

Welcome

KAIZEN ACTIVITIES

The word Kaizen is Japanese and means
"Continuous Improvement".

Kai =
Change

改善

Zen =
Good

Meaning

Japanese word for improvement

- ▶ KAI- To modify or change
- ▶ ZEN- Think, make good



Meaning

Make it easier by studying it and making the improvement through elimination of the waste.

HOW IT CAN BE DONE

- *Finding out the pain areas*
- *Analysis of the pain*
- *3Ms considered with the 4Ms*
- *3Ms MURA, MURI, MUDA*
- *4Ms MAN, MACHINE, MATERIAL and METHOD*

What is 3Ms

- ***MUDA- Waste***
- ***MURA- Unevenness***
- ***MURI- Overburden***

MUDA (waste)

- ***Defects***
- ***Overproduction***
- ***Waiting***
- ***Non- used talent***
- ***Transport***
- ***Inventories***
- ***Motion***
- ***Excess Processing***

MUDA

- **Defects** *(The efforts involving in inspecting and fixing defects)*
- **Transport** *(Moving the products that are not actually required)*
- **Inventory** *(All components, work in process and finished product not being processed)*
- **Over processing** *(resulting from the poor tool or product design creating activity)*

MUDA

- ***Motion*** (People or equipment moving or walking more than is required to perform the processing)
- ***Waiting*** (Waiting for the next production step, interruptions of the production during the shift change.
- ***Overproduction*** (Production Ahead of demand)
- ***Unused Skill*** (Skill of the person not being used)

MURI (Overburden)

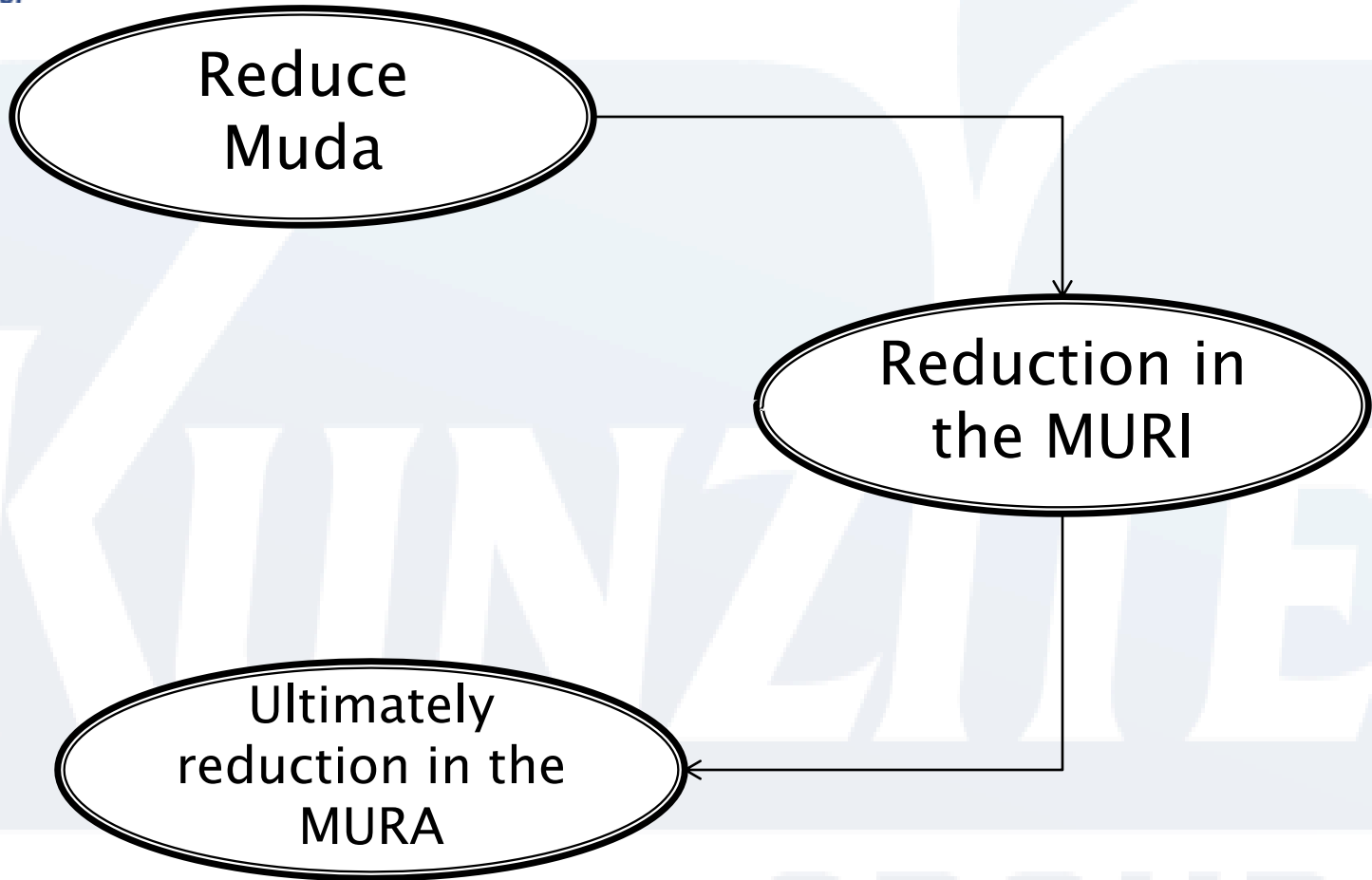
- **Can result form MUDA**
- **Overburden leads to breakdown**
- **Absenteeism from employees**
- **Anxiety level of the employee rise lead to stress.**

MURA (Unevenness)

- **Fluctuation in the Customer Demand.**
- **Fluctuation in process time per product.**
- **Variation in the Cycle time.**

Applying MUDA

- **By Creating the openness in the supply chain management**
- **Change the work design**
- **Create the operating standards for all the operators.**
- **Involvement of the everyone from shop floor operator to top management in implementing the changes needed.**

