



Capitalise the Chaos with Lean Thinking

A grayscale photograph of two hands holding two interlocking white puzzle pieces. The puzzle pieces are positioned to form a larger shape, with the text overlaid on them.

**RESPONDING WITH RAPID PRODUCTIVITY
IMPROVEMENT**

- 0. Introduction
- 1. COVID Challenges
- 2. Lean Response
- 3. What is Lean?
- 4. Is it counter intuitive (no logic)?
- 5. Its Origin
- 6. Principles of Lean Thinking
 - 1. Velocity & ROI
 - 2. Value & Waste
 - 3. Focus
- 7. Case studies



Consulting Company that Partners with Clients in the Journey towards
Prosperity & Perpetuity

Our Commitment

We are committed to make our client's investment with us as a Right Decision - with minimum 5 times ROI in same year of engagement

Corporates



Aspiring to be Corporate



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- Young Entrepreneur School, An initiative by Tamilnadu Chamber of Commerce.
- Delivered sessions for the Owners of SMEs on Leadership Productivity



Madurai



Chennai



Ramanathapuram



Dindigul



Sivakasi



With Confederation of Indian Industry (CII)



Training on Lean BPR at CII Godrej Centre, Mumbai



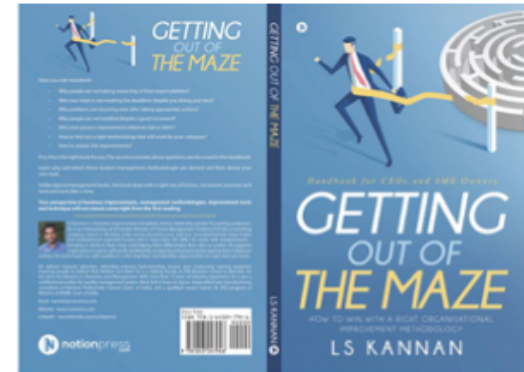
Training on Design of Experiments at CII Godrej Centre, Mumbai



Training on Waste Identification and Elimination



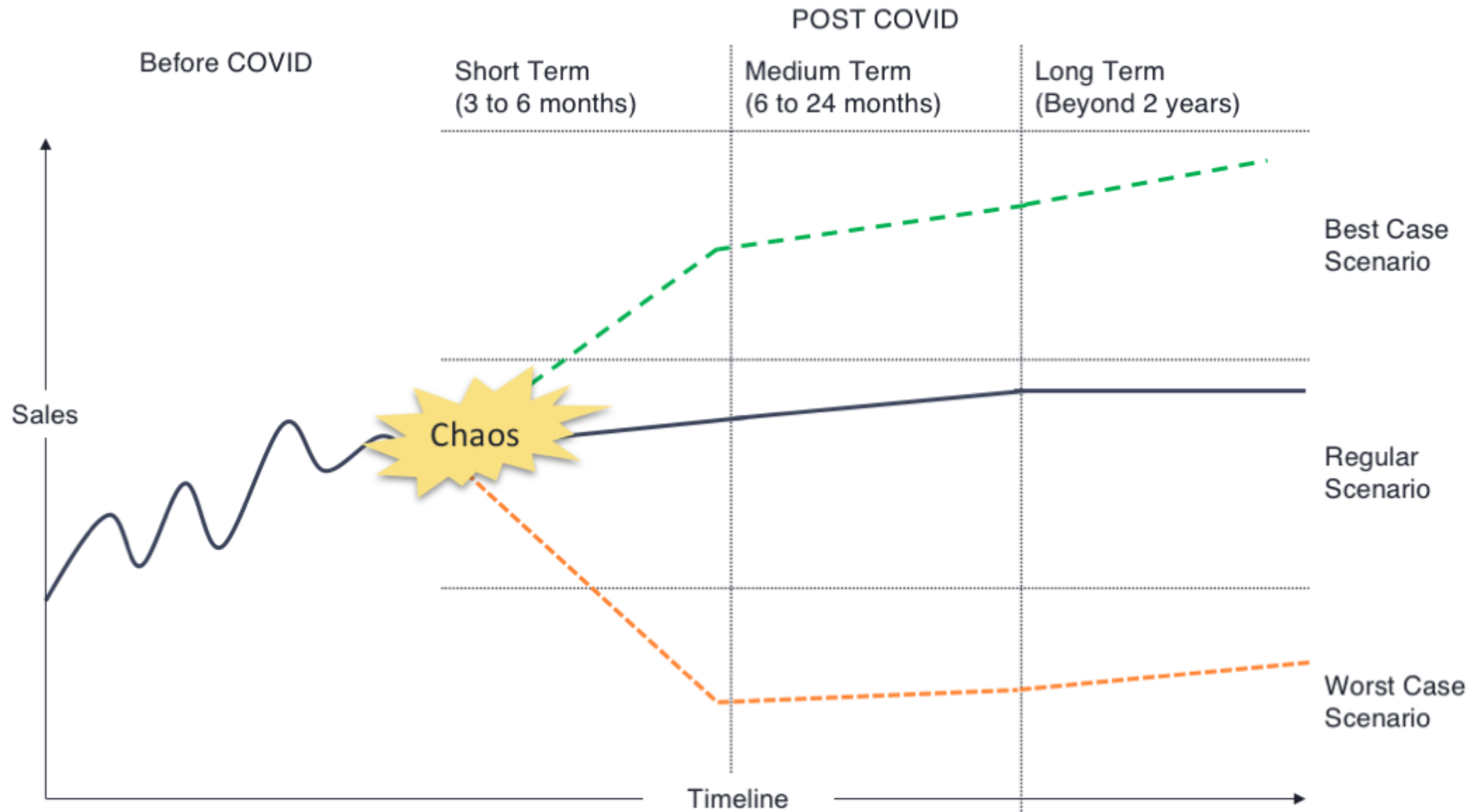
- CSense owns a registered trademark in India for the term True-Lean®
- CSense offers training programs on True-Lean® Green Belt; the training covers Lean Principles with the framework of Current State and Future State VSM.
- Mr Kannan has published a book 'Getting out of the maze'.
 - This book talks about the origin of Operational Excellence methodologies
 - Right application of these principles
 - Choosing a methodology that works well for the organisation





COVID Challenges





- Health & Hygiene consciousness and resulting expectations of customers
- Demand disparity
- Demand unpredictability (spikes)
- Global political & economic uncertainty
- Is India an alternative for China?
- Demand revival & Supply chain revival
- Govt spending and additional taxes

1. Getting ready mentally and emotionally to face reality. Every problem brings its own seed of opportunities.
2. Ready with strategies for short term and medium term requirements.
3. Predictions are predictions. Facts have to be seen. Keep watching, keep listening.
4. Hygiene and safety consciousness in workplace, products and in all customer touch points.
5. Becoming more flexible to demand variations. Least lead time to respond.
6. In short term, Reduce reduce and reduce cost – spend only on essentials
7. Avoid accumulation of inventory
8. Rethink futuristic investments
9. Utilise technology
10. Build relationship with employees, suppliers and customers.

What does Lean Thinking offer?

1. Flexibility to accommodate demand variations
2. One-time or short-term wind fall of cash to the business
3. Predictable process output
4. Increase in Plant Capacity without investments **Capacity Increase 20%**
5. Improved utilisation of machines
6. Consistent cost reduction in every process **Process Cost by 5 to 20%**
7. Shortest possible lead time to respond to new requirements **NBD Lead time by 20 to 90%**
8. Reduced production lead time and less customer wait time – more sales
9. Improved Safety & Hygiene **Mfr Lead time by 20 to 50%**
10. Increased morale and involvement of people
11. Improved Quality **Reduction in defects close to Zero**



What is Lean?

