

BUSINESS PROCESS VALUE STREAM MAPPING

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WHY FOCUS ON BUSINESS PROCESS?

- In order to deliver a quality product, all the processes in the value stream for that product must be robust.
- All processes can be improved!
- The non-manufacturing processes have not typically had the focus needed to find and eliminate waste.
- Business processes often drive waste into other areas of the business
 - Poor forecasting/ scheduling
 - Inaccurate sales order input
 - Engineering change orders taking too Long

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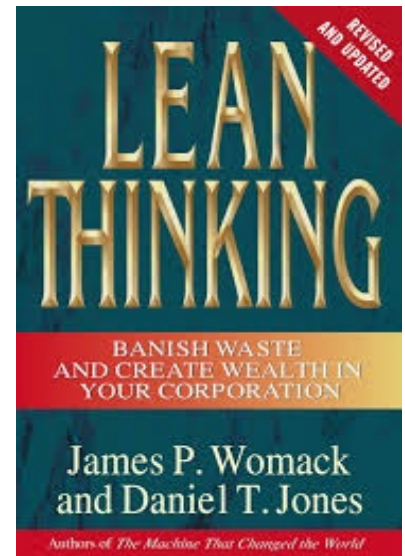
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FIVE LEAN PRINCIPLES

1. Understand what is **VALUE** under the customer point of view
2. Analyze the **VALUE STREAM** and remove the waste
3. Make the value **FLOW** through the value stream ...
4. ... In the way that customers can **PULL** what they want
5. Continuous improvement toward **PERFECTION**



WHAT IS VALUE?

- **VALUE** is those things that a customer is willing to pay for when they buy a product or service
- **What do your customers value?**
- **How do you differentiate yourself?**
- **What do your customers expect from your market segment?**
- **How do you ensure you are not trying to catch up?**
- **WASTE** is everything else!



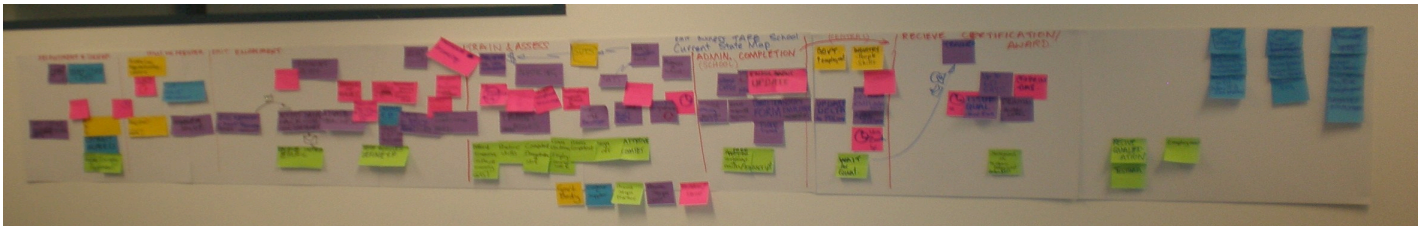
WHAT IS A VALUE STREAM MAP?

A detailed PICTURE of your process' actual flow. This PICTURE includes:

- Information flows
- Processing and lead times

This PICTURE helps you SEE:

- Problems in the flow
- Potential improvements



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OBJECTIVES OF VALUE STREAM MAPPING

- Visualize information flow
- Facilitate the identification and elimination of waste
- Provide a lean vision for the process
- Support the prioritization of continuous improvement activities at the plant and value stream levels
- Support constraint analysis
- Provide a common language for evaluating processes



Step back
and find the
optimal route



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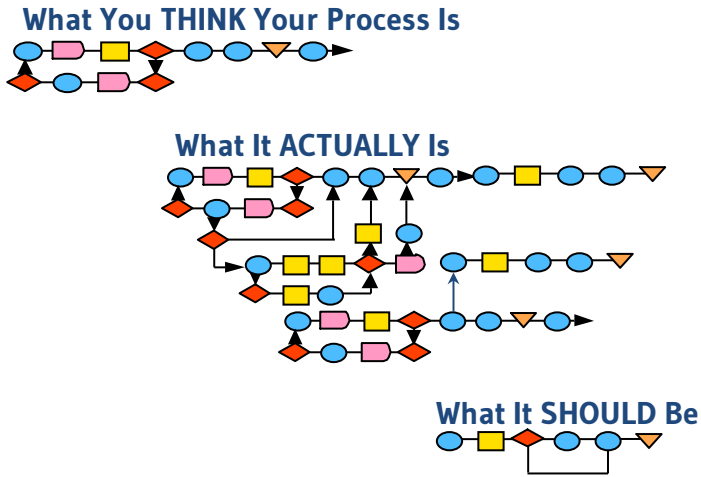


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VERSIONS OF A PROCESS

Most processes have at least three versions:



“Waste is often disguised as useful work.”

—Hiroyuki Hirano

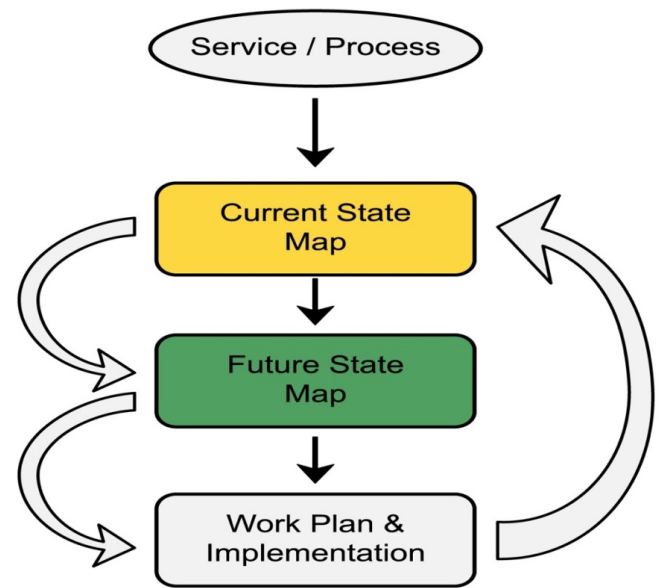
WHICH HORSE IS TALLER?

The background might cause you to think that the horses are not the same size.

Your assumptions might cause you to think they are the same size.



