



LEA Webinar

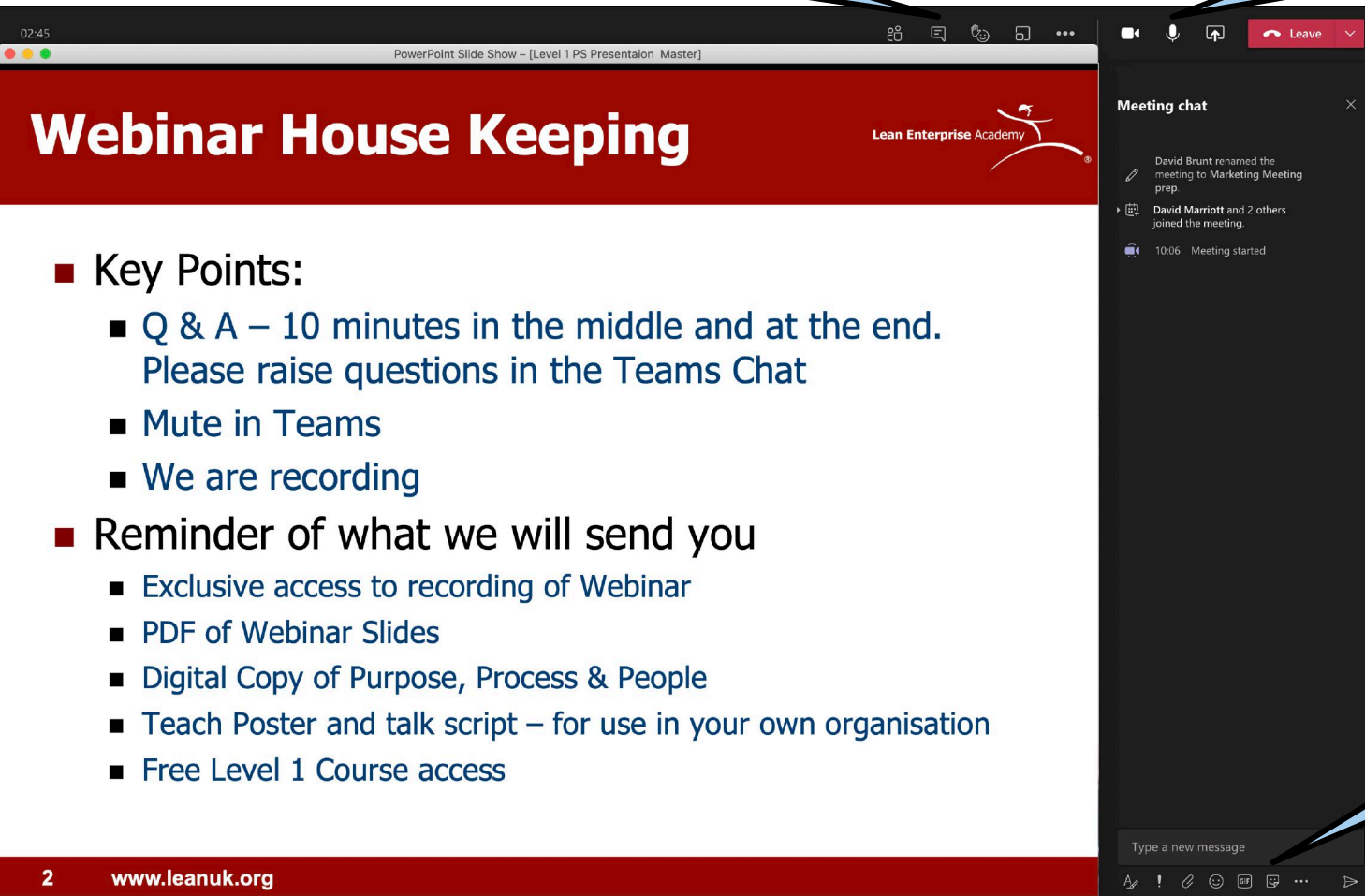
Lean A3 Problem Solving

D.Brunt, D.Marriott, P.Watkins
March 10th 2021

Webinar House Keeping

To ask a question click
to open the chat


Please check you are
muted



The screenshot shows a Teams meeting interface. On the left, a PowerPoint slide titled "Webinar House Keeping" is displayed, featuring the Lean Enterprise Academy logo. The slide content includes a list of key points and a reminder of what will be sent to attendees. On the right, a Teams chat window is open, showing a "Meeting chat" header and a list of messages. A "Leave" button is visible at the top of the chat window. A "Type a new message" input field is at the bottom of the chat window.

02:45 PowerPoint Slide Show – [Level 1 PS Presentaion Master]

Webinar House Keeping

Lean Enterprise Academy 

- Key Points:
 - Q & A – 10 minutes in the middle and at the end. Please raise questions in the Teams Chat
 - Mute in Teams
 - We are recording
- Reminder of what we will send you
 - Exclusive access to recording of Webinar
 - PDF of Webinar Slides
 - Digital Copy of Purpose, Process & People
 - Teach Poster and talk script – for use in your own organisation
 - Free Level 1 Course access

Meeting chat

David Brunt renamed the meeting to Marketing Meeting prep

David Marriott and 2 others joined the meeting.

10:06 Meeting started

Type a new message

Type question
here

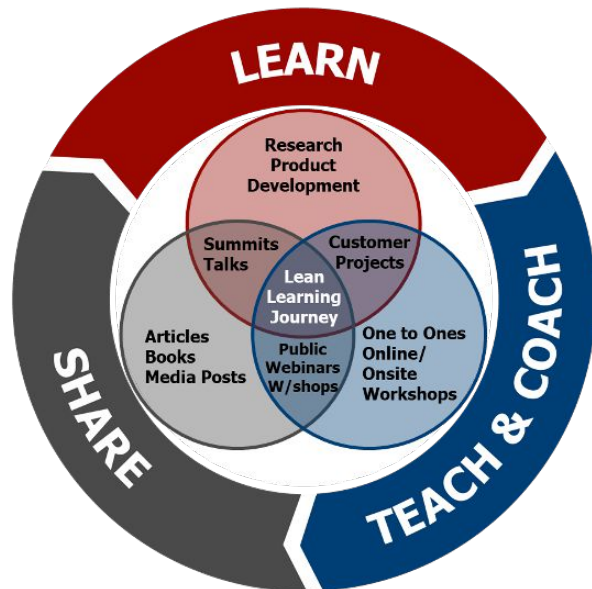
LEA - Purpose & Approach

Our Purpose:

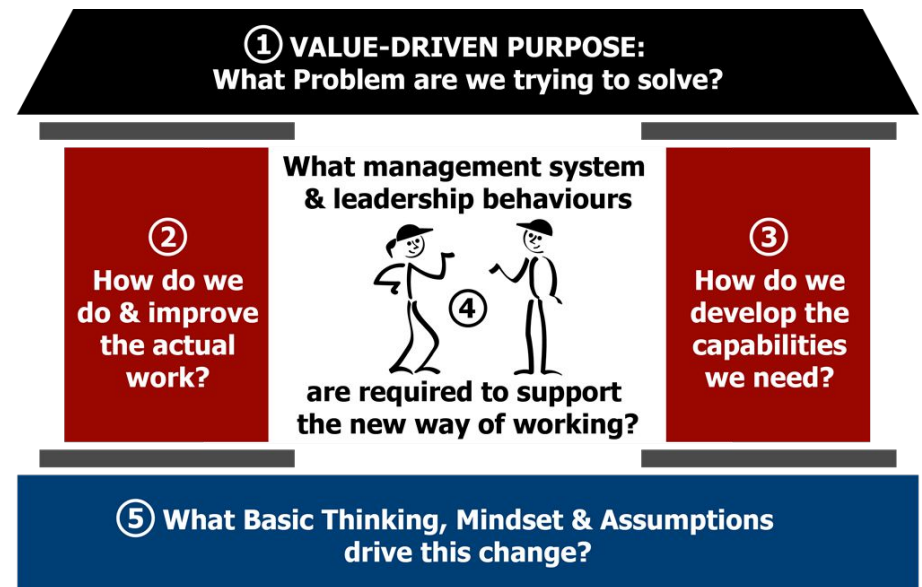
We are a not for profit organisation, established to help customers become self-reliant on their lean journey. Through research, products and services we provide better, faster and cheaper ways to learn and improve.