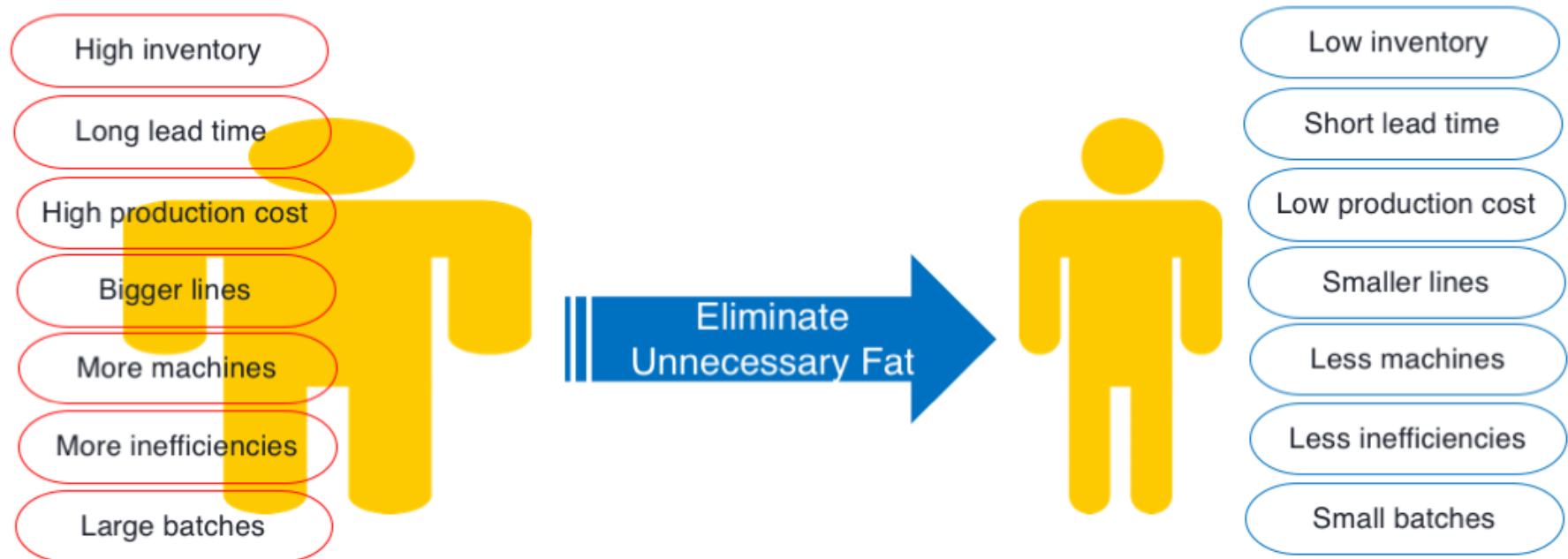


“All we are doing is looking at the time line from the moment the customer gives us an order to the point when we collect the cash. And we are reducing the time lines by removing the non-value added wastes”

- Taichi Ohno 1988



Lean – What is it?



Lean is reducing the amount of resources required in any process by reducing or eliminating unnecessary activities.

Who practice Lean?



Lean is beneficial across industries, across the world and across the sizes!



Is it Counter Intuitive?



1. Pay back period and ROI of a machinery can be improved by Machine utilisation.

2. Inventory (WIP) is counted as an Asset - Value Added Material in the books.

3. Production is planned based on Sales Forecast. Improve forecast accuracy.

4. Plan for EOQ and batch the sales orders to meet the EOQ threshold.

5. Avoid changeovers. Changeovers increase cost of product.

6. Machine up time is utmost important. Do not stop machine for any reason.

1. Pay back period and ROI of a machinery can be improved by Machine utilisation.

To reduce payback period, purchase small machine. Run the machine for orders.

2. Inventory (WIP) is counted as an Asset - Value Added Material in the books.

Inventory is a Liability. It increases the cost of Operations.

3. Production is planned based on Sales Forecast. Improve forecast accuracy.

Plan daily production based on orders received. Forecast is not production order.

4. Plan for EOQ and batch the sales orders to meet the EOQ threshold.

Plan for smallest batches. Keep order lead time to minimum. Ideal batch size is 1.

5. Avoid changeovers. Changeovers increase cost of product.

Plan for smaller batches. Reduce cost of changeovers not the count.

6. Machine up time is utmost important. Do not stop machine for any reason.

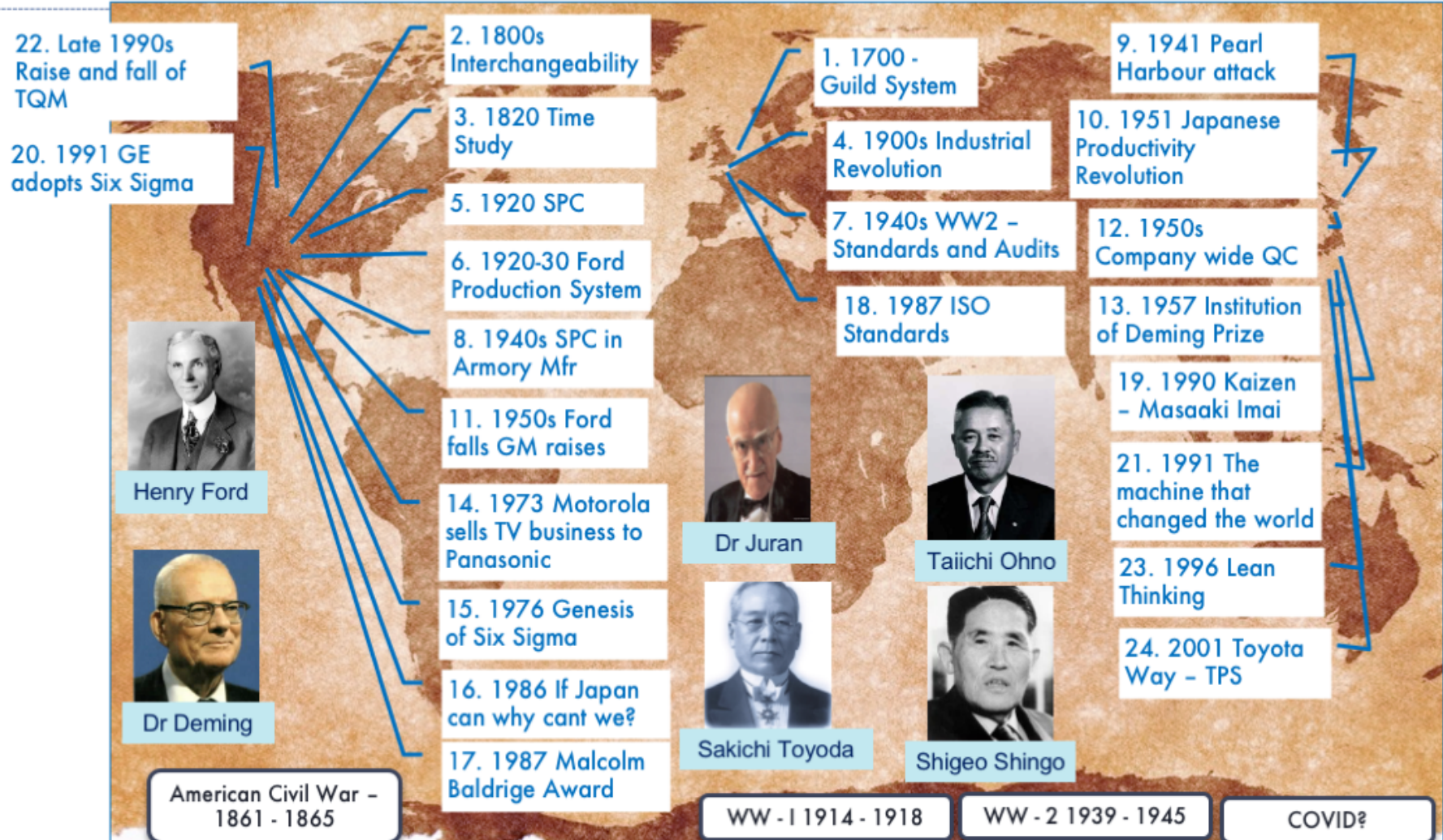
Encourage operators to stop machine if they find any abnormality.