VALUE STREAM MAPPING



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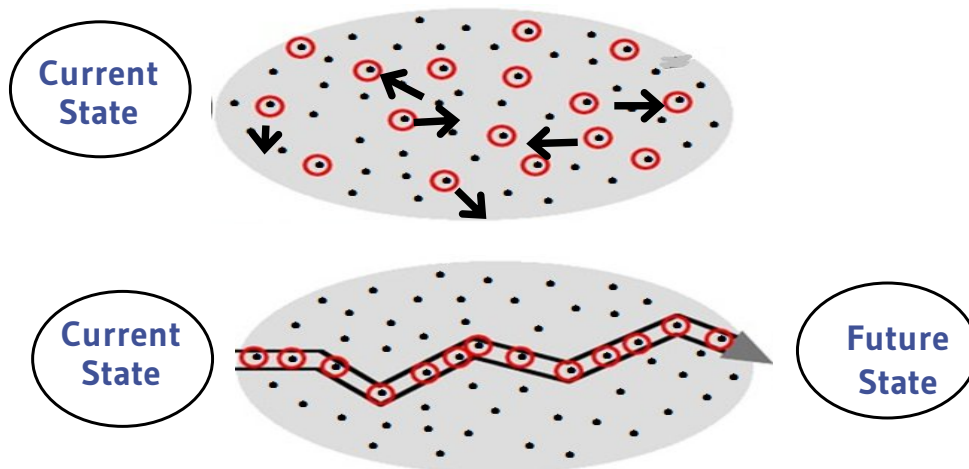


"Learning to See" Rother & Shook LEI 1999
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VSM HELP BUILD YOUR ROADMAP



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Source from Mike Rother , TOYOTA KATA
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BUSINESS PROCESS CURRENT STATE MAP

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STEPS TO DRAW CURRENT STATE

WHAT	HOW	WHY
Customer & demand data	Top right corner or top centre	This focuses us on the customer needs
Process steps	Post it notes in the workshop room; Take a helicopter view – agree height.	Plans the walk and prepares us for the logistics of the walk.
Information flow, data, and technology	Walk the process, you might get the people doing the work or their supervisor to time processes	To see what actually happens. Understand how the work priorities are determined and communicated.
Draw the lead time in	Typically back in the workshop room	Helps identify delays
Calculate out summary data	Multiply %C/A all together; Add up L/T + D/T	Gives a baseline summary to improve on

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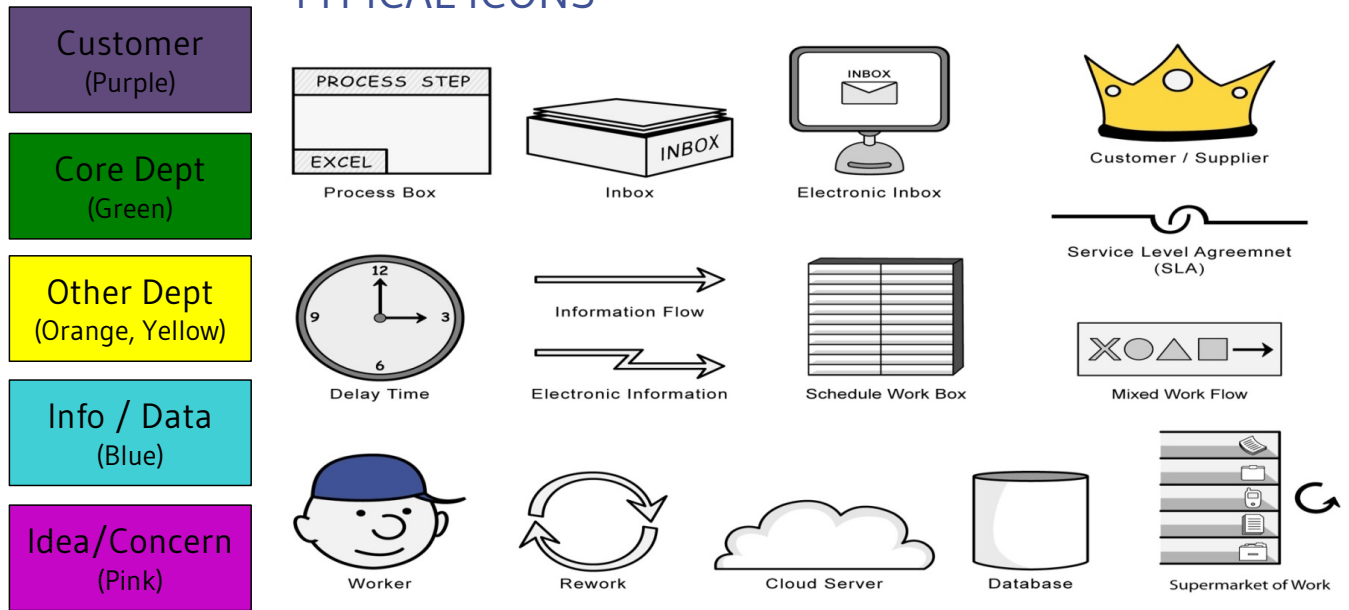


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TYPICAL ICONS



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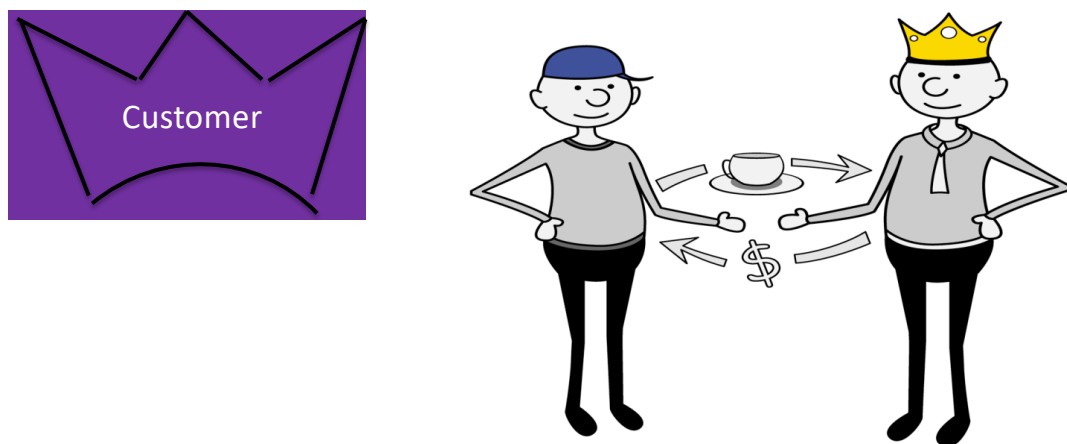