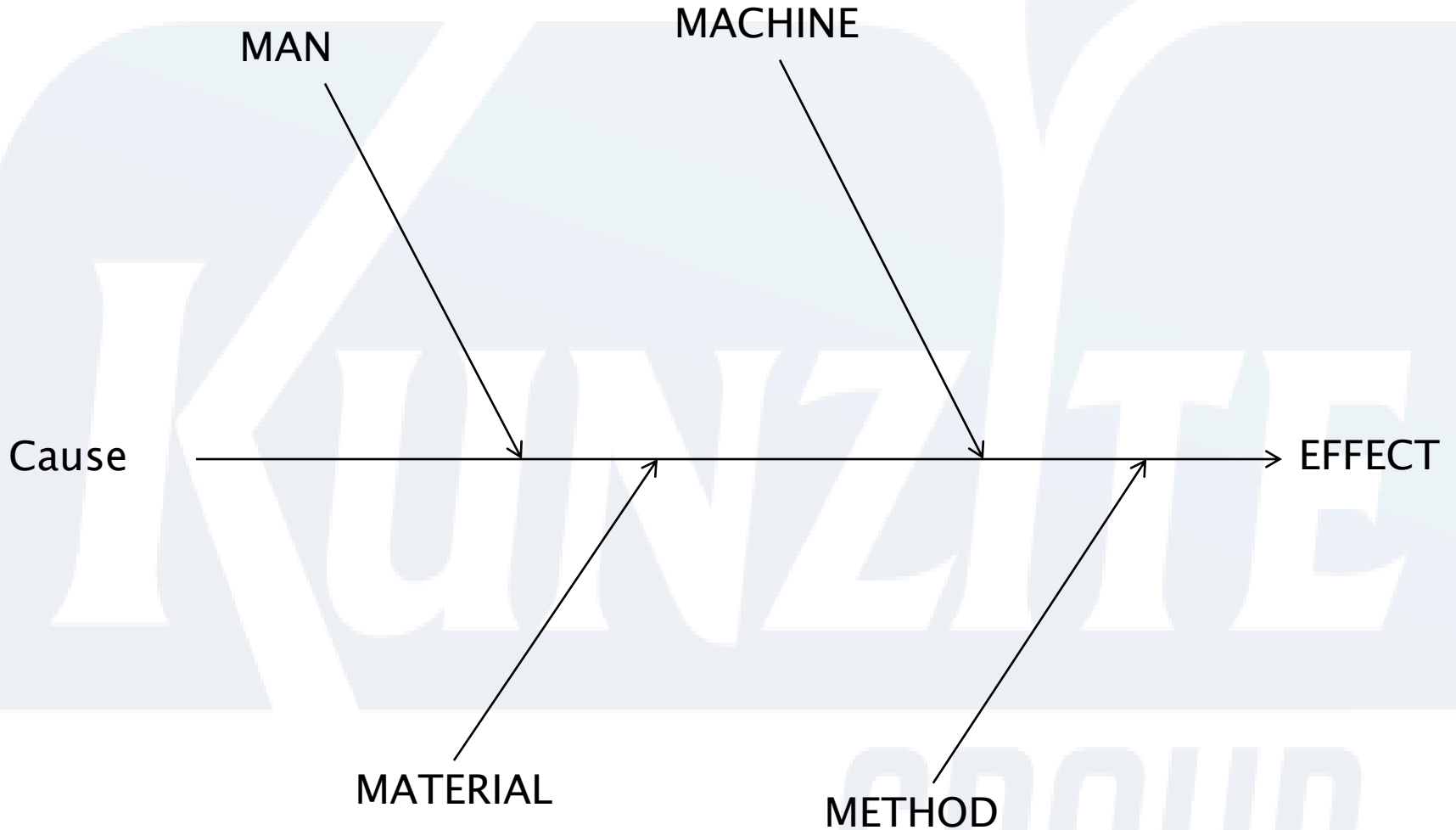


4M CONCEPT

1. Identify the waste (MUDA) in the process.
2. Root cause analysis of the waste/pain areas (defects).
3. Identify the major root cause arise from MAN, MACHINE MATERIAL & METHOD. (FISH BONE DIAGRAM/ISHIKAWA DIAGRAM/CAUSE AND EFFECT MATRIX).
4. List Down all the root cause and identify KEY FACTORS. (80:20 RULE/PARITO Law).
5. Generate Idea to Reduce Waste (MUDA).
6. Implement and make it standard.

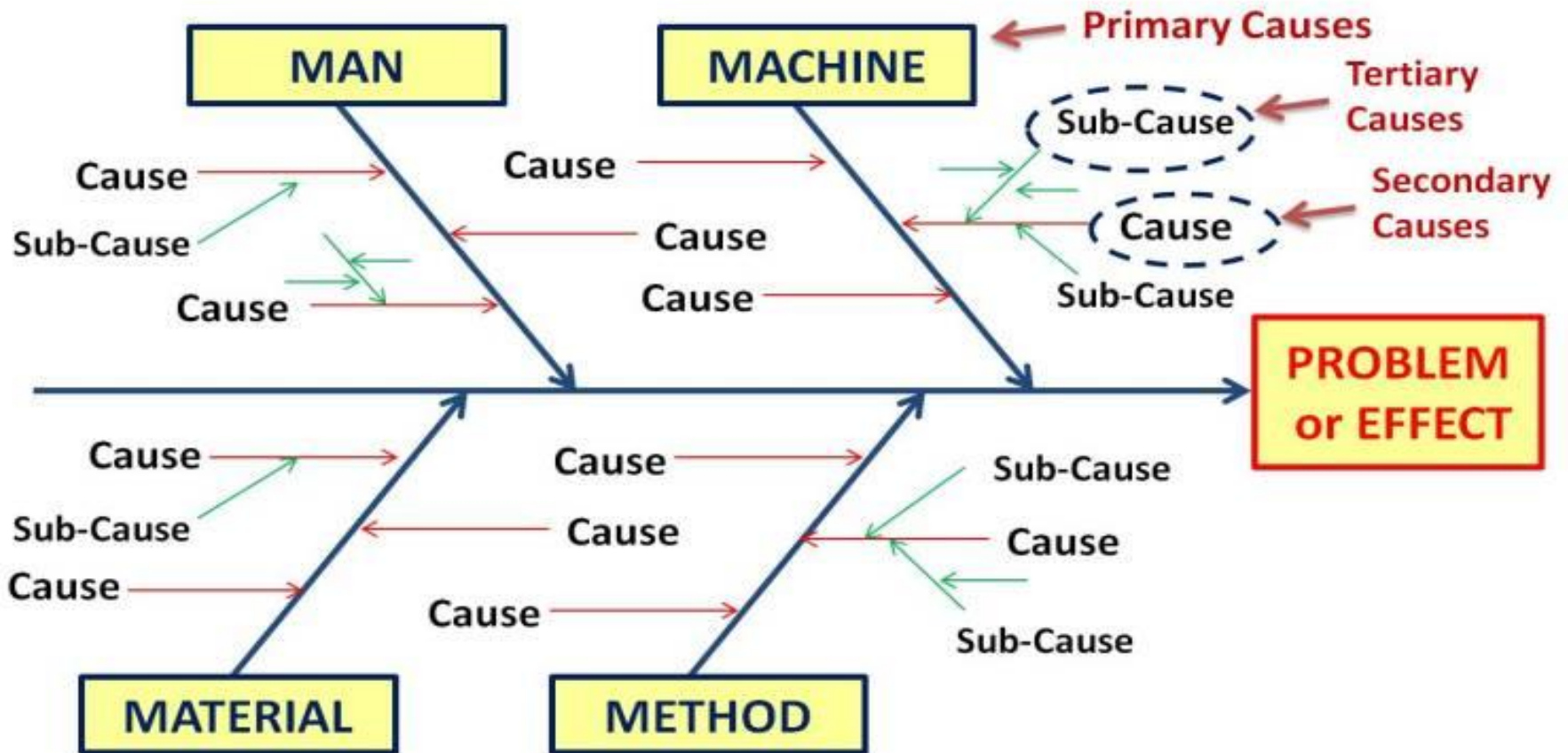
- Tools like the Ishikawa diagram or Fish-bone Analysis can be used to identify the root causes of the problems.
- While it is common to refer to Pareto as "80/20" rule.
- Assumption that in all situations, 20% of causes determine 80% of problems
- This ratio is merely a convenient rule of thumb and is not nor should it be considered an immutable law of nature.