Origin of Lean Manufacturing



The Origin – Timeline & Demography

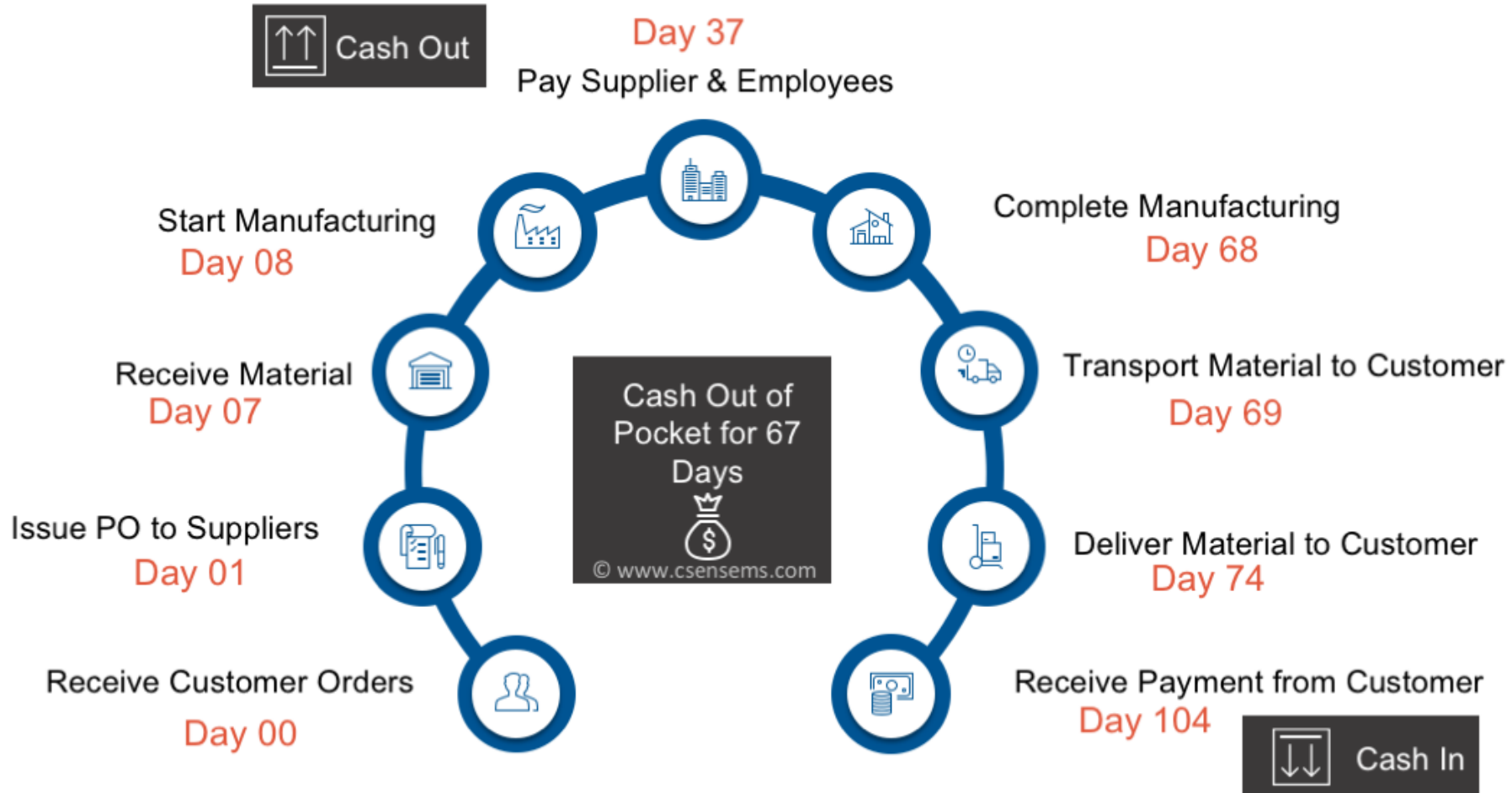




Velocity in Business

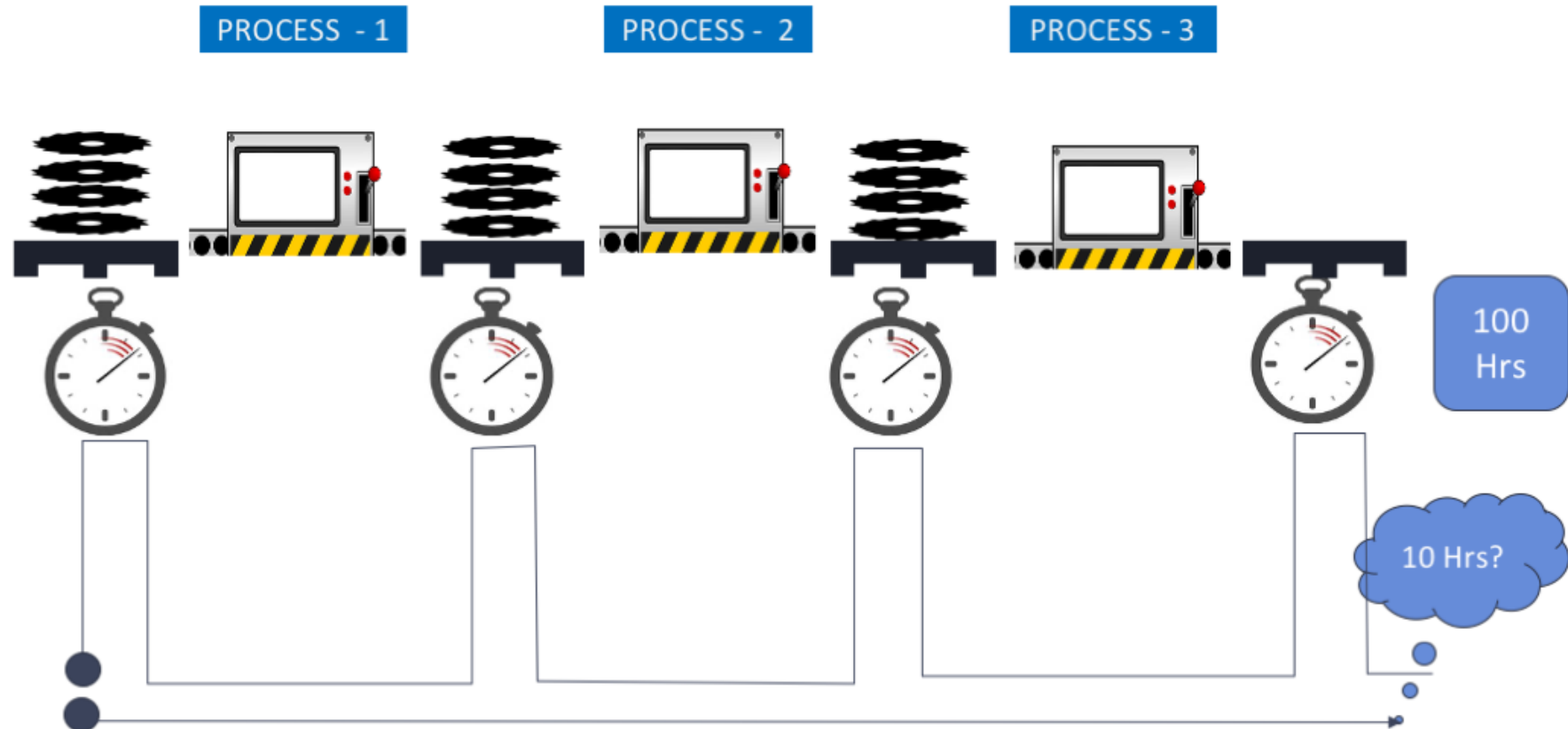


What is Cash-to-Cash Cycle?