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CUSTOMER IS ROYALTY



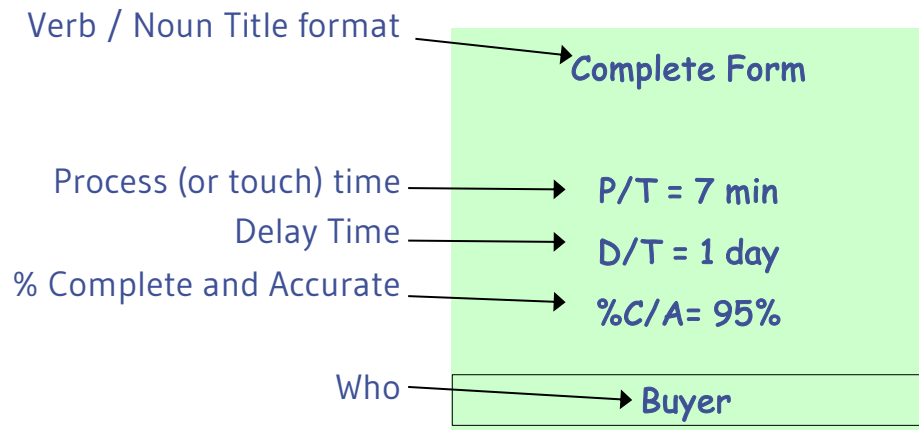
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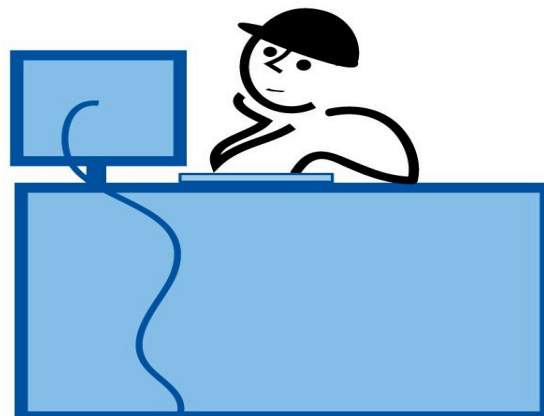
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DEFINE PROCESS STEPS

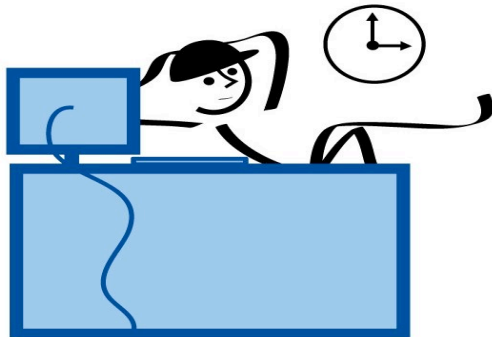


PROCESS TIME (P/T)

Time spent actually performing the work of the process (step), e.g., “hands-on time,” “touch time”



DELAY TIME (D/T)



or



Can be during a process (step),
e.g., waiting for a call back

Or between processes (steps),
e.g., sitting in an "inbox"

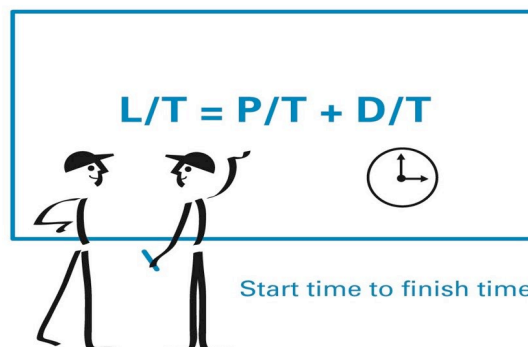
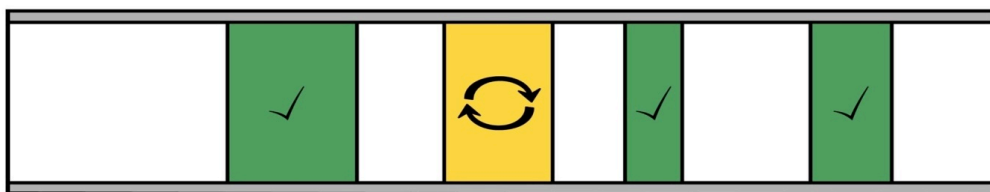
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LEAD TIME (L/T)



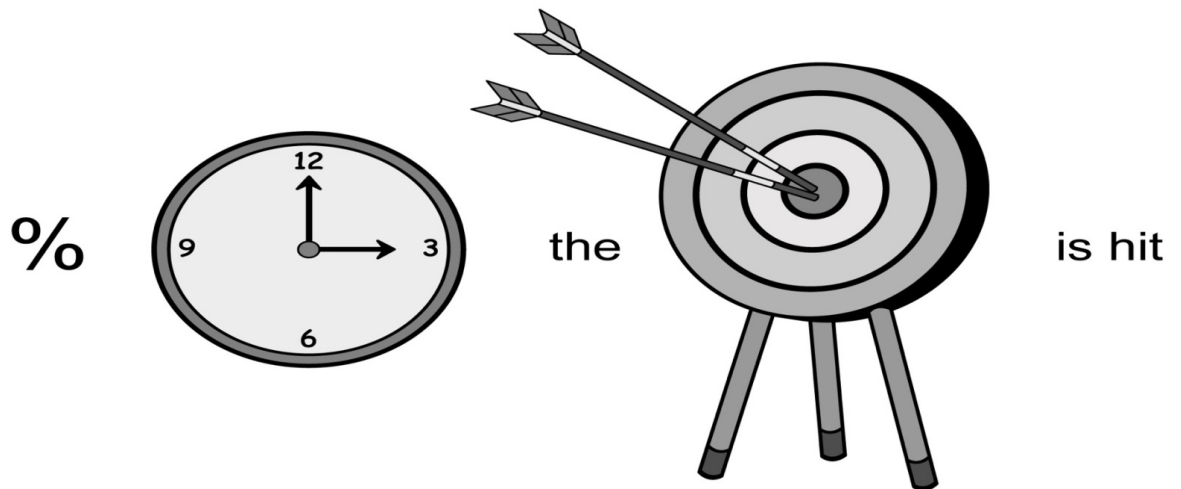
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% COMPLETE AND ACCURATE (%C/A)