Our Approach:

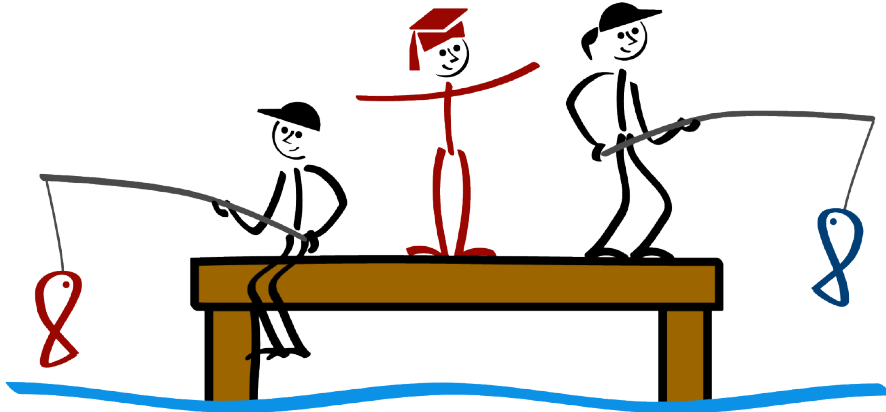
SELF RELIANT CUSTOMERS



LEAN TRANSFORMATION FRAMEWORK

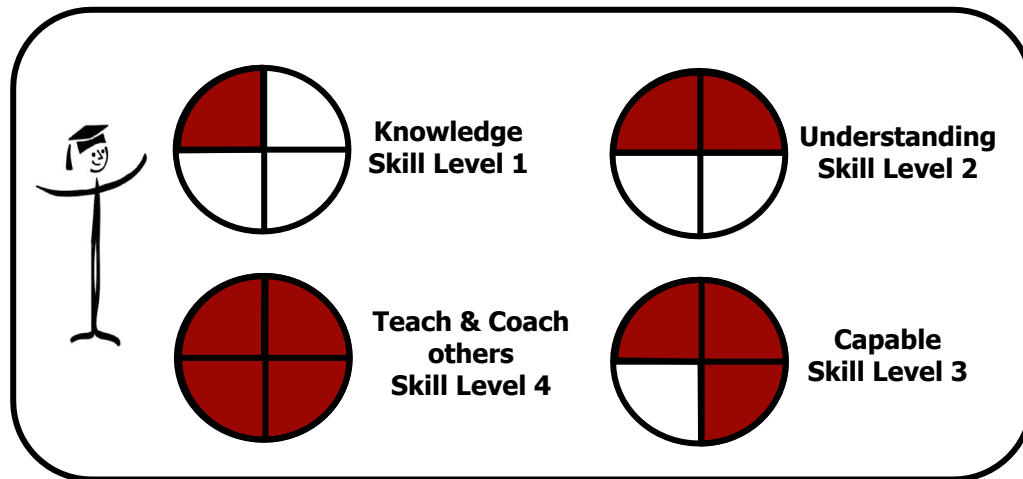


LEA - Learning Lean



*"Give a man a fish and you feed him for a day. **Teach** him how to fish and you feed him for a lifetime"*
– Lao Tzu

Skill Development – 4 Levels

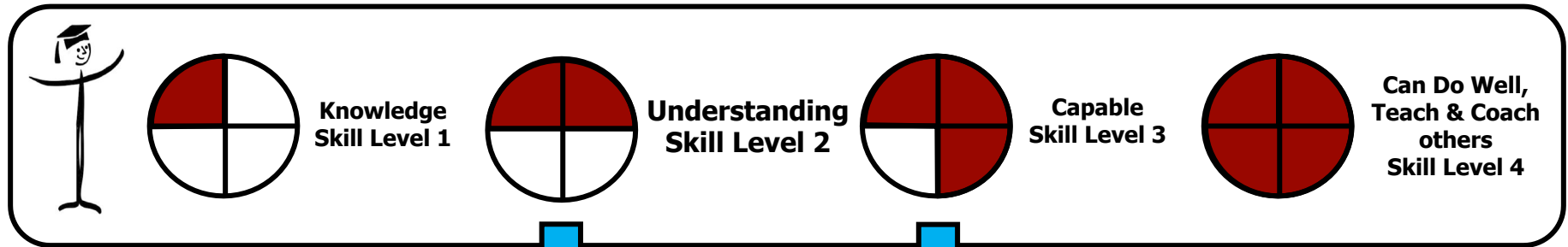


Online/On Site Support

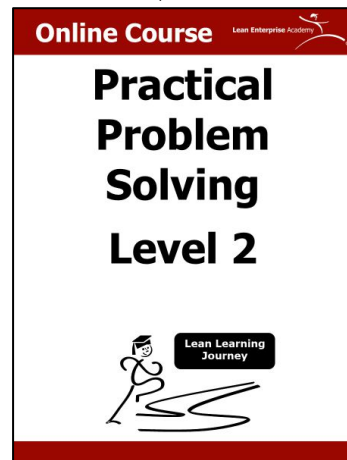
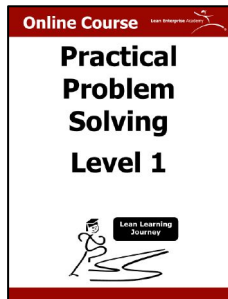


What is your Lean Journey?