What reduces velocity?

Lead Time Analysis

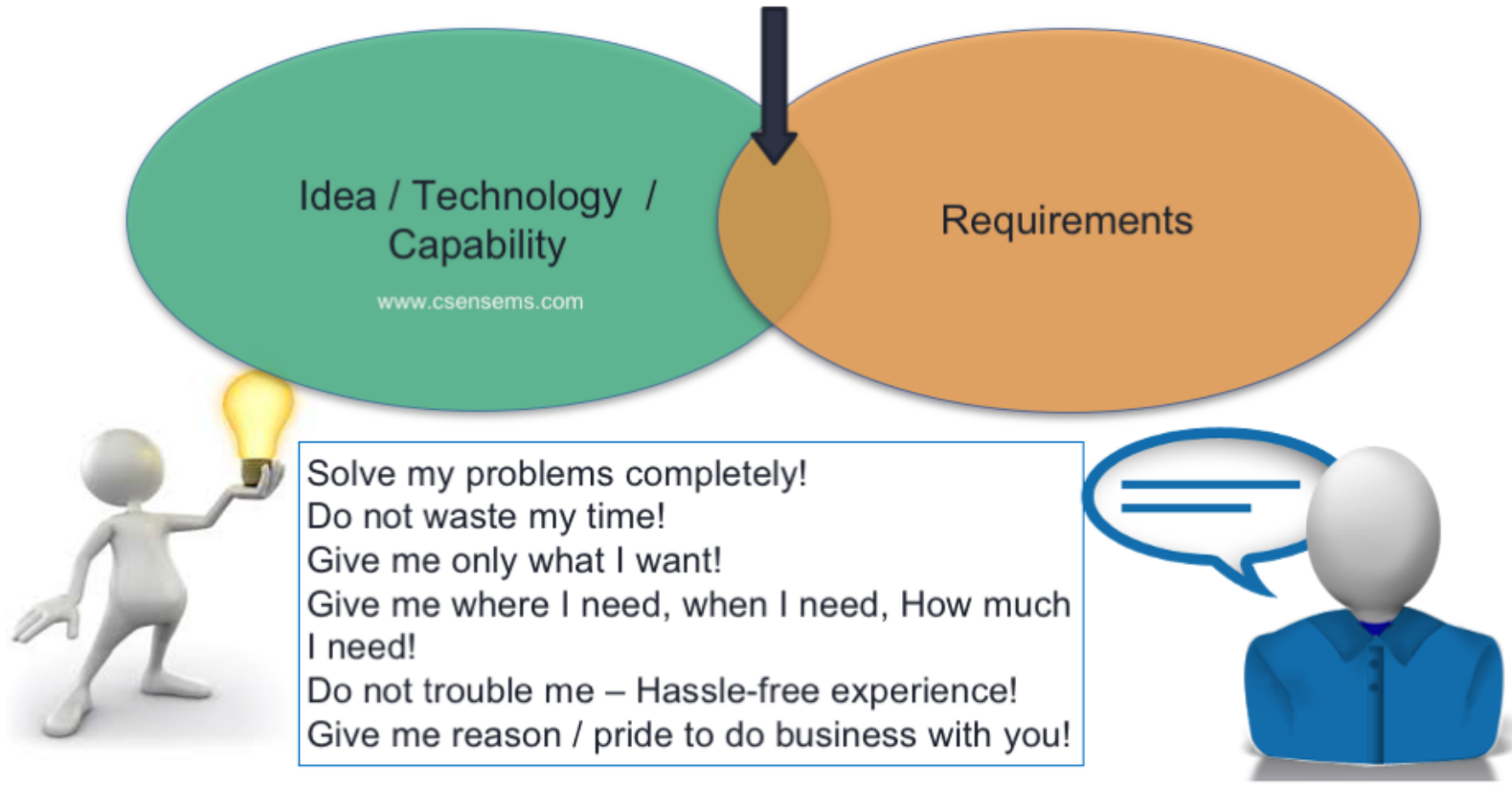




What is Value?



The Interaction zone is where the business potential exists!!!



- Value is anything which a customer is willing to pay for.
- An activity that supports the progression of business in the direction towards customers.
- An activity that can create a comparative advantage for your company.



The 3 Mu's



Muda: Wastefulness



Muri: Overload



Mura: Imbalance

Curtesy: www.blog.etq.com

- Any activity that consumes the resources but fails to move the business process in the direction towards customer is called Non-Value or Non-Value Adding Activity.
- Time, effort, money, energy etc., are considered as resources.



Transport

Inventory

Motion

Waiting

Over Production

Over Processing

Defects

- Movement of Material without any change in size / shape / property of material
- Transporting product between processes consumes cost but adds no value to the product.
- Cost is also incurred for material handling equipment and their Maintenance



- Excessive movement and handling cause damage and are an opportunity for quality to deteriorate.
- Transport without progress in the direction of customer consumes TIME.

- Transporting Raw Material from stores to process area.
- Carrying WIP from one machine to the next machine
- Sending components to Outsourced processes (sending out of own premises and receiving back)
- Keeping semifinished materials in a common stores at the end of shift
- Carrying components across the shed using overhead cranes
- Moving materials on a pallet using pallet trucks

- Material that are not attended - lying on floor
- Inventory lies in the production floor in the form of
 - Excess Raw Material
 - Work In Progress
 - Excess Finished Goods
- Inventory Reduces the velocity of business flow.



Inventory Helps!



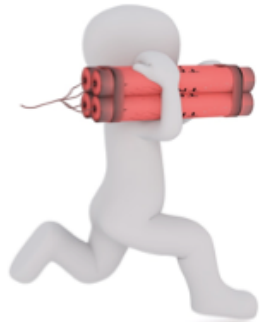
- Smooth sailing of Business
- With the help of Ocean of Inventory
- Overcoming Policy / System / Process Failures

Absenteeism Frequent Machine Breakdowns Rejections & Reworks Supplier delays Policy failures Erratic demand & forecasting

- Movement of People and / or machines without producing any change in size / shape / property of material
- Walking to printers, excessive clicking, or searching for supplies in a messy cabinet are all examples of wasted motion.