FISH BONE DIAGRAM

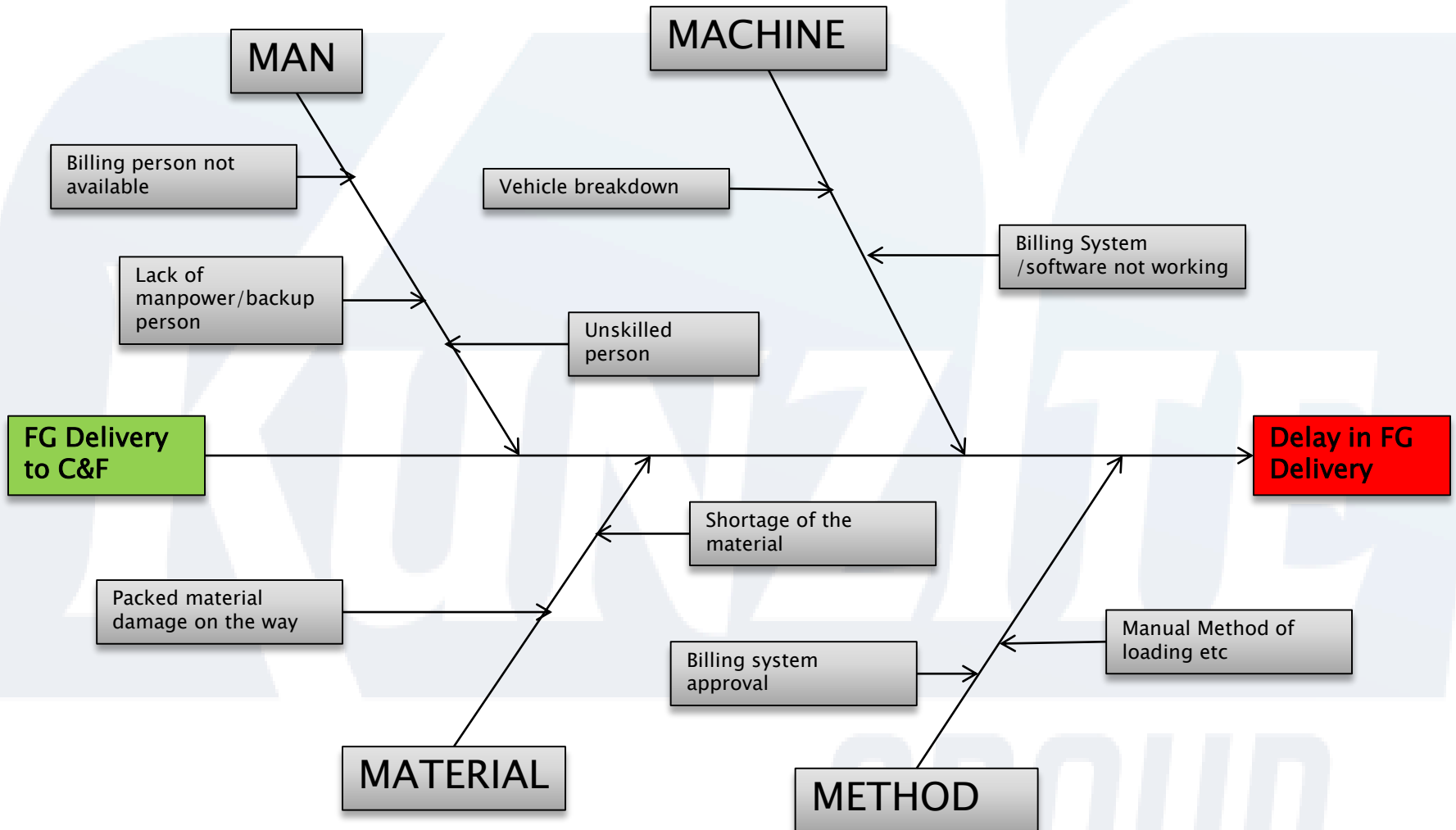


FISH BONE DIAGRAM

CAUSE AND EFFECT DIAGRAM

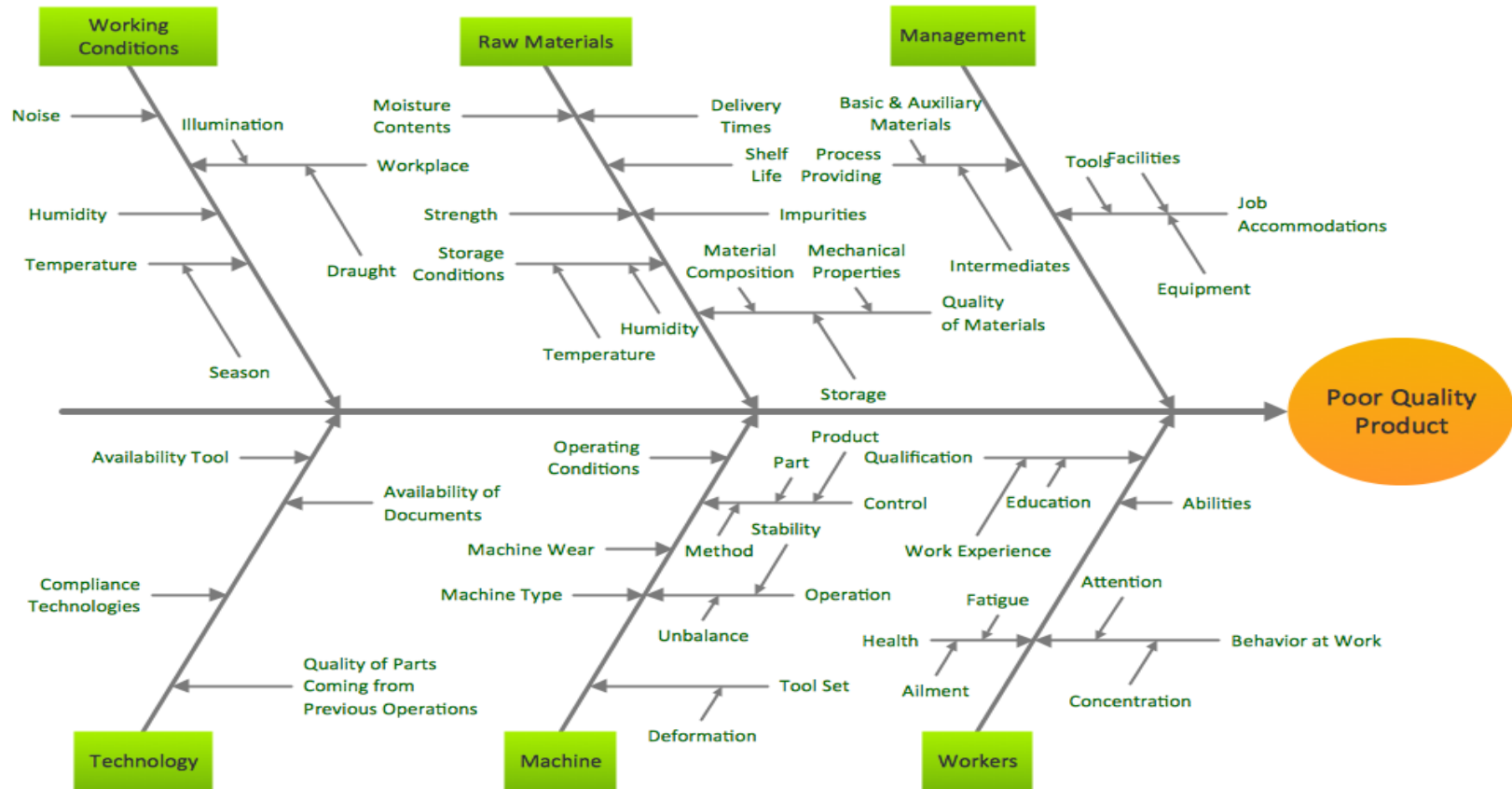


FISH BONE DIAGRAM EXAMPLE

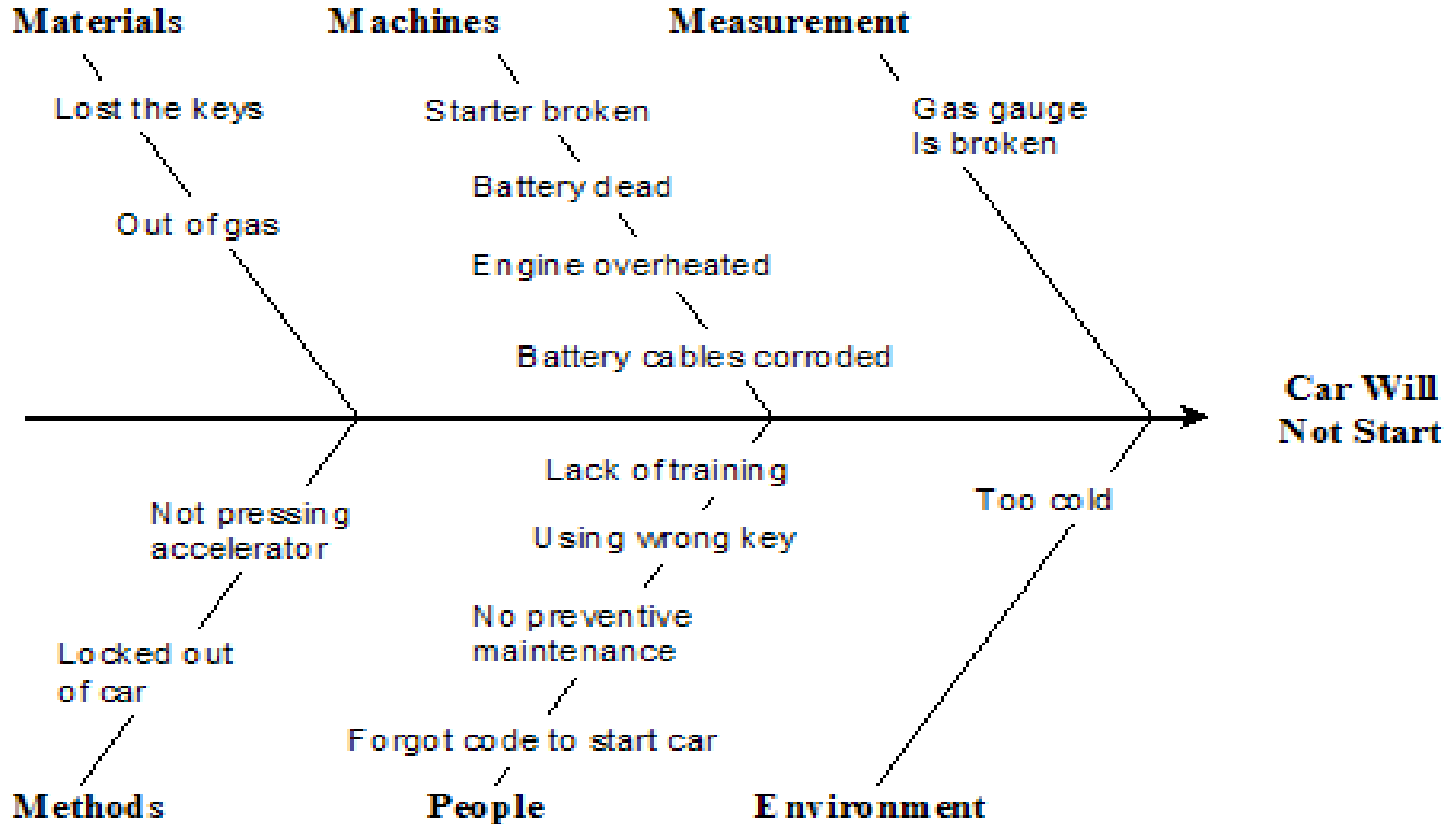


FISH BONE DIAGRAM EXAMPLE

Fishbone Diagram - Causes of Low-Quality Output



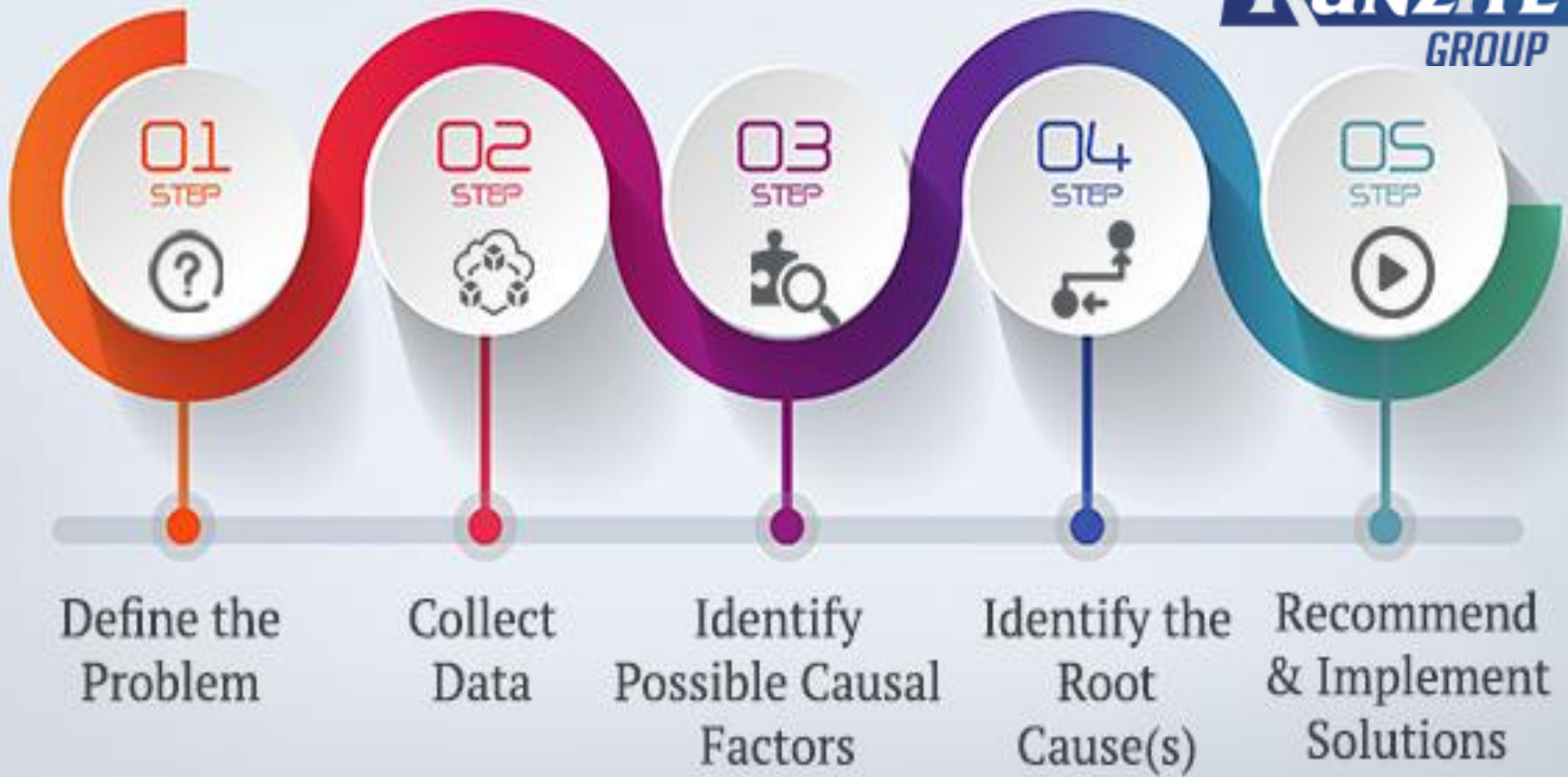
FISH BONE DIAGRAM EXAMPLE



