting in the elimination of risk. Can be applied to product design and process design. At it's simplest level, the identified failure modes can be prioritised and the design or process modified to reduce or eliminate the cause of failure. The total potential for failure is assessed by combining the risks for all components.	SMED (Single Minute Exchange of Die) is primarily a means of reducing changeover times on production equipment. It is a simple, but highly effective 4 step method which has the potential to reduce most changeover times to a fraction of what they were. It is particularly suited to batch manufacturing companies and can be taught to almost anyone who understands production processes.	Project Planning is an essential discipline for all but the smallest projects and it is concerned with identifying what has to be done, when, and by whom. There are many tools that go under the heading of project planning such as PERT (Program Evaluation and Review Technique) and GDPM (Goal Directed PM). There are also many software tools. However they all rely on training and a disciplined approach, and it is for this reason that good Project Managers are rare.	The Design of Experiments embraces a number of statistical methods to aid product and process optimisation. Key product features affecting product functionality or key process parameters affecting manufacturing quality are identified for appropriate control. Increased product and process understanding deliver both higher quality and lower cost output.	Plan Do Check Act is the basic discipline for any improvement activity. If used properly it helps ensure that needs are identified, appropriate solutions found and that they are implemented effectively and in a lasting way. The most common failing is a lack of attention to the Check and Act stages. It is broken down into 13 key steps and these are explained in the training manual.	Cause and Effect Analysis is a tool for identifying the possible causes (inputs) associated with a particular problem/effect (output). A Cause and Effect diagram (also known as a Fishbone or Ishikawa diagram) graphically illustrates the the results of analysis. CEDAC (Cause and Effect with the addition of Cards) is a refinement to the tool which adds more detail to the analysis.	A Process Map is a pictorial representation of a process using basic flowcharting symbols. It is useful for understanding how the process works and identifying and planning improvements. It is often the first step in a more detailed process analysis.	Process Analysis is actually a collection of tools used to quantify the operations of a process. Used appropriately they can measure the quality, cost, and timing of any process and accurately pin-point where and how improvements can be made. The tools taught to complete Process Analysis include functional process maps, streamlining, distance diagrams, A-delta-T and variance analysis	Distance Diagrams can have a huge impact on the speed and efficiency of any process, particularly in terms of poor communications and unnecessary administration. Distance Diagrams (often known as sphaghetti charts) graphically illustrate the physical distances covered by components in a process. This can help establish the need for change and identify what changes would be most effective.	This tool is used to record and analyse data relating to a problem in such a way as to highlight the most significant aspects. A Pareto diagram allows data to be displayed as a bar chart and enables the main contributions to a problem to be highlighted. Pareto analysis often reveals that a small number of problems are responsible for the bulk of quality costs. This phenomenon is called the Pareto Principle or the 80/20 rule.	Quality Function Deployment translates the voice of the customer into actionable, measurable customer design requirements for products, services and processes. By using a series of matrices or tables to link customer needs with product, service or process features, QFD ensures that customer satisfaction is maximised and the business remains customer focused.	A tool for developing a large number of ideas/issues and organising them to help understand the essence of a problem and breakthrough solutions. It uses brainstorming and an approach to show the relationships between the issues identified. It splits issues into drivers and outcomes and enables improvements to be focused upon the key drivers. This tool can be applied to a number of circumstances but is particularly suited to Goal Deployment activities.

$E+I^3$ = Bottom Line Profit

The above equation is the formula for empowerment of those who manage employees and customers.
EMPOWERMENT has 3 vital components to it leading to increasing bottom line profit; they are the managers ability to **INVOLVE**, **INSPIRE**, and **IGNITE** employees and customers.
Employees who are **involved** take on the task with willingness and the determination to succeed.
72% of **inspired employees** believe they can positively affect customer service, while 68% of **inspired employees** believe they can positively reduce costs.
Employees who are **ignited** are proven to perform 20% better.
$E+I^3$ really does = Bottom Line Profit

Through Empowerment you will magnify the results from deploying the appropriate PITT's

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