Walking



Picking



Carrying



Any movement of people or machine which does not add value to the product



Stretching



Placing



Just Watching

- Operator walking to stores to collect fasteners - in some companies stores is stored outside processing area.
- Operators walk to maintenance area to collect tools
- Operators have to climb staircases to adjust the steam valve
- Quality inspector has to climb staircases to note down reading
- Operators bending to switch on / off the machine
- Operators turning their back to pick / place the material
- Manager walks to collect the print outs from the printer
- Officer to stretch himself to pick up the phone

- Material, Machine or Man waiting for something
- Waiting extends the throughput time and thus reduces the velocity and cashflow
- *Materials waiting for getting batched up*
- *Materials waiting for next process*
- *Materials wait for getting transported*
- *Materials wait for operators*
- Machines wait for feed materials
- Machines waiting for power
- Machines waiting for operators
- Operators waiting for material



- Producing more than orders in hand / more than what next process can consume





*Over Production is a Crime, Sin and
Mother of all other Muda.*

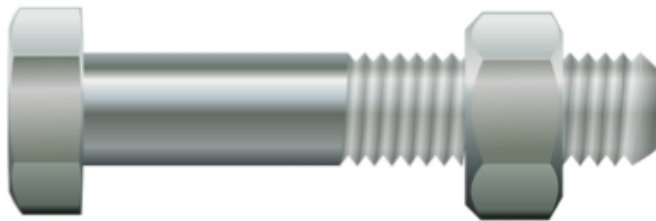
- Masaaki Imai, Father of Kaizen



- Process / activity that are not specified, not required or not producing any change in material size / shape / property
- It consumes resource and increases production time
- It is caused by
 - Out dated procedures / lack of procedures
 - Experience - “Working like this for 20 years!”
 - Insufficient process knowledge
 - Lack of process observations

- Threading a nut for several rounds is over-processing
- Because the fastening happens at the last thread!

- Shiego Shingo

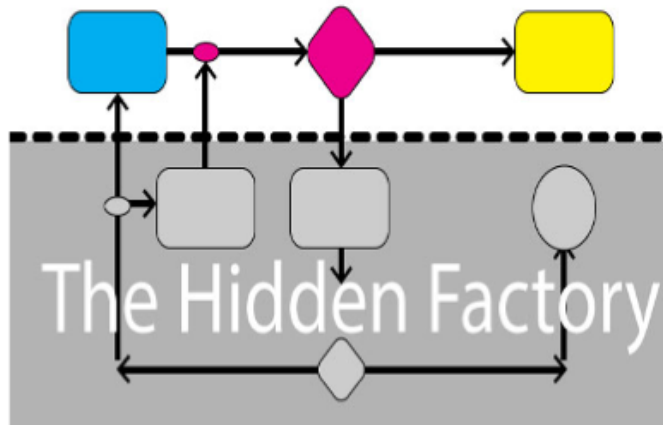


- Inspecting products at the end of production line
- Counting items in stores / warehouse
- Getting multiple signatures for approval
- Searching the right tool at the time of operations
- Conducting multiple audits
- Generating MIS reports with so many information - 99.5% of which were read by nobody
- Signing physical attendance despite having a bio-metric system in place - 'in case of' biometric fails
- Using spread sheets / calculators to verify the calculations done by ERP

- Products that are not meeting requirements right at first time
- This waste includes the waste of rework and reprocessing



Waste of Defects - The Origin of Hidden Factory

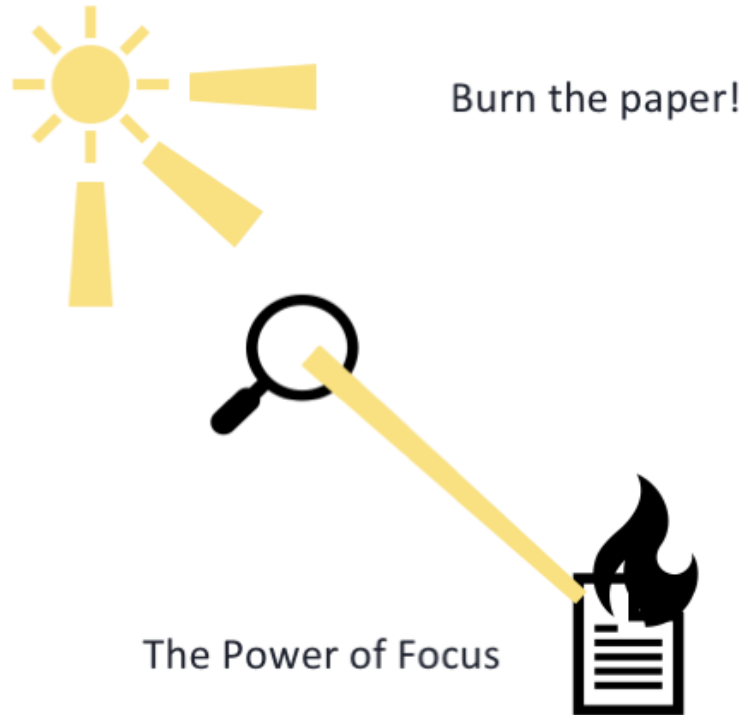


$$\text{Profit} = \text{Price} - \text{Cost} - \text{CoPQ}$$



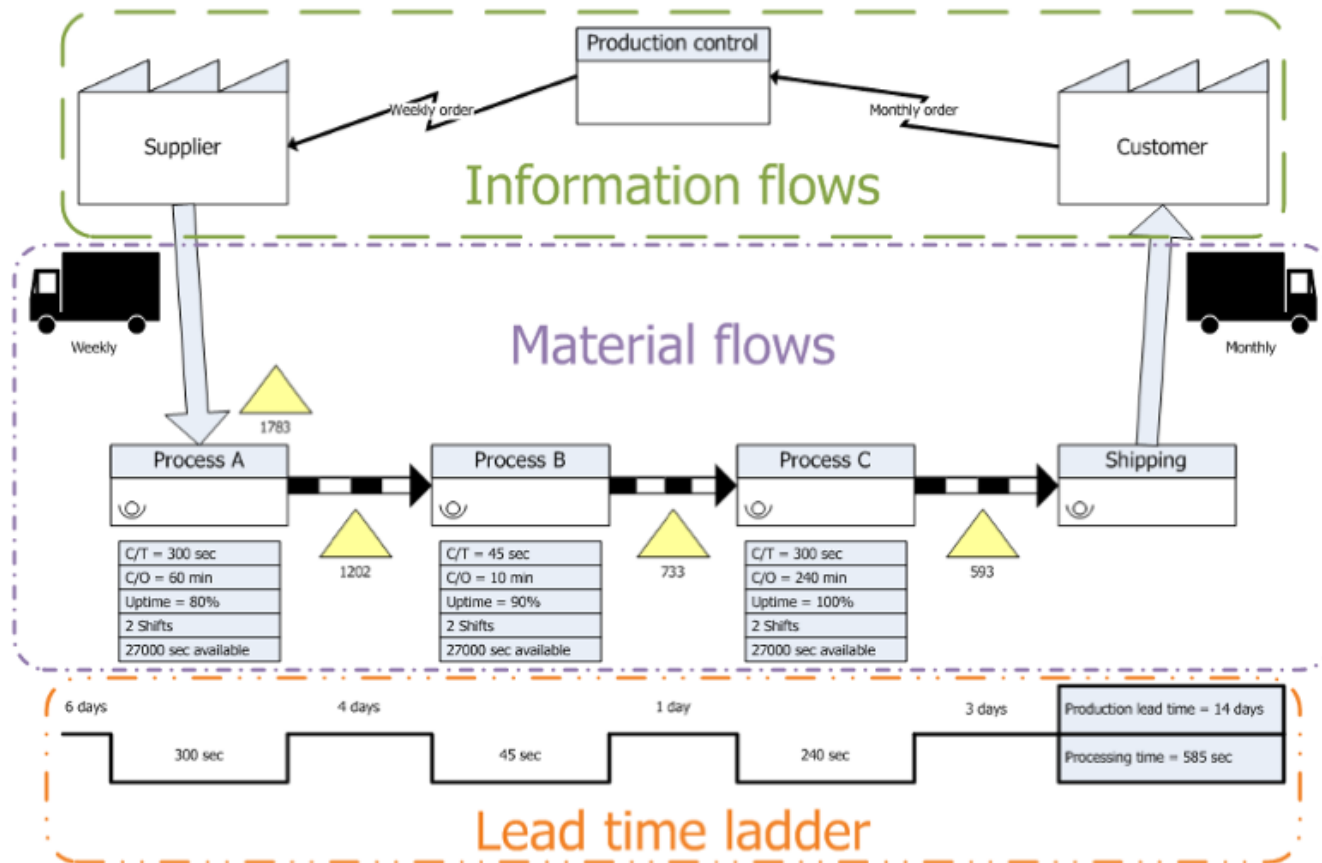
Focus on Bottleneck





Improving Everything at once = Improving nothing
Focus is the Key!