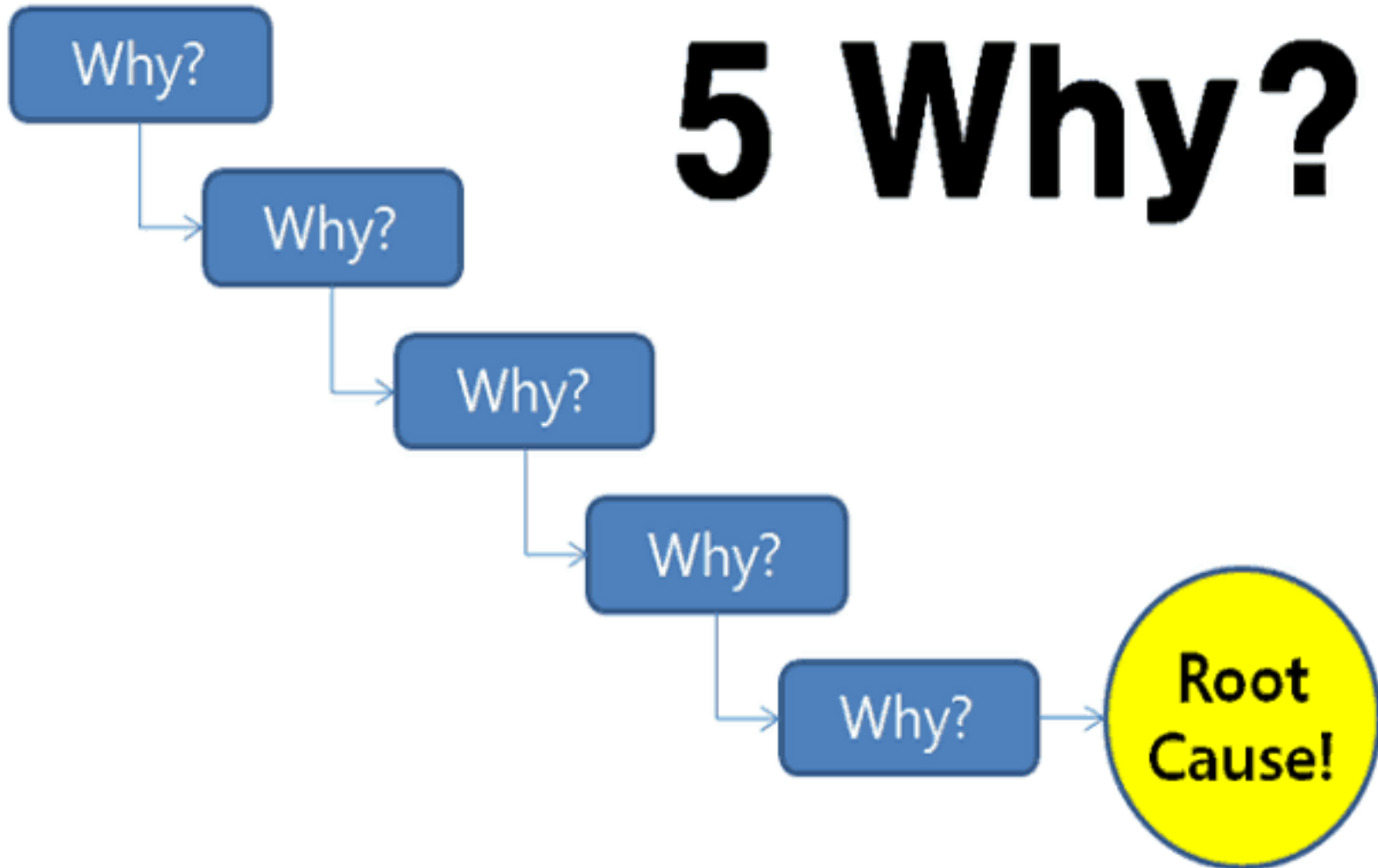
Next Step after Fishbone Brainstorming

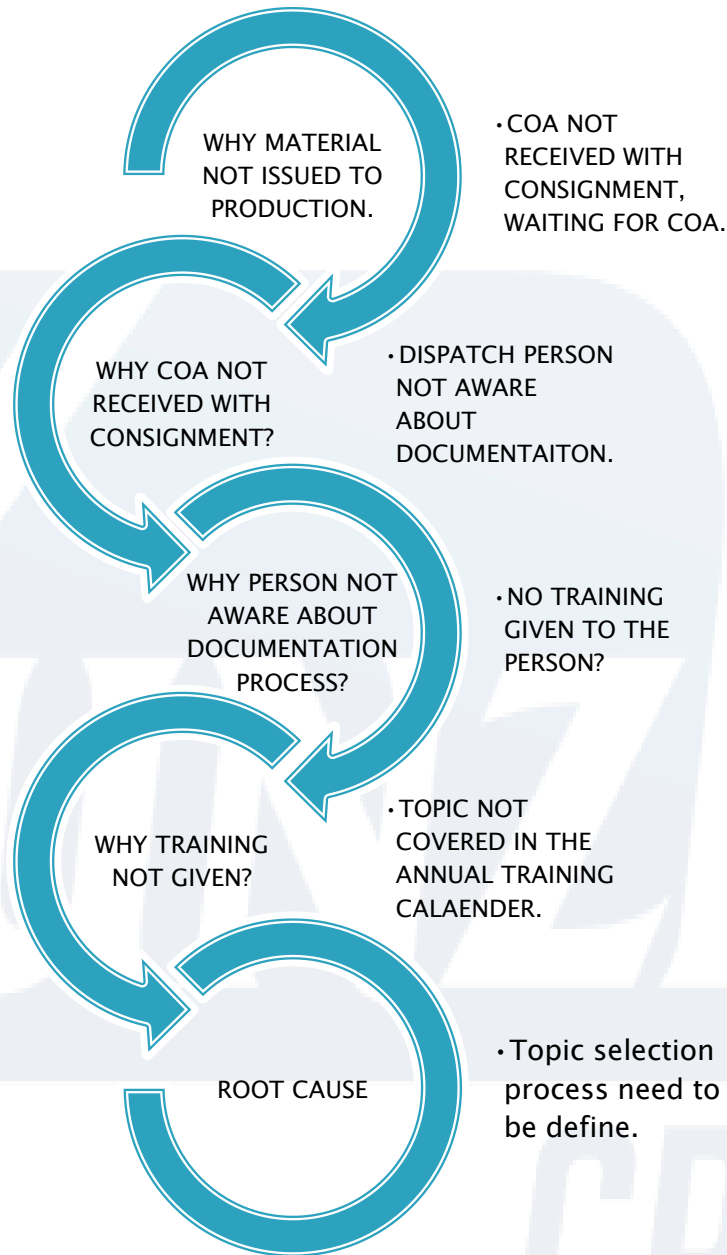
- List Down all the cause find out in Ishikawa/fish bone diagram.
- Assess all the reason in Descending order from major to minor on the basis of their impact.
- According to the Pareto law assumption 80 % of the problems can be rectified if we work on the 20 % major causes.