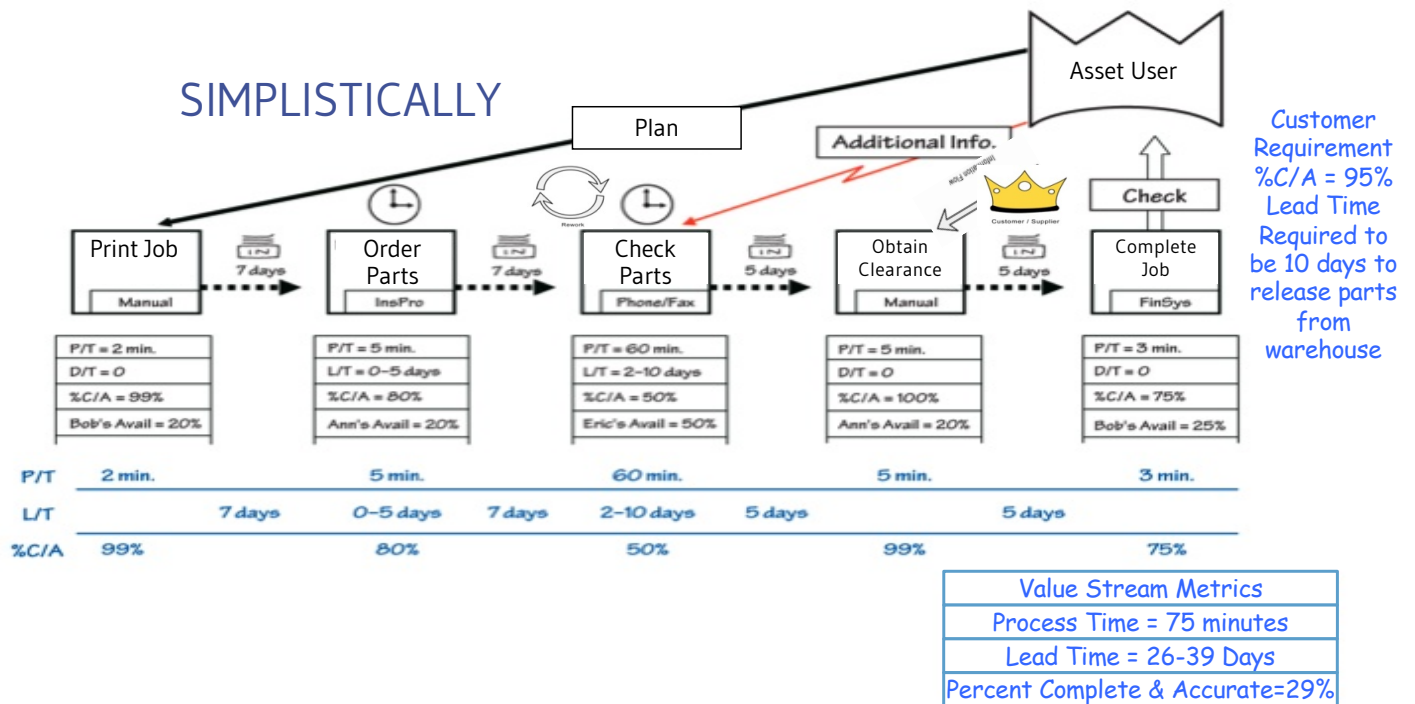
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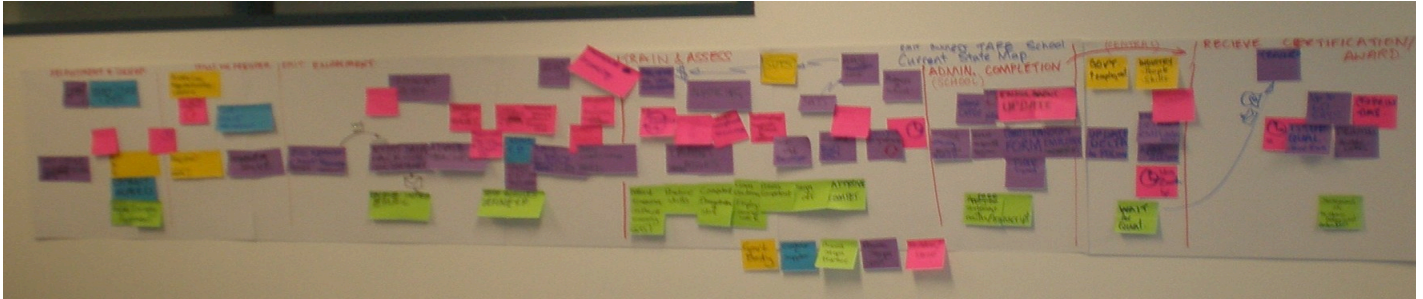
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SIMPLISTICALLY



Planned Maintenance Seal Kit
Current State VSM
18/1/11

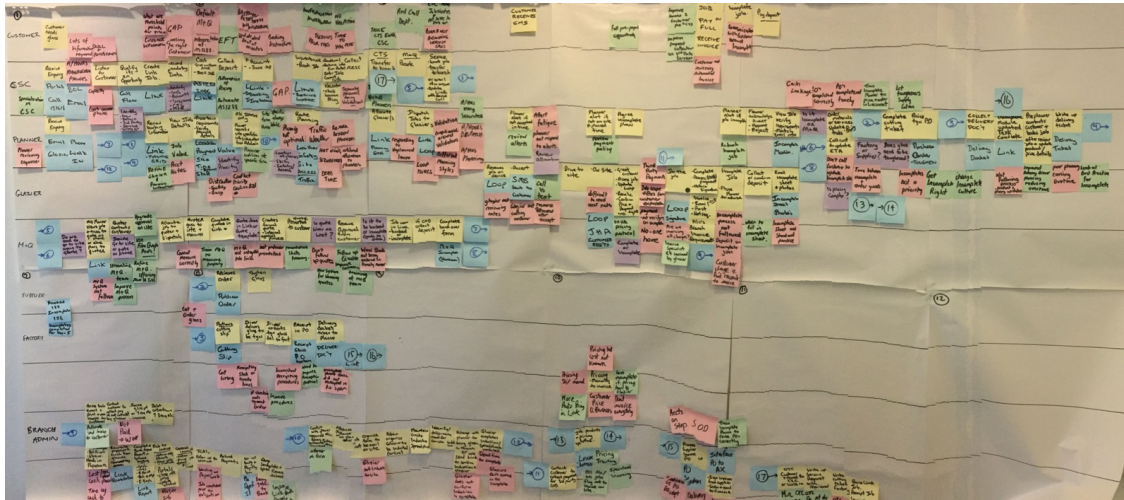
REALITY – VALUE STREAM MAP



REALITY – VALUE STREAM MAP



REALITY – VALUE STREAM MAP –SWIM LANES



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BUSINESS PROCESS FUTURE STATE MAP

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TXM NINE STEPS BUSINESS PROCESS FUTURE STATE MAPPING

1. Define customer needs
2. Define slabs
3. Start to define requirements for each slab
4. Decide if radical or incremental change is needed
5. Make the work flow
6. Simplify, error proof, & standardise tasks
7. Plan actions and engage all stakeholders
8. What are the benefits of the future state?
9. Share & improve every day