		10 mins
	One pc will come out every	10 mins
		8 Mins



Value Stream = All activities that are currently required to transform raw materials and information into a finished product and service.



What Next?



CASE STUDIES?

Is it in your Priority?

- Will Lean Thinking help you to improve?



- Take Action Now!



- Try to initiate One-Change **today** in your process.
- Discuss with your team.
- Join hands with your friends and like-minded people for cross learning.
- Use this opportunity – to interact.
- Form small groups – Cluster model.





Some Success Stories



Before: No FIFO



After: FIFO



Before: Drill Jigs/ Templates were scattered in different areas



After: Drill Jigs/Templates are stored In the separate Rack with Proper Identification



5S In office





Parle Biscuits Pvt. Ltd., NASHIK

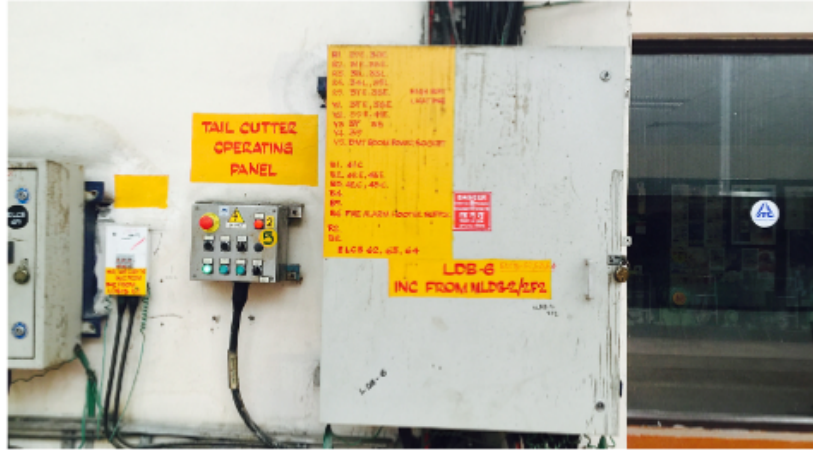
FORTNIGHTLY 5 'S' AUDIT SCORE BOARD YEAR **2010-11**

ZONE	ADMIN	ZONE LEADER	Mr. C.S. GUPTA
MAJOR AREAS: Kitchen, Rest, Auditorium, Corridor, Washrooms			
DATE OF AUDIT: 1 ST 01/05/10 2 ND 15/05/10			
AUDITORS FOR UPCOMING AUDIT: SDK/SP			
MONTH	1 ST PERCENTAGE	2 ND PERCENTAGE	GRADE
OCT			
NOV			
DEC			
JAN	64.02%	64.69%	-
FEB	59.69%	59.00%	-
MAR	53.38%	54.38%	-
APR	66.55%	58.00%	-
MAY	58.18%	59.37%	-
JUNE	60.15%	61.87%	-
JULY	46.37%	48.61%	-
AUG	57.25%	43.01%	-
SEPT			