Lean Learning Journey – Skill Levels



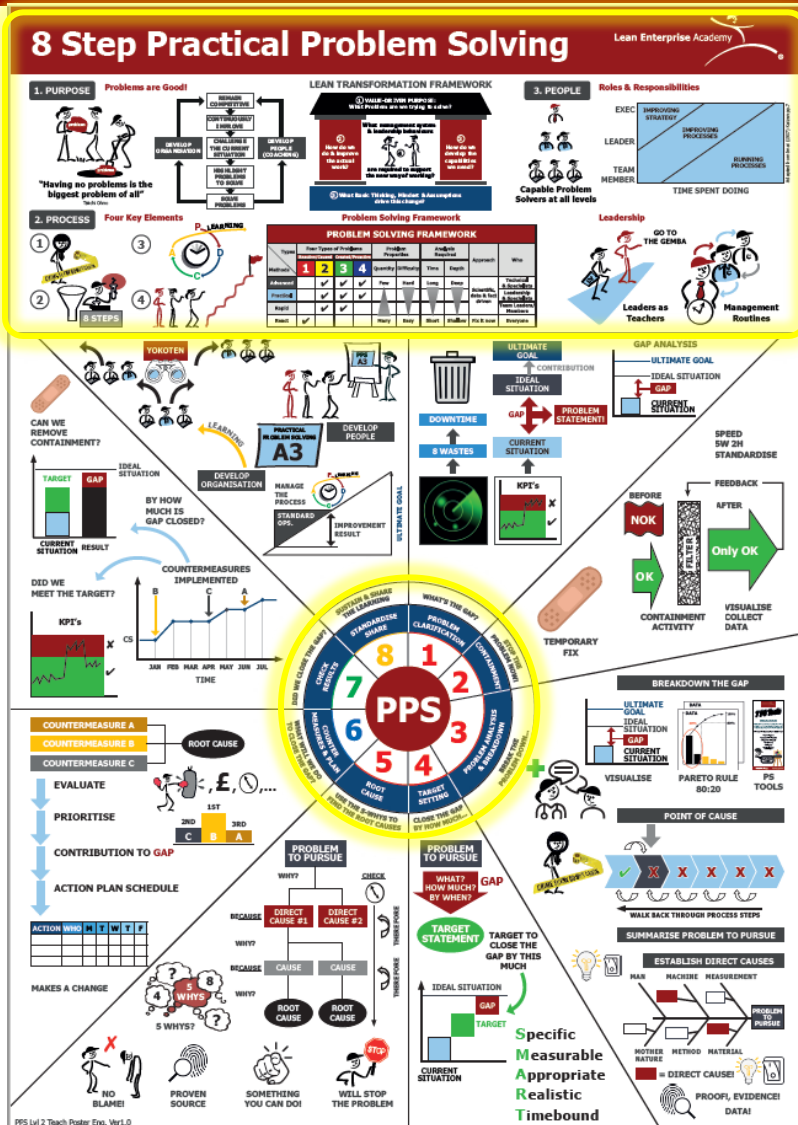
Today



- You must practice.
- We Offer online Teaching and Coaching of A3 Practical Problem Solving.
- Become capable of solving your own problems!

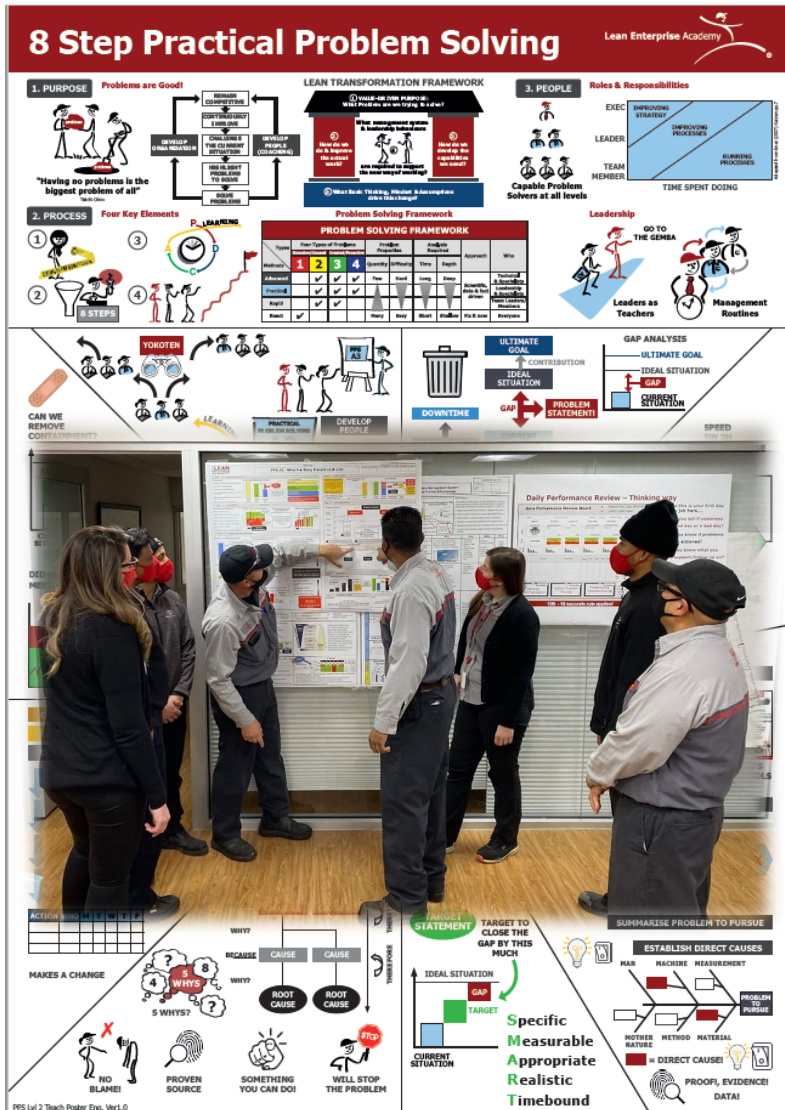
PPS Understanding Level 2 Online Course Available at www.leanuk.org/Lean Learning Journey

Problem Solving – Agenda



- **Agenda**
- **Teach Poster Concept**
- **Introduction to Problem Solving**
 - Purpose
 - Process
 - People
- **Q & A**
- **Overview of the 8 Steps**
- **PPS A3's**
- **Understanding the 8 Steps – Level 2**
- **Summary/Q & A**

Teach Poster Concept



8 Step Practical Problem Solving Lean Enterprise Academy

1. PURPOSE Problems are Good!

2. PROCESS Four Key Elements

3. PEOPLE Roles & Responsibilities

4. YOKOTEN CAN WE REMOVE COMPLEXITY?

5. 5 WHYS NO BLAME!

6. TARGET STATEMENT TARGET TO CLOSE THE GAP BY THIS MONTH

7. GAP ANALYSIS ULTIMATE GOAL vs IDEAL SITUATION vs PROBLEM STATEMENT

8. ESTABLISH DIRECT CAUSES MAN, MACHINE, MEASUREMENT, METHOD, MATERIAL, MOTHER NATURE

Problem Solving Framework Table:

Problem Solving Framework	1	2	3	4	5	6	7	8	9	10	11	12
Problem	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Analysis	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Do	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Check	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Act	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Problem Solving Framework Diagram:

Problem Solving Framework: Problem Statement, Analysis, Plan, Do, Check, Act

Daily Performance Review - Thinking 5Y

Specific Measurable Appropriate Realistic Timebound

PROOF, EVIDENCE! DATA!

- **Why do we use a Poster?**
- **Can be taught by leaders in the workplace or online without the need for a training room.**
- **Structured in to defined areas making it easier to remember.**
- **Pictures are remembered easier than words & create more interest and discussion.**
- **A poster can be put up in your workspace for future reference, not hidden on a pc.**

Problem Solving – Introduction

Work through:

1. Purpose
2. Process
3. People

Starting Point:

Lean Transformation Framework

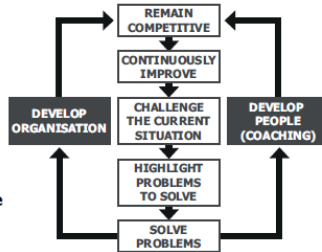
8 Step Practical Problem Solving

1. PURPOSE

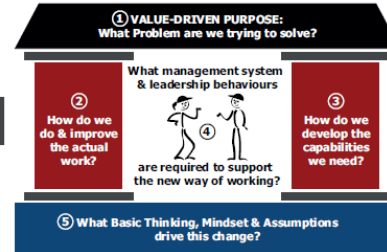
Problems are Good!