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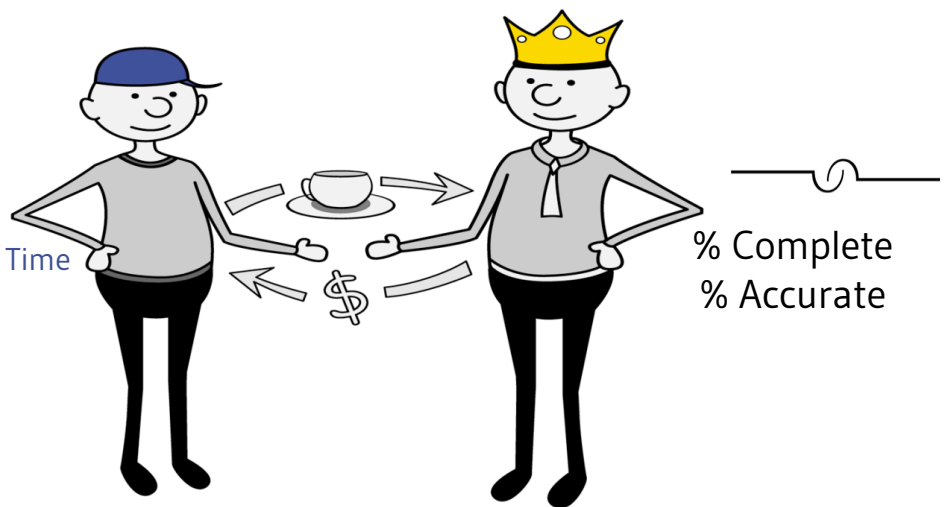


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1. DEFINE CUSTOMER NEEDS

- What
- When
- How
- Who
- Overall Lead Time



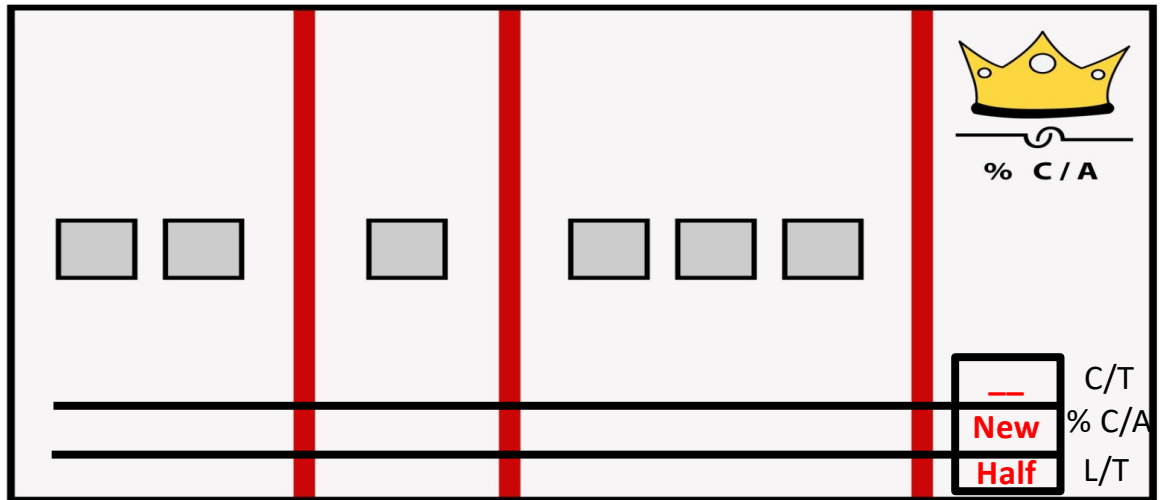
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2. SLABS DEFINED



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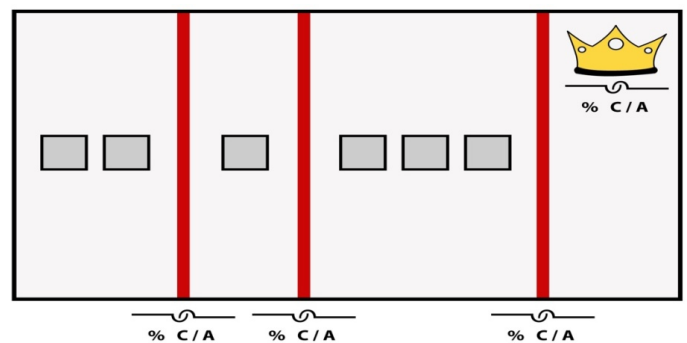


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3. REQUIREMENTS FOR EACH SLAB DEFINED

- What is required
- How it is required
- When it is required – align time requirements to minimise wait time for next step.
- How accurately it is required
- Expectation for dealing with accurate information
- Expectation for missing or inaccurate information
- Additional KPI's to suit the specific process



“What we need to successfully transition from one slab to the next.” Margaret Stewart (RMIT)

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LEAN TOOLS – SERVICE LEVEL AGREEMENT

WHY?

Agreed standard completion time

WHY ELSE?

Allows whole service to be aligned

HOW?

What exactly will be done

When will the task be completed by

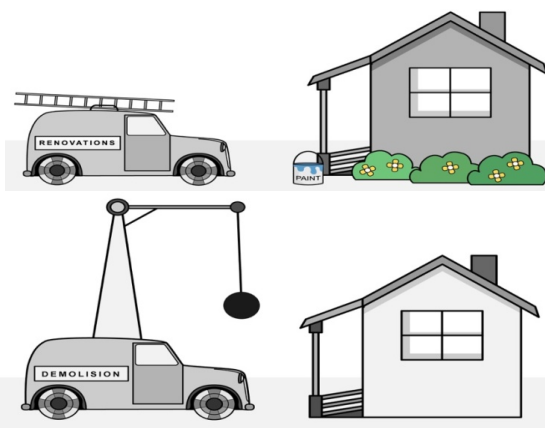
Where will the completed task be placed

Who is the customer that determines the task achieves the SLA (service level agreement)

Example: Ibis hotels 15 minute satisfaction guarantee to resolve your issue in 15 minutes.



4. DECIDE IF INCREMENTAL OR RADICAL CHANGE



- For each slab decide to “Detonate” or “Renovate”

5. MAKE THE WORK FLOW

- Eliminate blockages
- Make work flow in direct path
- Control Lanes of work



TYPICAL COUNTERMEASURES TO BARRIERS OF FLOW

Common Barriers to Flow	Typical Countermeasures
Too many handoffs	Combine steps
Fluctuations in work requirements (job size, complexity, due dates, etc.)	Separate standard process from "special" work, establish SLA
Fluctuation in pace of work.	Standardize pace
Waiting for decision/approvals	Adopt "Proceed- Until-Halted"
Long queues	Establish "supermarkets"
Poorly defined requirements across all functions	Feedback understanding of requirements to the customer

LEAN TOOLS – PROCEED UNTIL HALTED

WHY?

Eliminate delays waiting for permission / authorisation

WHY ELSE?