- Basically one must have to work on the 20 % major causes to reduce maximum problems.

Root Cause Analysis Prosses



5 Why?





Why last month production below the average?

- Because breakdown time in the machine is high.

Why breakdown time is so high?

- Pulley is not working properly and machine stopped many time.

Why pulley is not working?

- Running pulley beyond its life span.

Why running old pulley?

- Time to import pulley is 45 days and it is in transit?

why it is not ordered timely?/
why not kept in spare?

- Not listed in critical spares/ No reminder for its life span over.

ROOT CAUSE

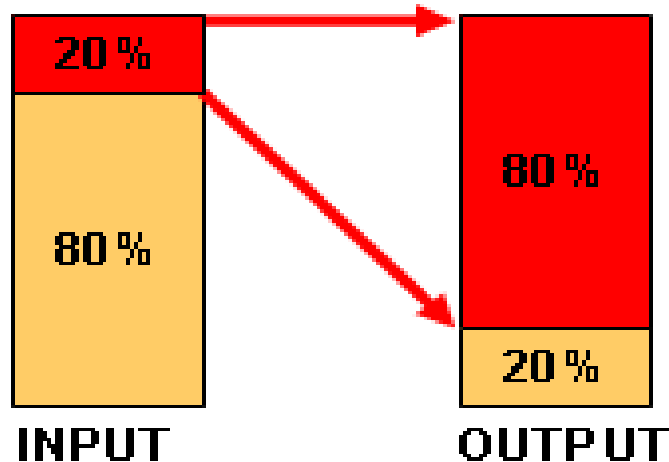
- CRITICAL SPARES LIST NOT UPDATED/ REMINDER SET FOR LIFE SPAN OF PULLEY AND MINIMUM QTY OF SPARES.