"Having no problems is the biggest problem of all!"
Taiichi Ohno



LEAN TRANSFORMATION FRAMEWORK

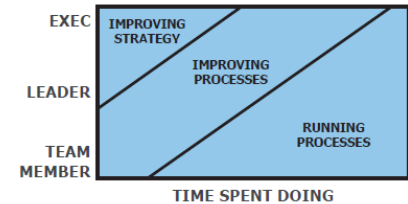


3. PEOPLE

Roles & Responsibilities



Capable Problem Solvers at all levels



Adapted from Time (1987) Kazuo Imai

2. PROCESS

Four Key Elements



Problem Solving Framework

Types	Four Types of Problems				Problem Properties		Analysis Required		Approach	Who
	Reactive/Causal	Created/Proactive	3	4	Quantity	Difficulty	Time	Depth		
Advanced	✓	✓	✓	✓	Few	Hard	Long	Deep	Scientific, data & fact driven	Technical & Specialists
Practical	✓	✓	✓	✓	▲	▼	▼	▼		Leadership & Specialists
Rapid	✓	✓	✓	✓	▲	▼	▼	▼	Fix it now	Team Leaders/ Members
React	✓	✓	✓	✓	Many	Easy	Short	Shallow		Everyone

Leadership



GO TO THE GEMBA

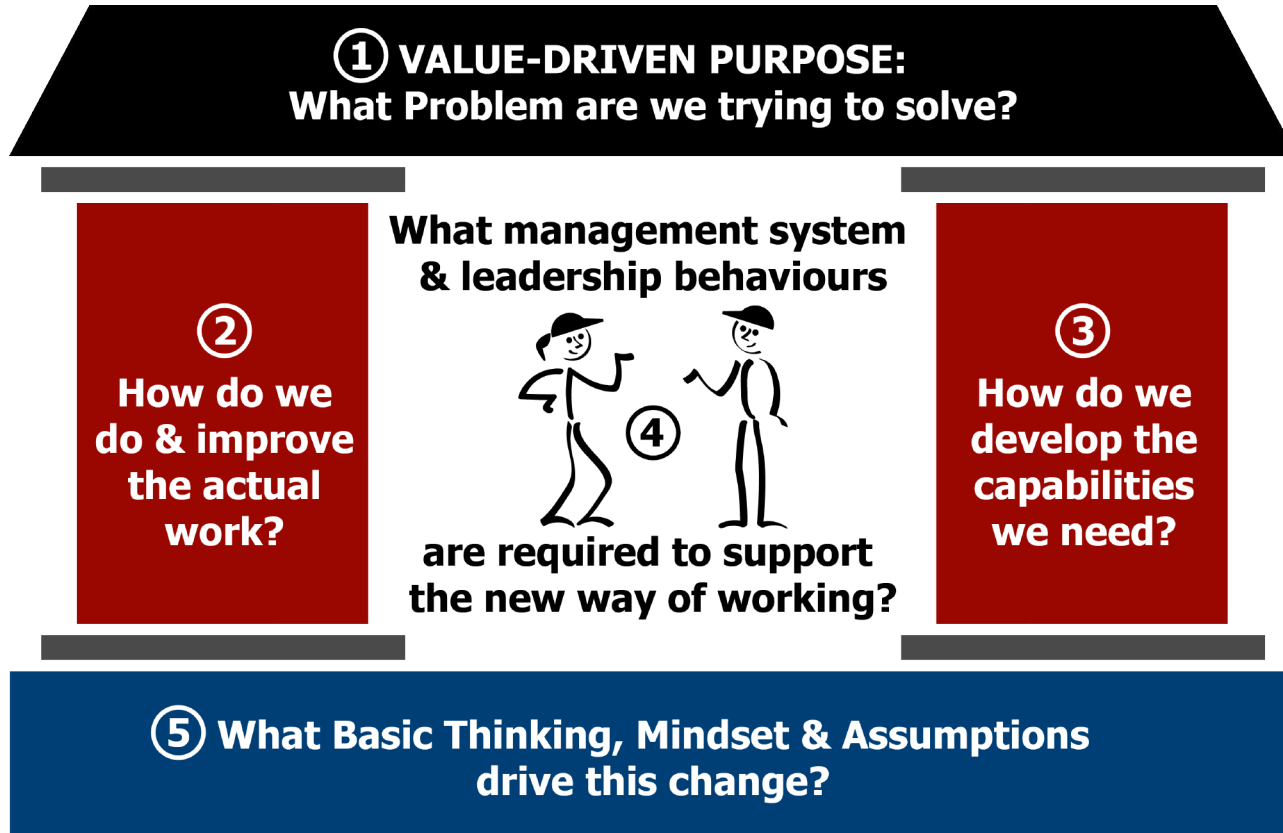
Leaders as Teachers



Management Routines

PPS Lvl 1 Teach Poster Eng_Ver1.0

Problem Solving is the #1 Lean Skill!

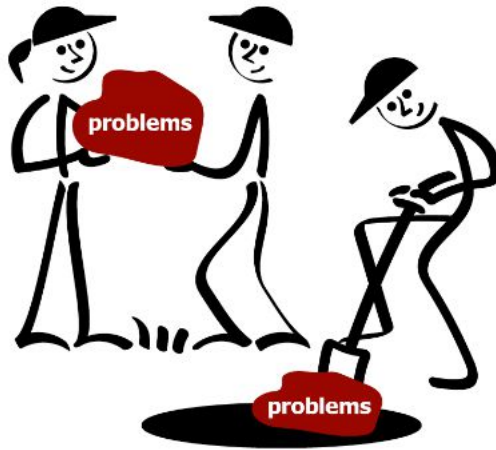


- Go to www.leanuk.org/what-is-lean/working-with-us to see the full LTF video explanation