Eliminates task for leader

Gives greater morale

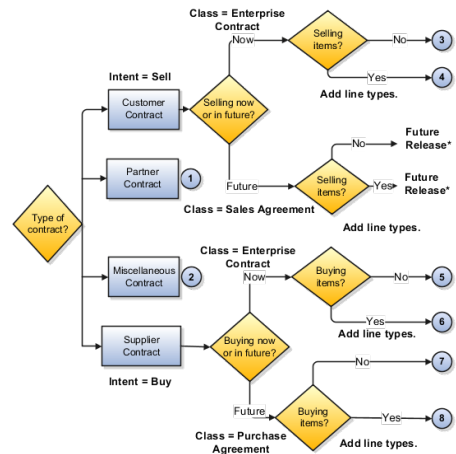
HOW?

Define specific criteria

Define guidelines

Monitor and have resolution process clearly defined

A more complex type of agreement



LEAN TOOLS – 5S

WHY?

Ensures the work can flow without delay.

WHY ELSE?

Right information ready for use.
Visual management help make decision easily.

HOW?

Sort, Set in order, Shine,
Standardise, Sustain



LEAN TOOLS – LEVELING BOX

WHY?

Visualise upcoming work

WHY ELSE?

Error proofs against missing tasks

Minimise waste of doing task before needed

Pull ahead work prior to visible 'spike' of work.

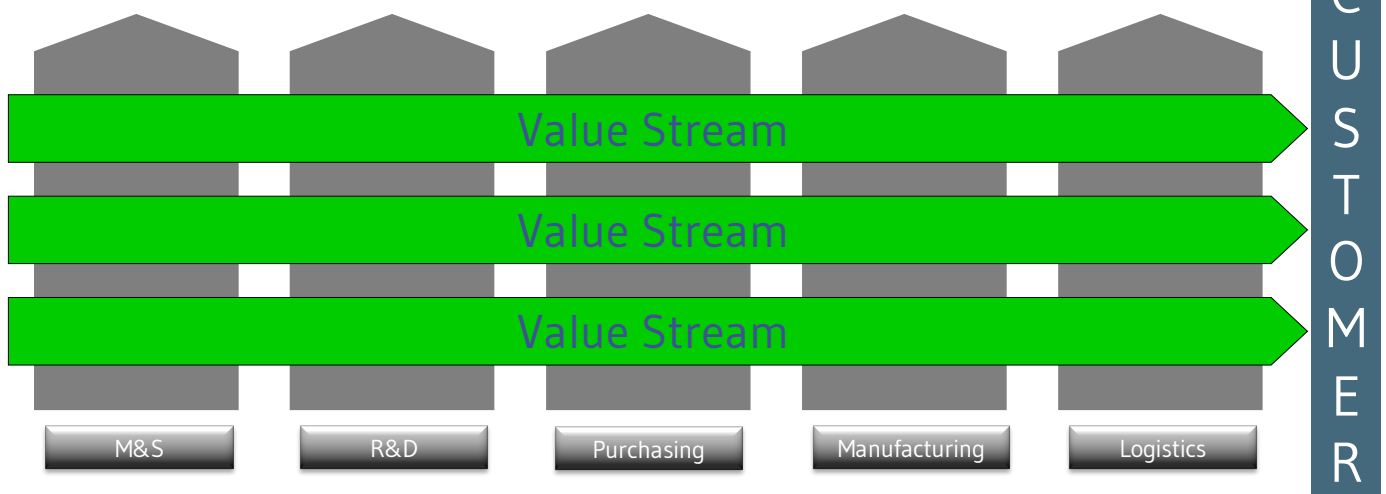
HOW?

31 day, or 7 day slotted box

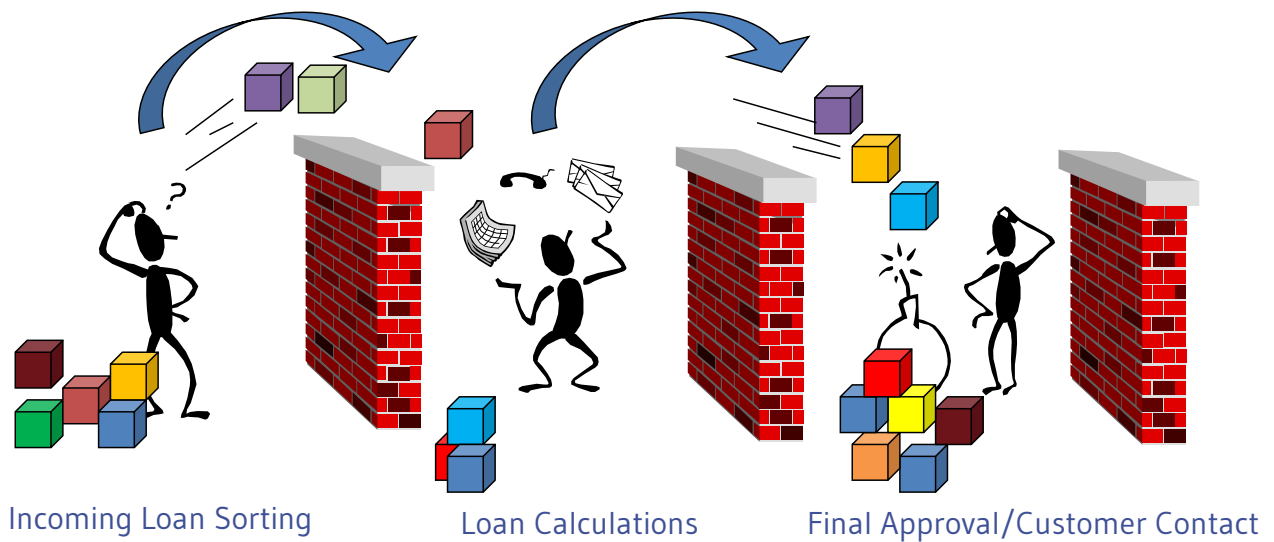
Kamishibai Board (Tee cards board)



IDEAL VALUE STREAM



TRADITIONAL "OVER THE WALL" BATCH PROCESSING



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CONTINUOUS FLOW



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6. SIMPLIFY, ERROR PROOF AND STANDARDISE TASKS



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TREAT THE PERSON DOING THE WORK AS THE SURGEON



Present work Optimally to the Value-Added Worker.

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LEAN TOOLS – STANDARD WORK

WHY?

Sets expectations that we can do the agreed best method

WHY ELSE?

Saves time
Happy people
Leaders can correct

HOW?