Pareto (80:20) Rule



80/20 Thinking

How To Achieve More with Less



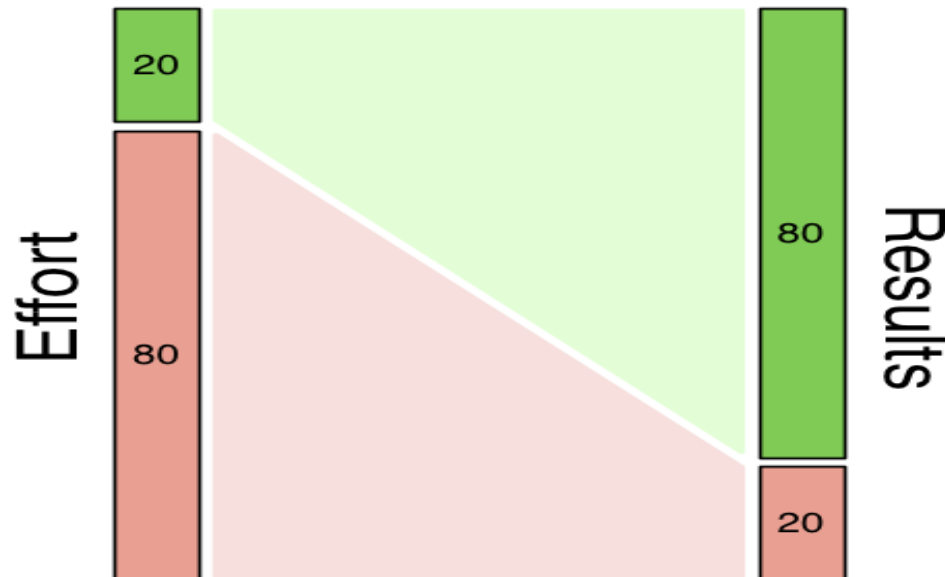
- 80% of outputs result from 20% of inputs
- 80% of consequences flow from 20% of causes
- 80% of results come from 20% of effort

- 80% of value is produced with 20% of resources
- 80% of growth and profitability comes from 20% of clients
- 80% of defects can be eliminated by correcting 20% of causes

**Progress means moving resources
from low-value to high-value uses**

The 80-20 Rule

"For many events, roughly 80% of the effects come from 20% of the causes." - Pareto

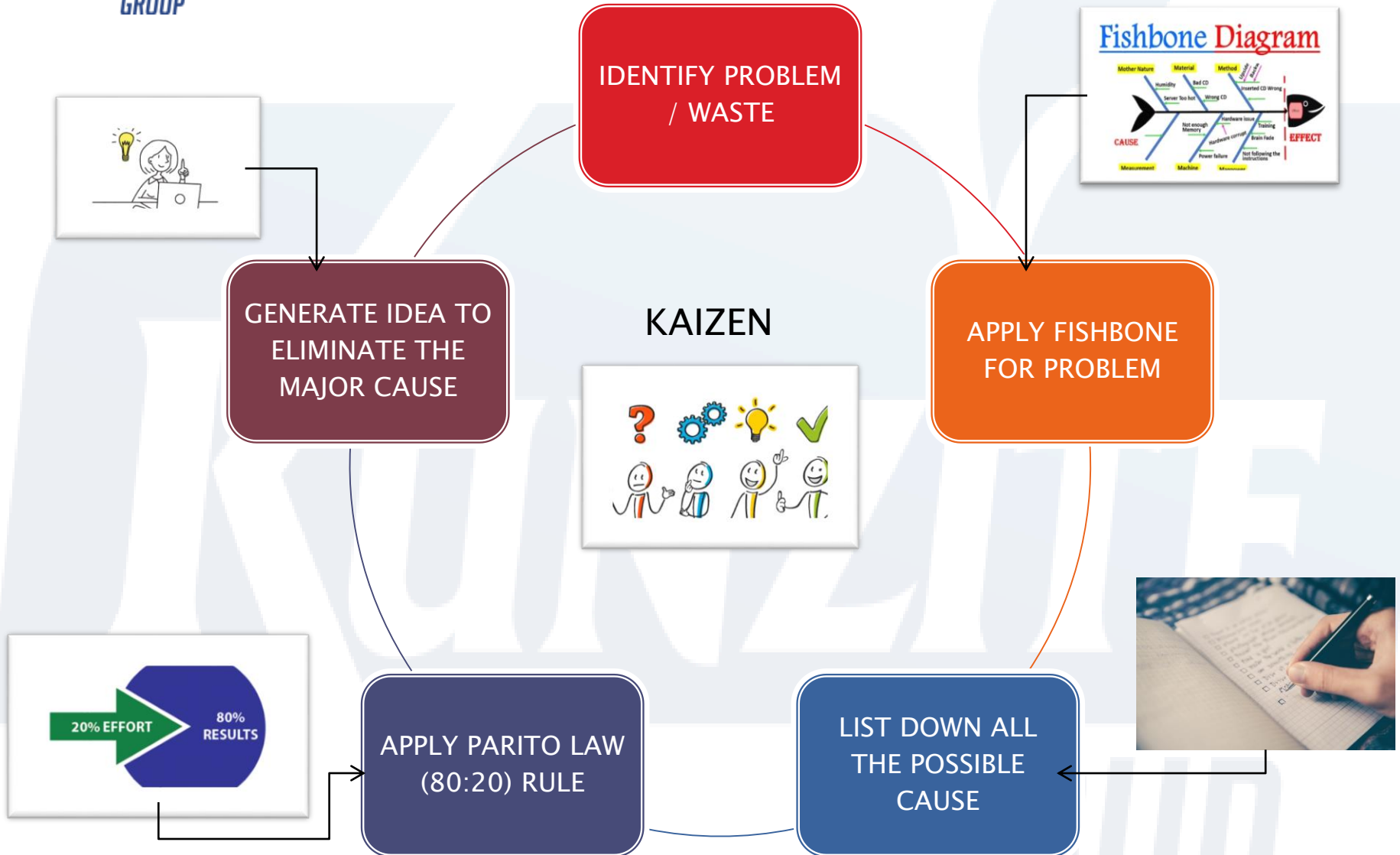


Therefore 20% of the effort produces 80% of the results but the last 20% of the results consumes 80% of the effort.

How to find Area for Kaizen

- Major causes need attention for change which can be implemented.
- One must have to choose area to work upon according to expertise.
- Example, Machine operator can suggest a change which might have positive performance.
- Method can be changed for positive impact by Area manager/supervisor.
- Before and after condition can be monitor to get exact impact of the change.

HOW IT CAN BE IMPLEMENTED?



Parking measure (USA)

Before KAIZEN



After KAIZEN



Ginger Vaughn







Gravity Conveyor



Gravity Roller
Conveyor With
Adjustable
Stands



Adjustable Height
Conveyor Stands





KAIZEN

KAIZEN IDEA:-

Before Kaizen (Picture)	IDEA Generator		After Kaizen (Picture)
	Implementation by		
	Date of IDEA		
	Date of implementation		
	RATINGS ON THE SCALE * (out of thirty marks)		
PROBLEMS:-	RATING (1 ~ 5 SCALE)		BENEFITS:-
	P		
	Q		
	C		
	D		
	S		
	M		
	E		

* TERMINOLOGY

P- PRODUCTIVITY, Q- QUALITY, C- COST, D- DELIVERY, S- SAFETY, M- MORAL, E- ENVIRONMENT

PREPARED BY

APPROVED BY

ISSUE/REVISION NO : 00

RELEASE DATE :

KAIZEN IDEA:- To Make the panel cleaning equipment visible for the worker at shop floor.