1.0 Purpose

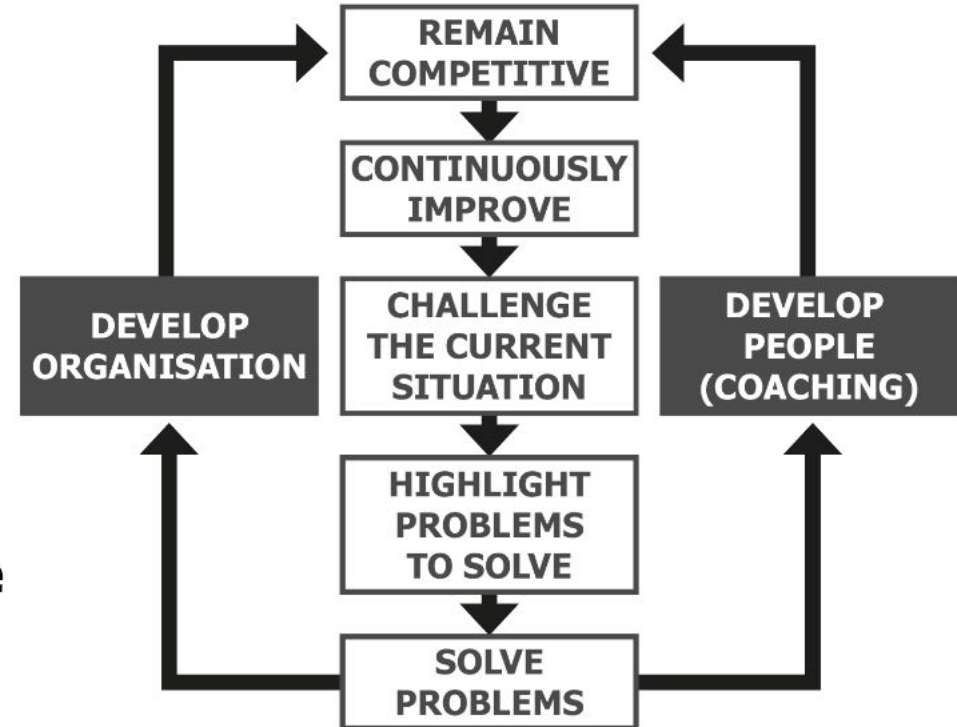
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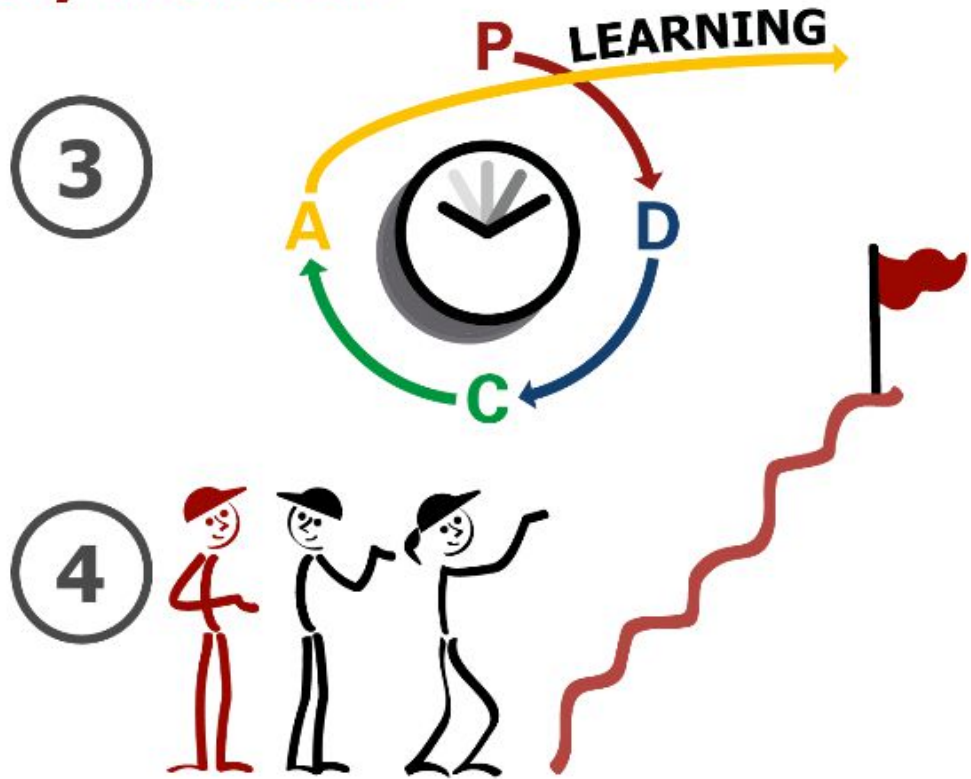
Taiichi Ohno







Supports People and Business Development

2. PROCESS

Four Key Elements



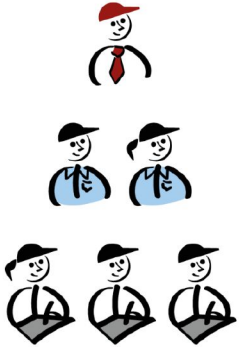
PROBLEM SOLVING FRAMEWORK

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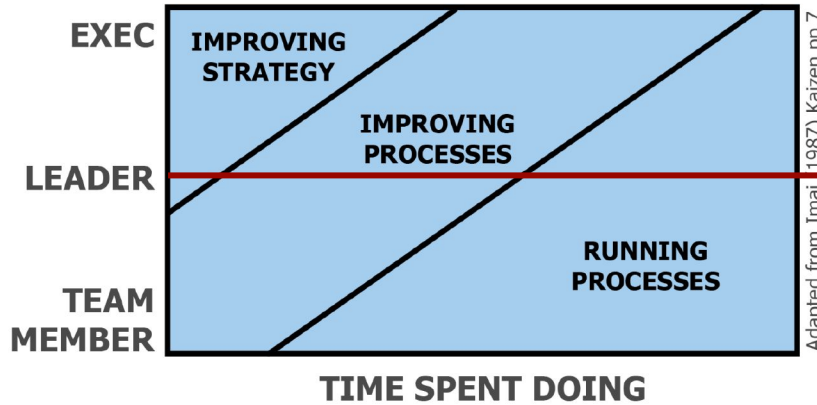
3.0 People

3. PEOPLE

Roles & Responsibilities



Capable Problem Solvers at all levels



What is your Time Spent Doing?

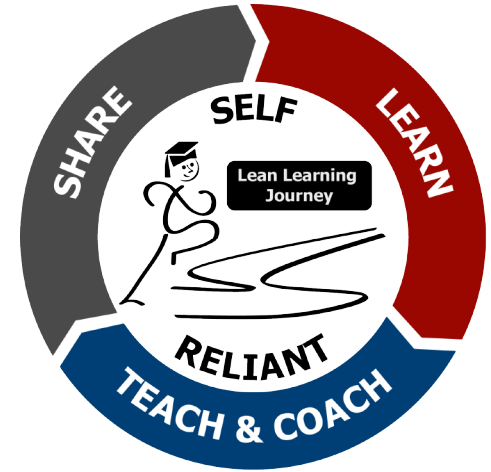
Leadership



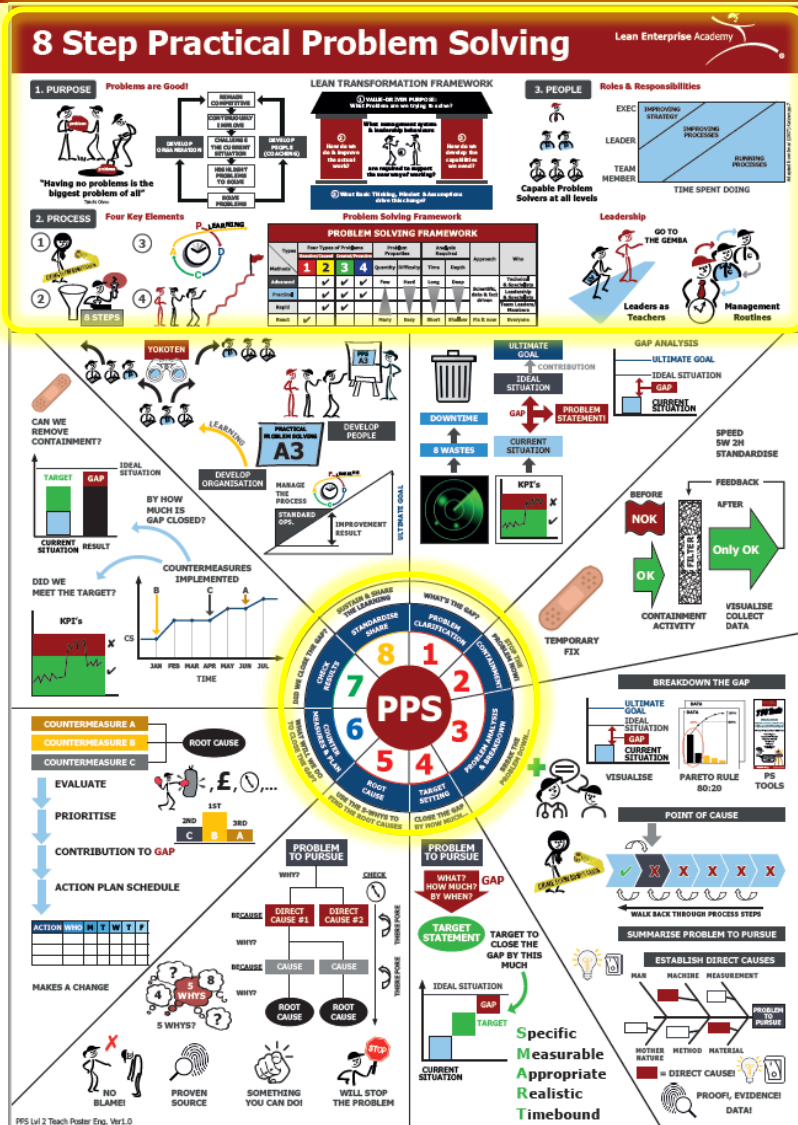
GO TO THE GEMBA

Leaders as Teachers

Management Routines




Problem Solving – Agenda




- Agenda
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 - ✓ People
- Q & A
- Overview of the 8 Steps
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What Questions Do You Have?