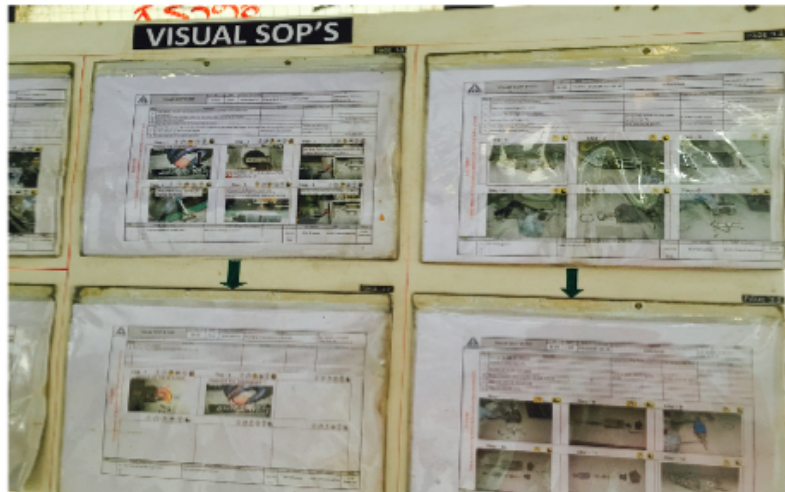
GRADE CRITERIA

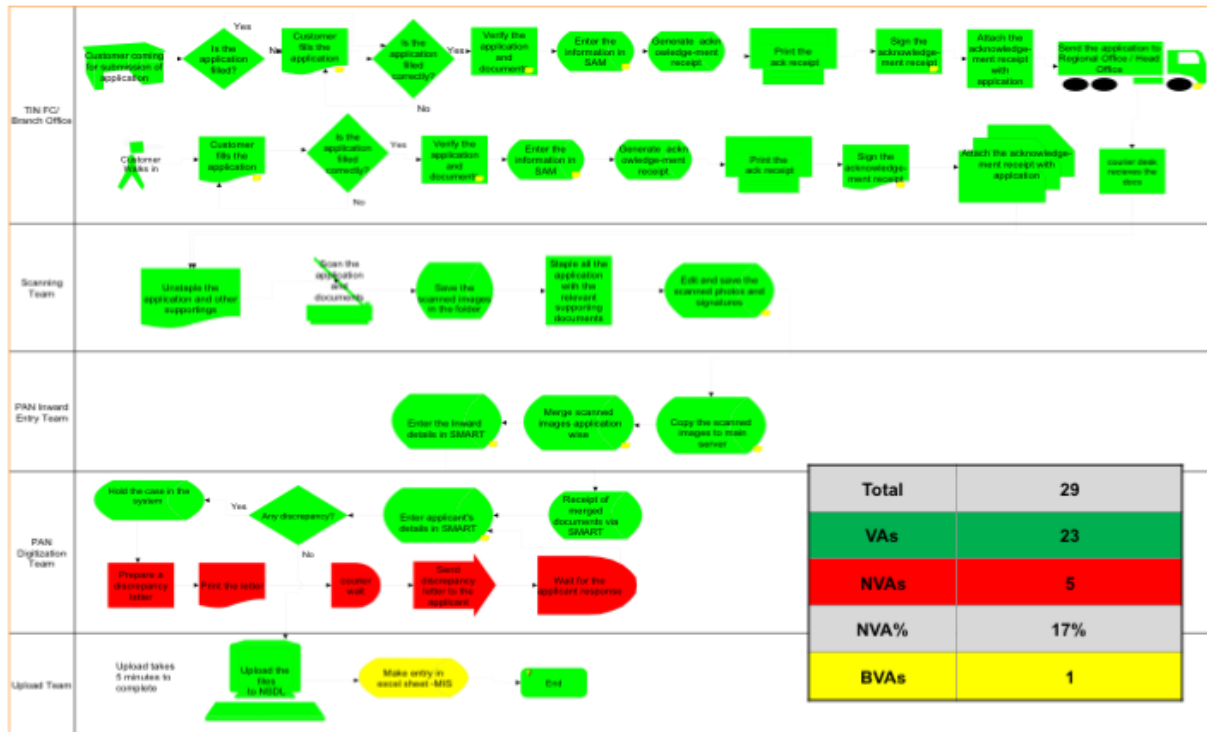
- >90-DIAMOND
- >80-GOLD
- >70-SILVER





IN PUT			OUT PUT		
GRADE - BASE		COST PER KG	GRADE		COST PER KG
CYBER XL	80	RUPEES	INDOBEV LPE	76	RUPEES
NG REPLEN	84	RUPEES	INDO BARR LPE	77	RUPEES
MBRITL	40	RUPEES	INDO BEN 2PE	82	RUPEES
WHITE BACK	50	RUPEES	INDO BARR 2PE	80	RUPEES
GRSY BACK	55	RUPEES	800 LPE	90	RUPEES
LDPE	125	RUPEES	800 LPE	92	RUPEES
LPG	80	RUPEES	NOO WRAP	70	RUPEES
CONSUMABLES	LOW	RUPEES			
NTTO TAPE	1NO	8221	TANGIBLE LOSS FOR 1 HR DOWN TIME PRODUCT LOSS : 2.0 LAKHS LOPE LOSS : 0.3 LAKHS TOTAL LOSS : 2.3 LAKHS		
TEFLON STRIP	1NO	527			
GSM TAPE	1NO	514			
DOUBLE SDE TAPE	1NO	209			
KORA CLOTH	1MT	26			
BOPO TAPE	1NO	23			

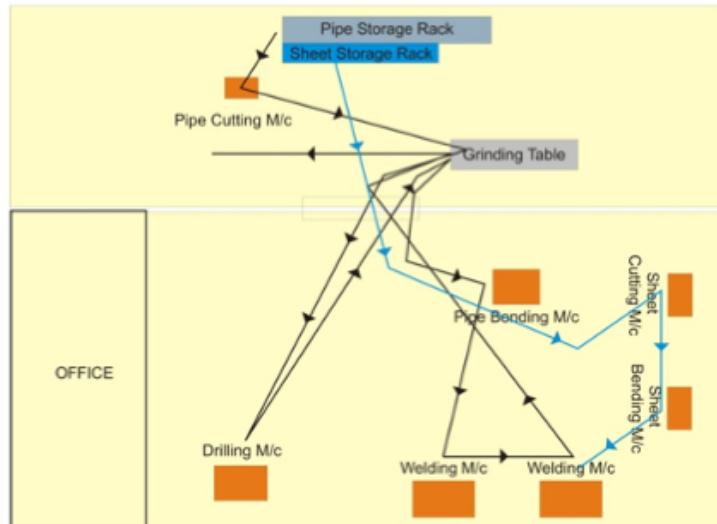




Benefit Attribute	Old Process	Achieved after improvement
Sigma value for TAT	1.25	4
Rolled Throughput Yield	89%	100%
No. of People employed	24	10 (deployed for other proceses)
Total no. of NVA'S	32	5
Total no. of activities	67	29
Journey – distance	103 mtrs	20 mtrs (Approx)
TAT	2 to 3 days - approx	a) 1.5 days (outside City) b) 5.5 minutes (approx) (within City)
Productivity per person	1033 applications	2000 (approx)
Average % of Rework	10%	Nil
Subcontract	Yes	No subcontract

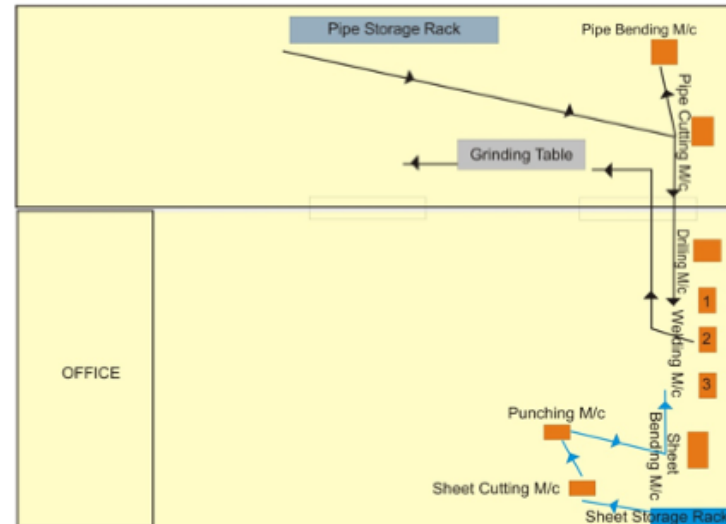
Before Lean Machine Layout

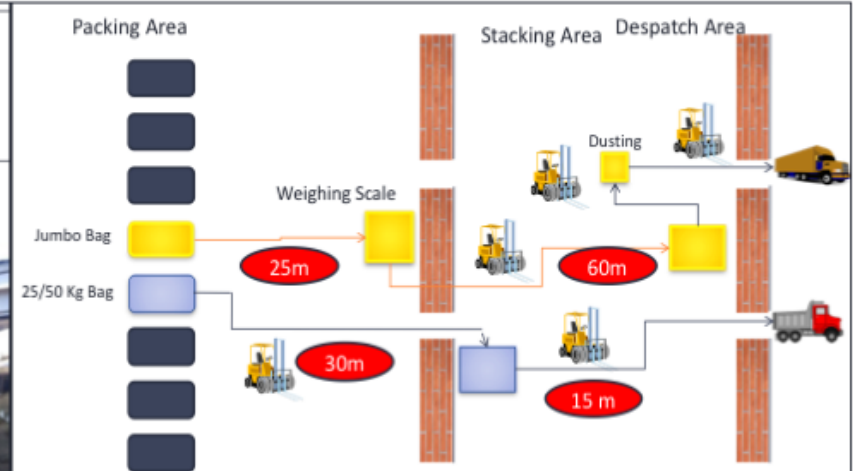
Total Movement 200'

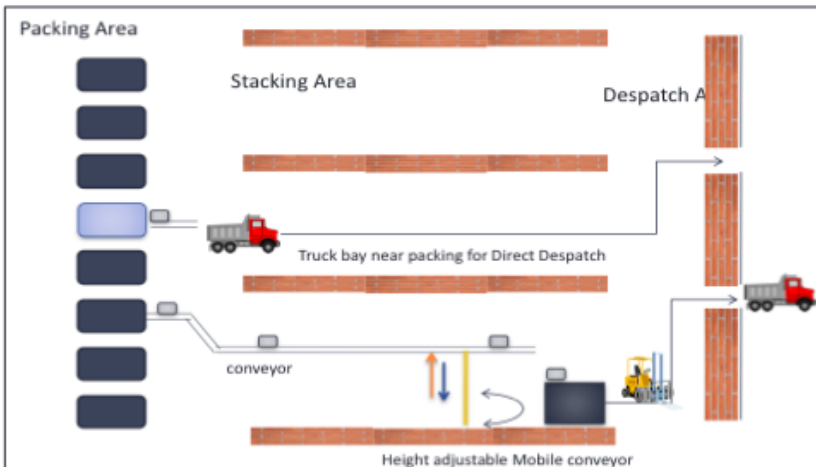


After Lean Machine Layout

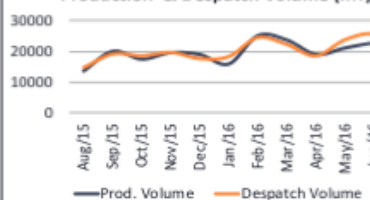
Total Movement 90'