Before Kaizen (Picture)



After Kaizen (Picture)



IDEA Generator	Mr. XYZ
Implementation by	ABC Department
Date of IDEA	DD-MM-YYYY
Date of implementation	DD-MM-YYYY
RATINGS ON THE SCALE * (out of thirty marks)	14/30

PROBLEMS:- No Marking around the Vacuum Cleaner, May be hit by any moving equipment/cleaning equipment.

RATING (1 ~ 5 SCALE)	
P	2
Q	2
C	3
D	0
S	3
M	3
E	1

BENEFITS:- Easily visible marking can protect the valuable assets from wear and tear and breakdown.

* TERMINOLOGY	P- PRODUCTIVITY, Q- QUALITY, C- COST, D- DELIVERY, S- SAFETY, M- MORAL, E- ENVIRONMENT		
PREPARED BY			APPROVED BY
ISSUE/REVISION NO : 00			RELEASE DATE :

The 5 W and 1 H of Kaizen

Who?	What?	Where?
<ol style="list-style-type: none"> 1. Who does it? 2. Who is doing it? 3. Who should be doing it? 4. Who else can do it? 5. Who else should do it? 6. Who is doing 3-Mus? 	<ol style="list-style-type: none"> 1. What to do? 2. What is being done? 3. What should be done? 4. What else can be done? 5. What else should be done? 6. What 3-Mus are being done? 	<ol style="list-style-type: none"> 1. Where to do it? 2. Where is it done? 3. Where should it be done? 4. Where else can it be done? 5. Where else should it be done? 6. Where are 3-Mus being done?
When?	Why?	How?
<ol style="list-style-type: none"> 1. When to do it? 2. When is it done? 3. When should it be done? 4. What other time can it be done? 5. What other time should it be done? 6. Are there any time 3-Mus? 	<ol style="list-style-type: none"> 1. Why does he do it? 2. Why do it? 3. Why do it there? 4. Why do it then? 5. Why do it that way? 6. Are there 3-Mus in the way of thinking? 	<ol style="list-style-type: none"> 1. How to do it? 2. How is it done? 3. How should it be done? 4. Can this method be used in other areas? 5. Is there any other way to do it? 6. Are there any 3-Mus in the method?

PROCESS OF KAIZEN

Lean Enterprise

CONTINUOUS IMPROVEMENT EVENT STEPS (KAIZEN)

Start



Document Reality



Identify Waste



Separate value added from non value added steps

Eliminate unnecessary non value added and plan counter measures



Reality Check



Make Changes



Verify Change



In 2 to 5 days

Do It Again



Celebrate



Make this the Standard

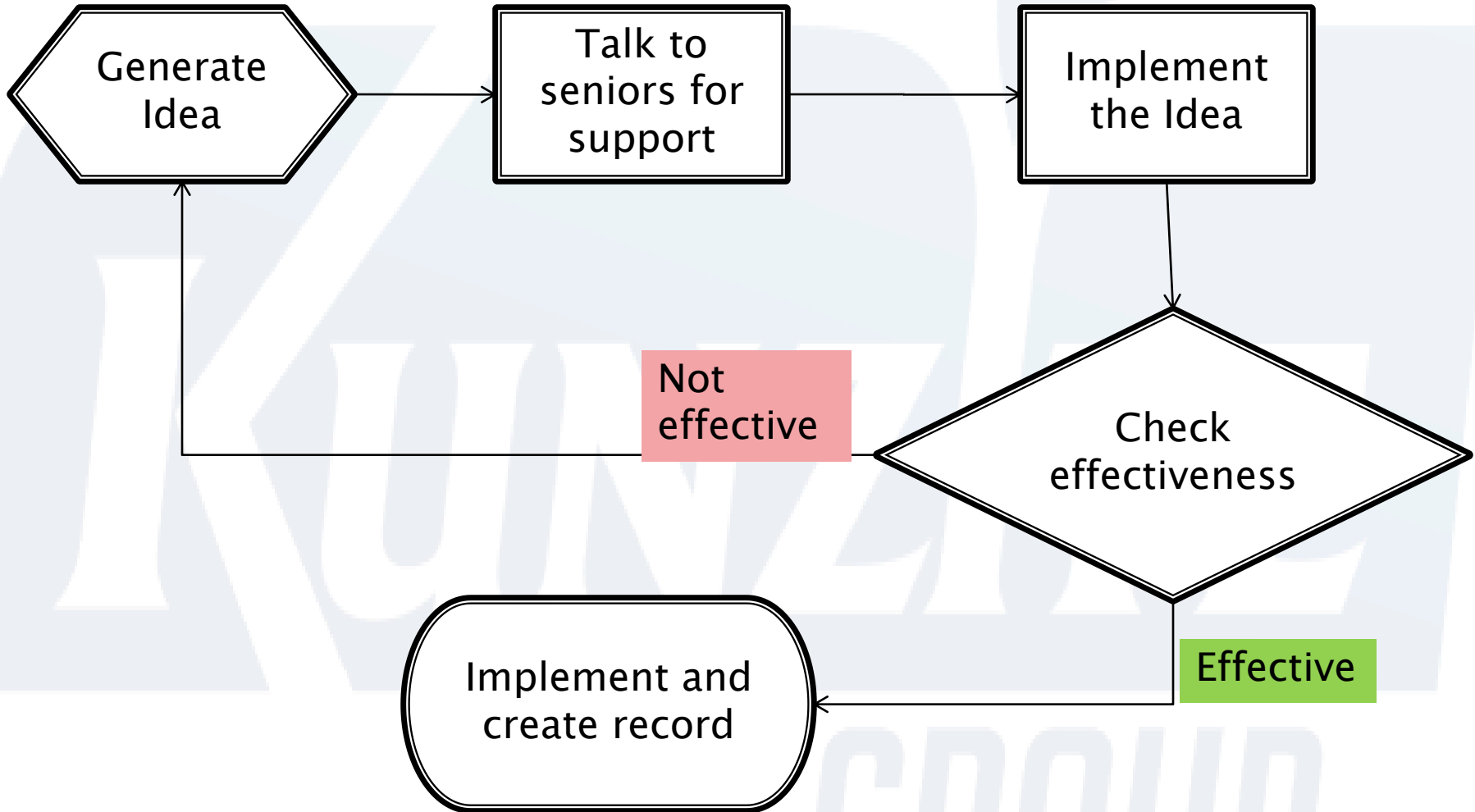


Measure Results



Archfield Consulting Group
(Company Proprietary)

January 2004





THANK YOU