8 Step Practical Problem Solving

Lean Enterprise Academy 

1. PURPOSE Problems are Good!



"Having no problems is the biggest problem of all!"
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REMAIN COMPETITIVE

CONTINUOUSLY IMPROVE

CHALLENGE THE CURRENT SITUATION

HIGHLIGHT PROBLEMS TO SOLVE

SOLVE PROBLEMS

DEVELOP ORGANISATION DEVELOP PEOPLE (COACHING)

LEAN TRANSFORMATION FRAMEWORK

① VALUE-DRIVEN PURPOSE:
What Problem are we trying to solve?


② How do we do & improve the actual work?

④ are required to support the new way of working?

③ How do we develop the capabilities we need?

⑤ What Basic Thinking, Mindset & Assumptions drive this change?

3. PEOPLE Roles & Responsibilities



Capable Problem Solvers at all levels

EXEC IMPROVING STRATEGY


LEADER IMPROVING PROCESSES

TEAM MEMBER RUNNING PROCESSES

TIME SPENT DOING


Adapted from Imai (1986) Nelson 1992

2. PROCESS Four Key Elements



① ② ③ ④

P-LEARNING




Problem Solving Framework


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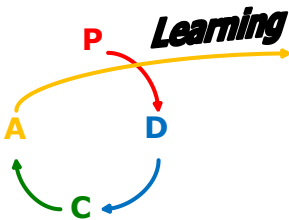
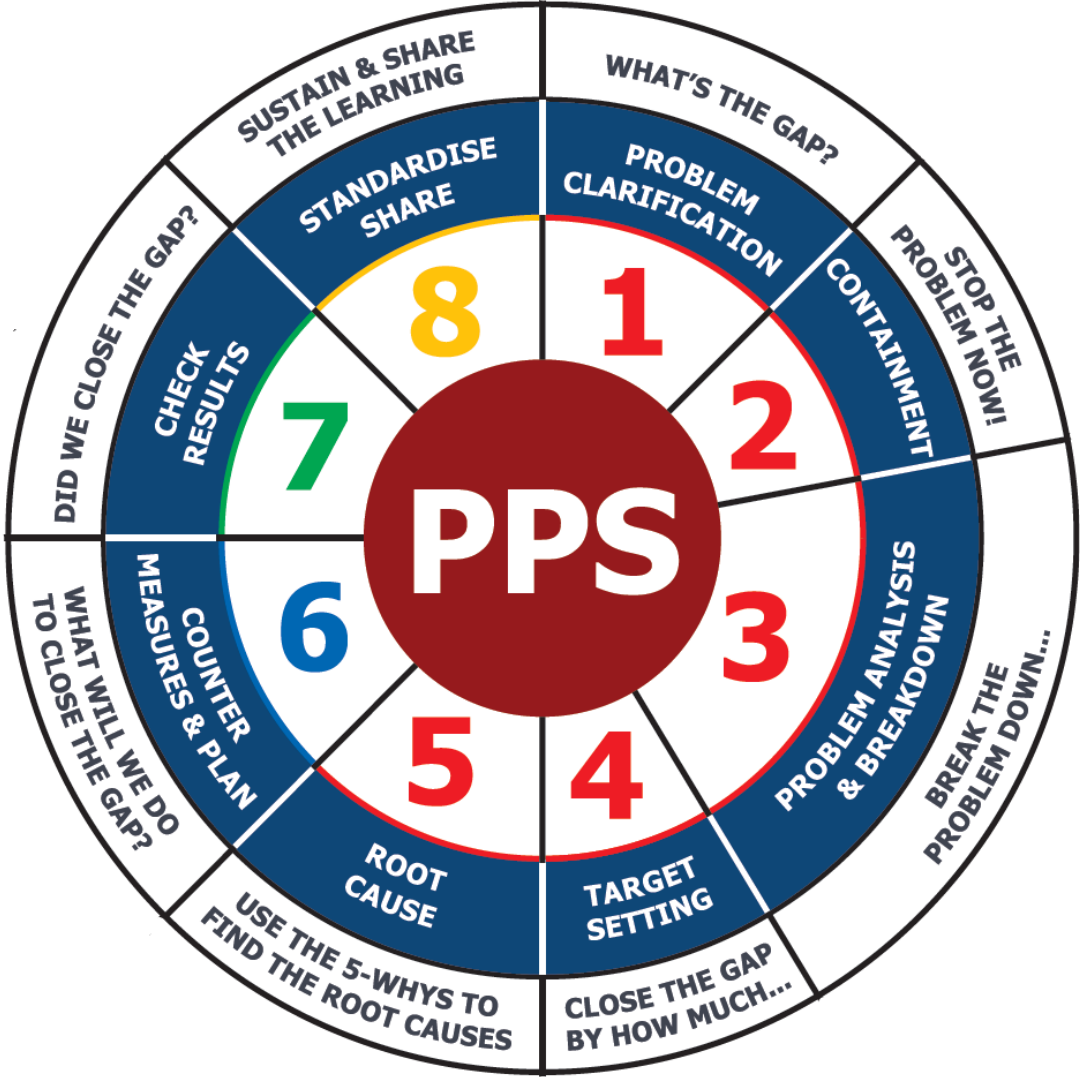