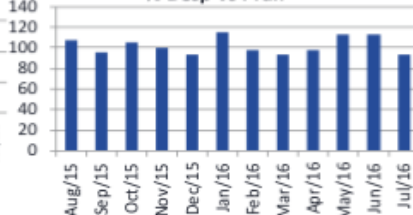




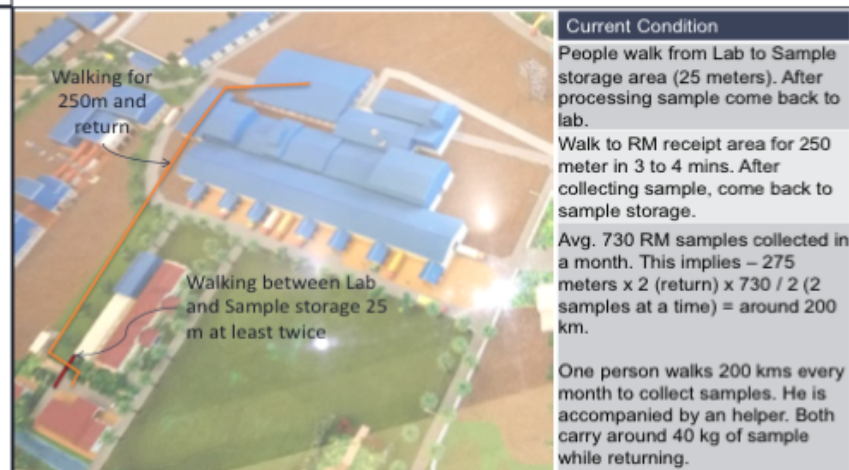
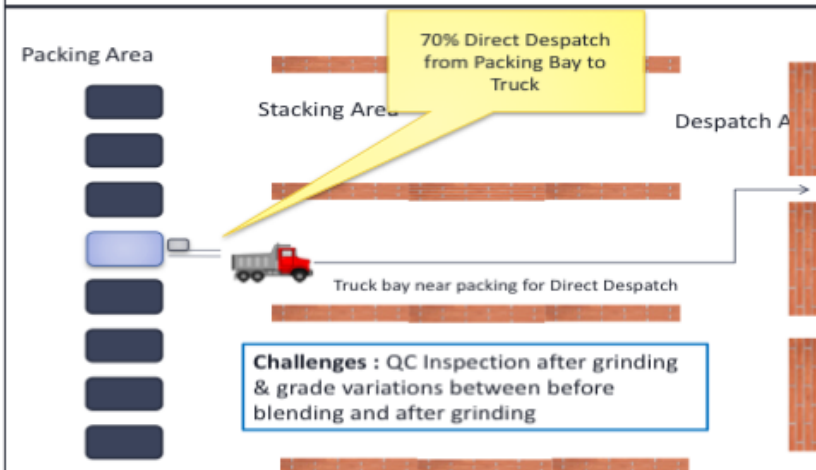
Production & Despatch Volume (mT)



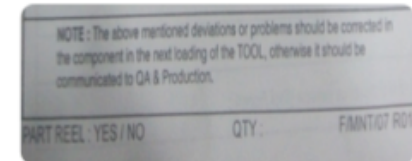
% Desp Vs Prdn



1. First graph shows that Production Volume and Despatch Volume are managed close every month.
2. The second graph shows the ratio of Monthly Despatch volumes against Monthly production volumes. Most of the times the volume are matching up to 90% (with avg of 102%).
3. Hence, we can target for 70% of Despatches as **Direct Despatch** (Details in next slide)



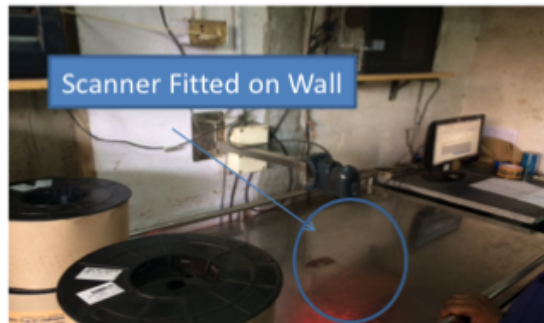
Lean in Component Manufacturing



Part Reel To Be Added in Last piece Off Sheet



Different Finish Labelling Controlled through Software



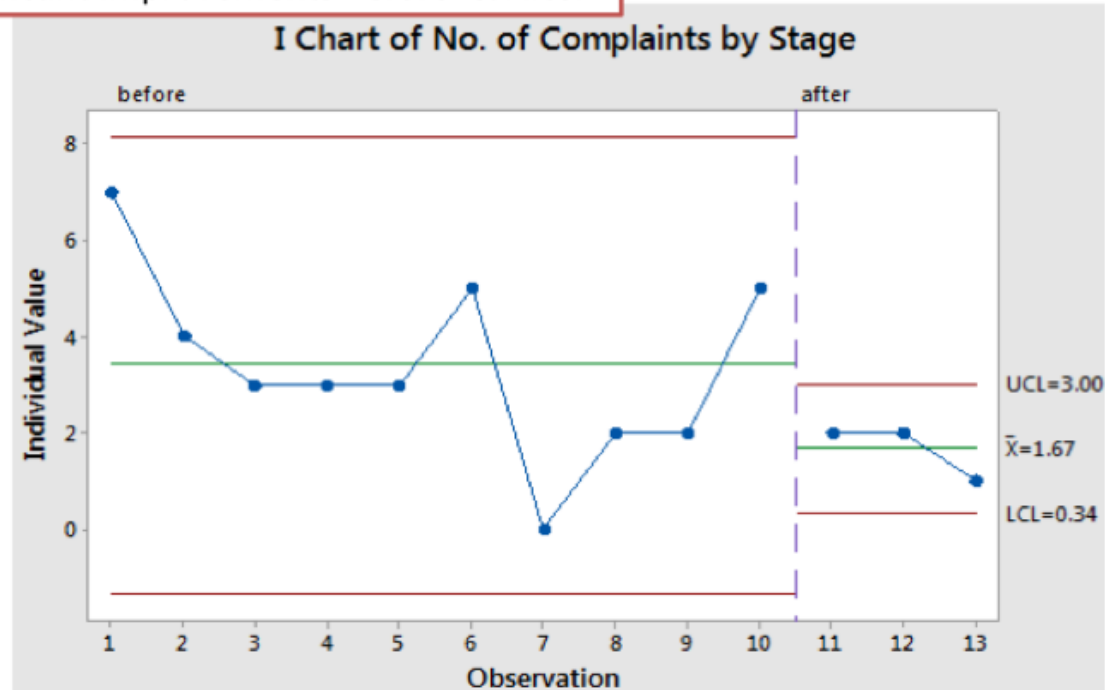
Significant Improvements Before & After

Two-Sample T-Test and CI: No. of Complaints, Stage

Two-sample T for No. of Complaints

Stage	N	Mean	StDev	SE Mean
after	3	1.667	0.577	0.33
before	10	3.40	1.96	0.62

Difference = μ (after) - μ (before)
 Estimate for difference: -1.733
 95% CI for difference: (-3.298, -0.168)
 T-Test of difference = 0 (vs \neq): T-Value = -2.47 **P-Value = 0.033** DF = 10



As per Above Hypothesis Test , p Value is less than 0.05 which is stating that Project is Significant Improvements/change can be seen Before between After ..



End of Module