Get together & define the best way
Share knacks



Standardised Work Sheet		Department/Section	Welding (2)	Date	4-22-08	
Process		rear panel robot OP (24)		Worksheet #	001-240	
Target Time	37 sec.	Part Name	rear panel	Qty	100	
Cycle Time	37 sec.	Part #	2400240	Rev	1	
Work Sequence Layout		Step #	Step Name	Time (Seconds)	Precedence	Remarks
1. Pick up rear panel		1	Pick up rear panel	10	1	
2. Place rear panel on robot		2	Place rear panel on robot	10	2	
3. Robot welds rear panel		3	Robot welds rear panel	10	3	
4. Robot moves rear panel		4	Robot moves rear panel	10	4	
5. Pick up rear panel		5	Pick up rear panel	10	5	
6. Place rear panel on robot		6	Place rear panel on robot	10	6	
7. Robot welds rear panel		7	Robot welds rear panel	10	7	
8. Robot moves rear panel		8	Robot moves rear panel	10	8	
9. Pick up rear panel		9	Pick up rear panel	10	9	
10. Place rear panel on robot		10	Place rear panel on robot	10	10	
11. Robot welds rear panel		11	Robot welds rear panel	10	11	
12. Robot moves rear panel		12	Robot moves rear panel	10	12	
13. Pick up rear panel		13	Pick up rear panel	10	13	
14. Place rear panel on robot		14	Place rear panel on robot	10	14	
15. Robot welds rear panel		15	Robot welds rear panel	10	15	
16. Robot moves rear panel		16	Robot moves rear panel	10	16	
17. Pick up rear panel		17	Pick up rear panel	10	17	
18. Place rear panel on robot		18	Place rear panel on robot	10	18	
19. Robot welds rear panel		19	Robot welds rear panel	10	19	
20. Robot moves rear panel		20	Robot moves rear panel	10	20	
21. Pick up rear panel		21	Pick up rear panel	10	21	
22. Place rear panel on robot		22	Place rear panel on robot	10	22	
23. Robot welds rear panel		23	Robot welds rear panel	10	23	
24. Robot moves rear panel		24	Robot moves rear panel	10	24	
25. Pick up rear panel		25	Pick up rear panel	10	25	
26. Place rear panel on robot		26	Place rear panel on robot	10	26	
27. Robot welds rear panel		27	Robot welds rear panel	10	27	
28. Robot moves rear panel		28	Robot moves rear panel	10	28	
29. Pick up rear panel		29	Pick up rear panel	10	29	
30. Place rear panel on robot		30	Place rear panel on robot	10	30	
31. Robot welds rear panel		31	Robot welds rear panel	10	31	
32. Robot moves rear panel		32	Robot moves rear panel	10	32	
33. Pick up rear panel		33	Pick up rear panel	10	33	
34. Place rear panel on robot		34	Place rear panel on robot	10	34	
35. Robot welds rear panel		35	Robot welds rear panel	10	35	
36. Robot moves rear panel		36	Robot moves rear panel	10	36	
37. Pick up rear panel		37	Pick up rear panel	10	37	
38. Place rear panel on robot		38	Place rear panel on robot	10	38	
39. Robot welds rear panel		39	Robot welds rear panel	10	39	
40. Robot moves rear panel		40	Robot moves rear panel	10	40	
41. Pick up rear panel		41	Pick up rear panel	10	41	
42. Place rear panel on robot		42	Place rear panel on robot	10	42	
43. Robot welds rear panel		43	Robot welds rear panel	10	43	
44. Robot moves rear panel		44	Robot moves rear panel	10	44	
45. Pick up rear panel		45	Pick up rear panel	10	45	
46. Place rear panel on robot		46	Place rear panel on robot	10	46	
47. Robot welds rear panel		47	Robot welds rear panel	10	47	
48. Robot moves rear panel		48	Robot moves rear panel	10	48	
49. Pick up rear panel		49	Pick up rear panel	10	49	
50. Place rear panel on robot		50	Place rear panel on robot	10	50	
51. Robot welds rear panel		51	Robot welds rear panel	10	51	
52. Robot moves rear panel		52	Robot moves rear panel	10	52	
53. Pick up rear panel		53	Pick up rear panel	10	53	
54. Place rear panel on robot		54	Place rear panel on robot	10	54	
55. Robot welds rear panel		55	Robot welds rear panel	10	55	
56. Robot moves rear panel		56	Robot moves rear panel	10	56	
57. Pick up rear panel		57	Pick up rear panel	10	57	
58. Place rear panel on robot		58	Place rear panel on robot	10	58	
59. Robot welds rear panel		59	Robot welds rear panel	10	59	
60. Robot moves rear panel		60	Robot moves rear panel	10	60	
61. Pick up rear panel		61	Pick up rear panel	10	61	
62. Place rear panel on robot		62	Place rear panel on robot	10	62	
63. Robot welds rear panel		63	Robot welds rear panel	10	63	
64. Robot moves rear panel		64	Robot moves rear panel	10	64	
65. Pick up rear panel		65	Pick up rear panel	10	65	
66. Place rear panel on robot		66	Place rear panel on robot	10	66	
67. Robot welds rear panel		67	Robot welds rear panel	10	67	
68. Robot moves rear panel		68	Robot moves rear panel	10	68	
69. Pick up rear panel		69	Pick up rear panel	10	69	
70. Place rear panel on robot		70	Place rear panel on robot	10	70	
71. Robot welds rear panel		71	Robot welds rear panel	10	71	
72. Robot moves rear panel		72	Robot moves rear panel	10	72	
73. Pick up rear panel		73	Pick up rear panel	10	73	
74. Place rear panel on robot		74	Place rear panel on robot	10	74	
75. Robot welds rear panel		75	Robot welds rear panel	10	75	
76. Robot moves rear panel		76	Robot moves rear panel	10	76	
77. Pick up rear panel		77	Pick up rear panel	10	77	
78. Place rear panel on robot		78	Place rear panel on robot	10	78	
79. Robot welds rear panel		79	Robot welds rear panel	10	79	
80. Robot moves rear panel		80	Robot moves rear panel	10	80	
81. Pick up rear panel		81	Pick up rear panel	10	81	
82. Place rear panel on robot		82	Place rear panel on robot	10	82	
83. Robot welds rear panel		83	Robot welds rear panel	10	83	
84. Robot moves rear panel		84	Robot moves rear panel	10	84	
85. Pick up rear panel		85	Pick up rear panel	10	85	
86. Place rear panel on robot		86	Place rear panel on robot	10	86	
87. Robot welds rear panel		87	Robot welds rear panel	10	87	
88. Robot moves rear panel		88	Robot moves rear panel	10	88	
89. Pick up rear panel		89	Pick up rear panel	10	89	
90. Place rear panel on robot		90	Place rear panel on robot	10	90	
91. Robot welds rear panel		91	Robot welds rear panel	10	91	
92. Robot moves rear panel		92	Robot moves rear panel	10	92	
93. Pick up rear panel		93	Pick up rear panel	10	93	
94. Place rear panel on robot		94	Place rear panel on robot	10	94	
95. Robot welds rear panel		95	Robot welds rear panel	10	95	
96. Robot moves rear panel		96	Robot moves rear panel	10	96	
97. Pick up rear panel		97	Pick up rear panel	10	97	
98. Place rear panel on robot		98	Place rear panel on robot	10	98	
99. Robot welds rear panel		99	Robot welds rear panel	10	99	
100. Robot moves rear panel		100	Robot moves rear panel	10	100	



LEAN TOOLS – LEADER STANDARD WORK

WHY?