Leaders as Teachers



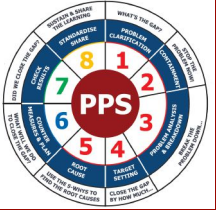
Management Routines

Overview of the 8 Steps

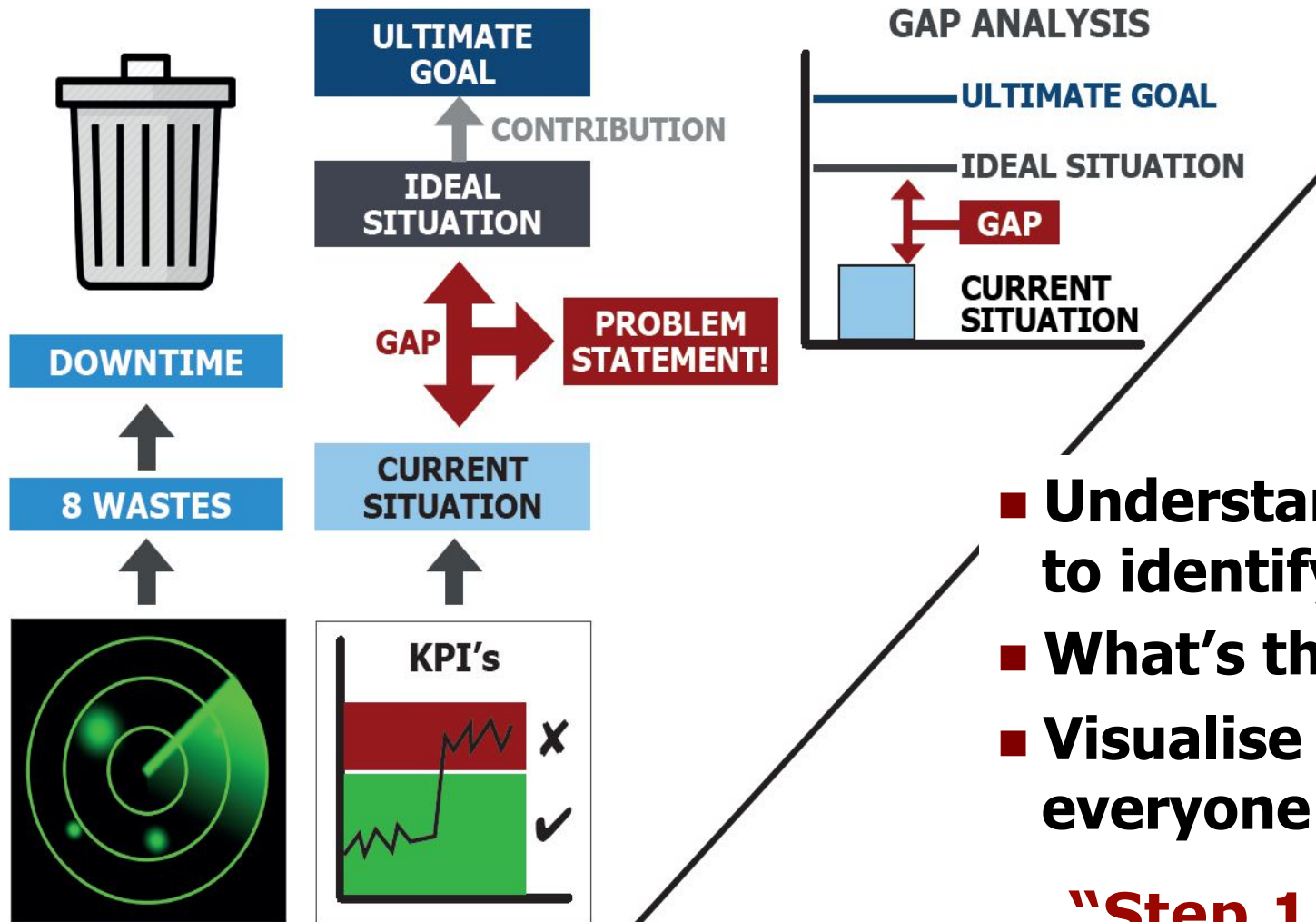


Follows PDCA Thinking

- Time spent **Planning** before **Doing** anything....



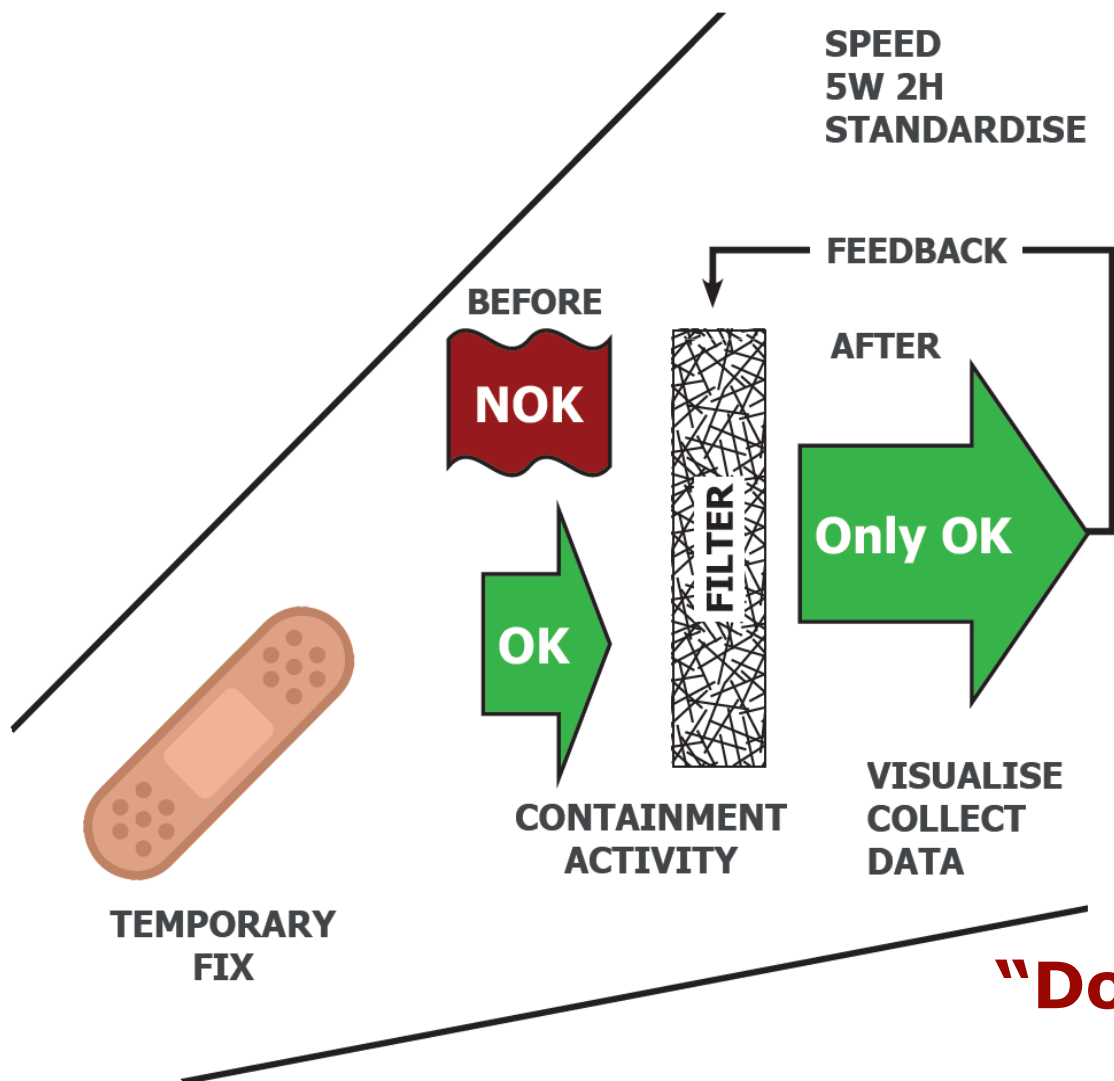
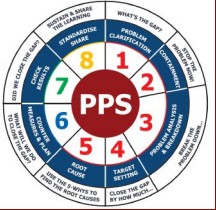
Step 1 – Problem Clarification



- Understand Waste to identify Problems
- What's the GAP ?
- Visualise the GAP so everyone is aligned

“Step 1 is Key”