Ensures leader time is spent coaching team members and challenges daily activities

WHY ELSE?

Checks if the leader has missed any tasks

HOW?

Follow "A Day In The Life" and develop a timeline current state
Create a future state "Day In The Life"
Use a Standard Work Sheet
Lead by example using visual tools (eg kamishibai)

		LEADERS STANDARD WORK											
		STANDARD WORK	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	WEEKLY	WEEKLY	WEEKLY	
										1-5	6-7	8-9	
LEADER		MAN POWER											
TEAM LEADERS		EQUIPMENT RELIABILITY											
		PRODUCTION PLAN REVIEW											
		TOOLBOX MEETINGS											
		SAFETY / PPE REVIEW											
		5S											
		PICK OPERATOR											
		PERFORMANCE RESULTS											
		KAIZEN MEETING											
		PRODUCTION PLAN REVIEW											
		DAILY PRODUCTION REPORT											
		PERFORMANCE RESULTS											
		START/SHUT DOWN CONTROL											
		MOCK MEETING											
		OWN REPORT											
		OWN REPORT											
		KAIZEN											
		JOB OBSERVATION											
		5S											
		KAIZEN											
		JOB OBSERVATION											
		5S											
		OWN REPORT											
MANUFACTURING ENGINEER													



LEAN TOOLS – KAMISHIBAI BOARD (TEE CARDS BOARD)

WHY?

For a manager, the proper use of a Kamishibai is to train your eyes to see problems (deviations from the standard), and teach others to see and solve these problems.

WHY ELSE?

The visual checklist is simple to be followed.
It's also easy to audit the tasks.

HOW?

Define the tasks
Label the cards and layout
Check and Adjust



LEAN TOOLS – ERROR PROOFING

WHY?

Prevent errors and incomplete work
delaying the next process

WHY ELSE?

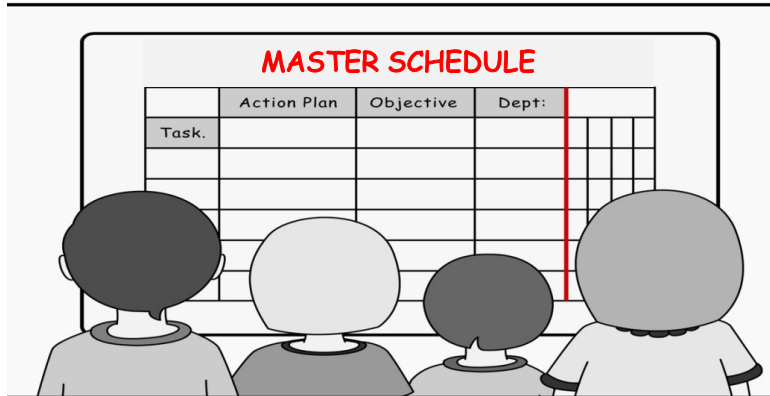
Rework and delay is not good for
morale

HOW?

Forms, checks, single / linked data
source, simplify, checklist, visual
management



7. PLAN ACTIONS AND ENGAGE ALL STAKEHOLDERS



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Source: "Getting The Right Things Done," Pascal Dennis
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LEAN TOOLS – A3

WHY?

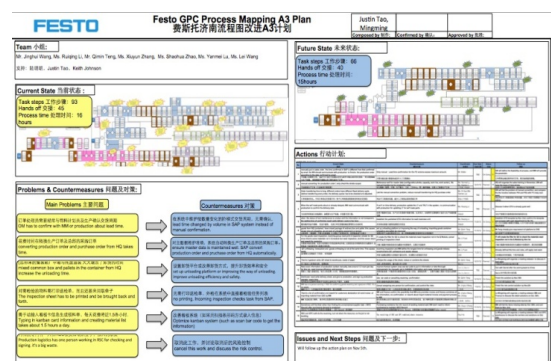
A story telling approach to planning
A3 thinking is the antidote to common communication

WHY ELSE?

Provides organizational alignment
through simple, visual communication

HOW?

Background, current state, target,
analysis, future state, action plan,
metrics



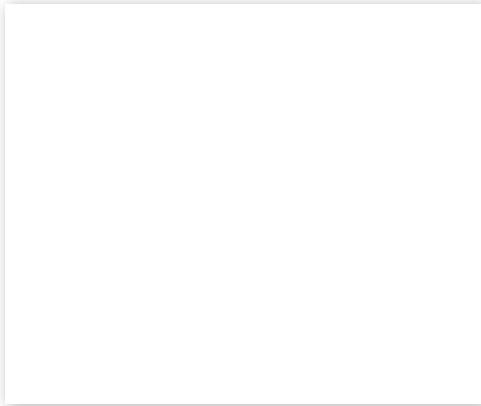
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8. WHAT ARE THE BENEFITS OF THE FUTURE STATE?



- Why would we do this?
- What are the benefits?
- What are the benefits to the business?
- What are the benefits to the benefits?
- How do we measure success?
- How will the business Directors quantify this benefit?
- Is the resource we have committed enough?

9. SHARE AND IMPROVE EVERY DAY

- Visual meetings
- Daily problem solving
- Event Kaizen



LEAN TOOLS – VISUAL MEETINGS

WHY?

Identify problems

WHY ELSE?

Focus on achieving value stream map

HOW?

Hand drawn on laminated templates



LEAN TOOLS – DAILY PROBLEM SOLVING

WHY?

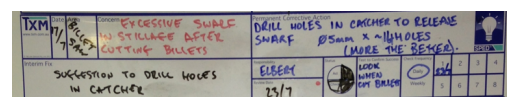
Short forum to decide actions to resolve problems

WHY ELSE?

Communicates to all and instills a Plan – Do – Check – Act culture
Share problem solving thinking

HOW?

Daily 10-15 minute meeting
Hand write using whiteboard



LEAN TOOLS – EVENT KAIZEN

WHY?

Rapid implementation of incremental improvement

WHY ELSE?

Rapid decision making

Decision making at the lowest possible level.

HOW?

Follow Plan-Do-Check-Act method.

Highly action oriented.

Guidelines to “listen, just do it, fix it up later”

Plan



Do



Check & Act



FUTURE STATE MAP

- Reduce lead time
- Create “Flow”
- Less waste
- Less inventory and WIP
- Better customer service
- Better use of people’s time





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