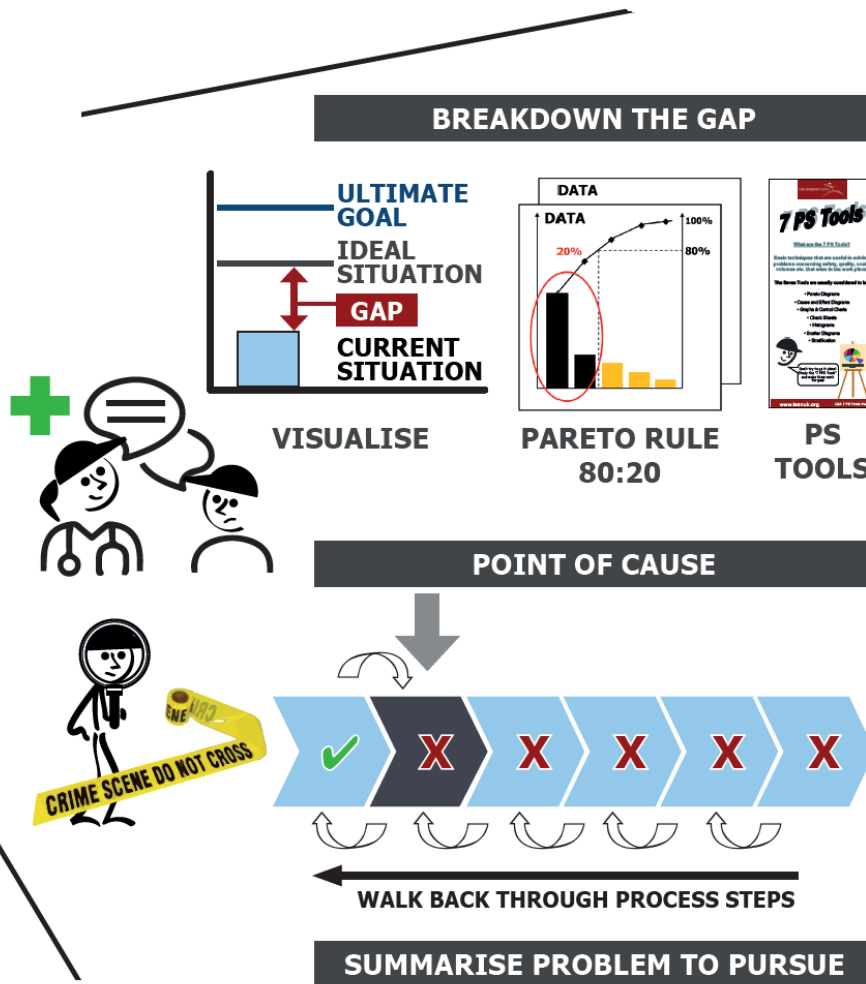
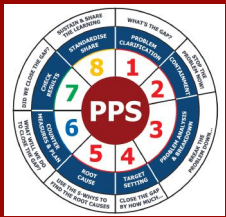
Step 2 – Containment



- Stop the bleeding
- Protect the customer
- Understand the problem better

“Don’t stop after Step 2 Containment”

Step 3 – Problem Analysis & Breakdown

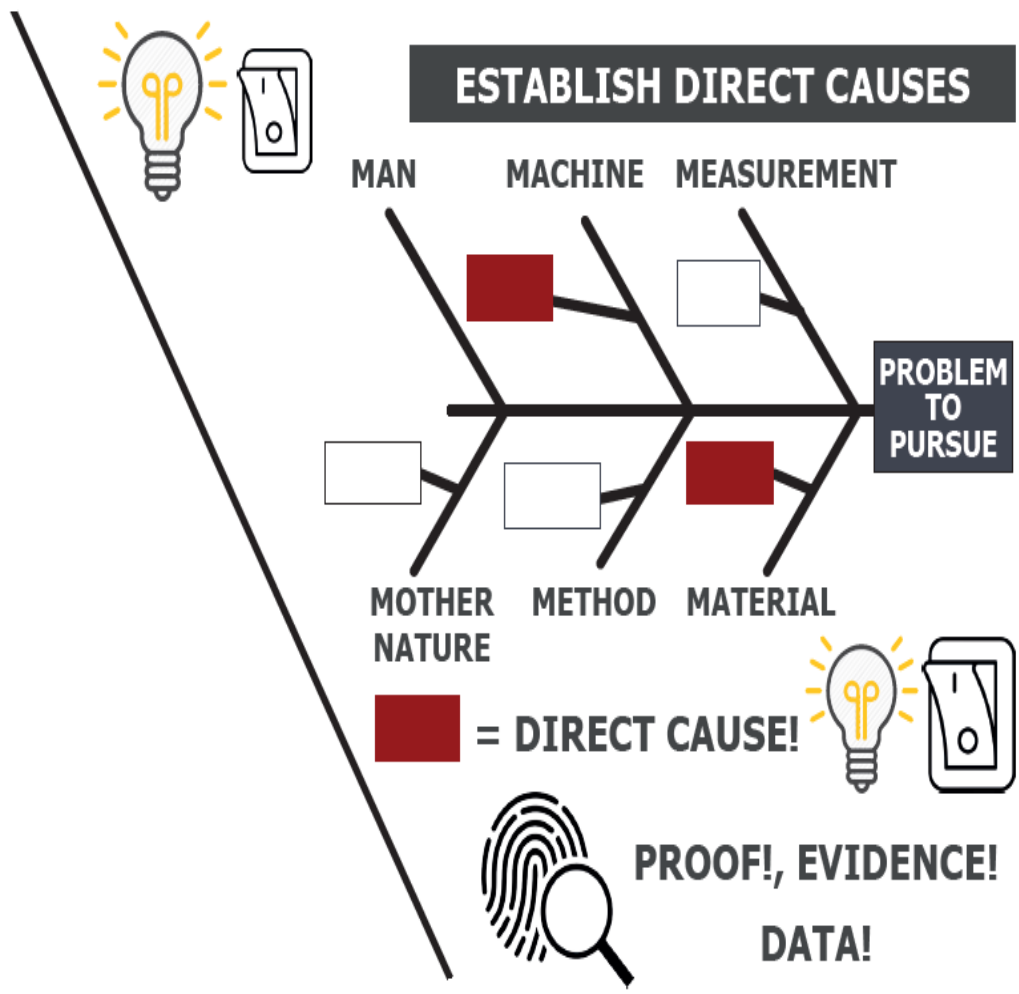


- Start with **GAP** from step 1
- Breakdown the large vague problem with data
- Prioritise the biggest contributing causes
- Go Study for yourself
- Problem to Pursue - What, When, Where,

“Define the Problem to Pursue”



Step 3 – Problem Analysis & Breakdown

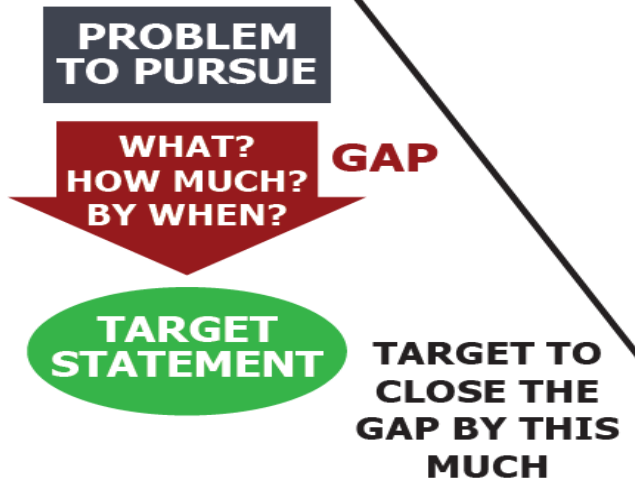


- **Establish Direct Causes of Problem to Pursue**
- **Can use Fishbone diagram as brainstorm framework**
- **Must Prove with Data**

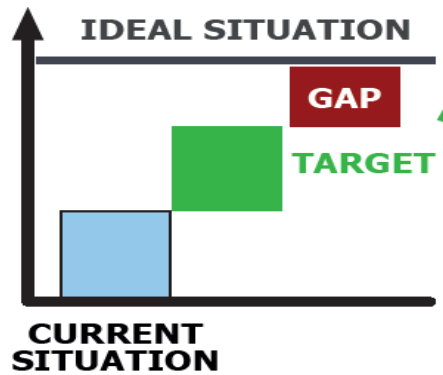
“Prove Cause & Effect”



Step 4 – Target Setting



- Set Target against Problem to Pursue
- Ensure it's SMART
- Understand the impact on the GAP



Specific
Measurable
Appropriate
Realistic
Timebound

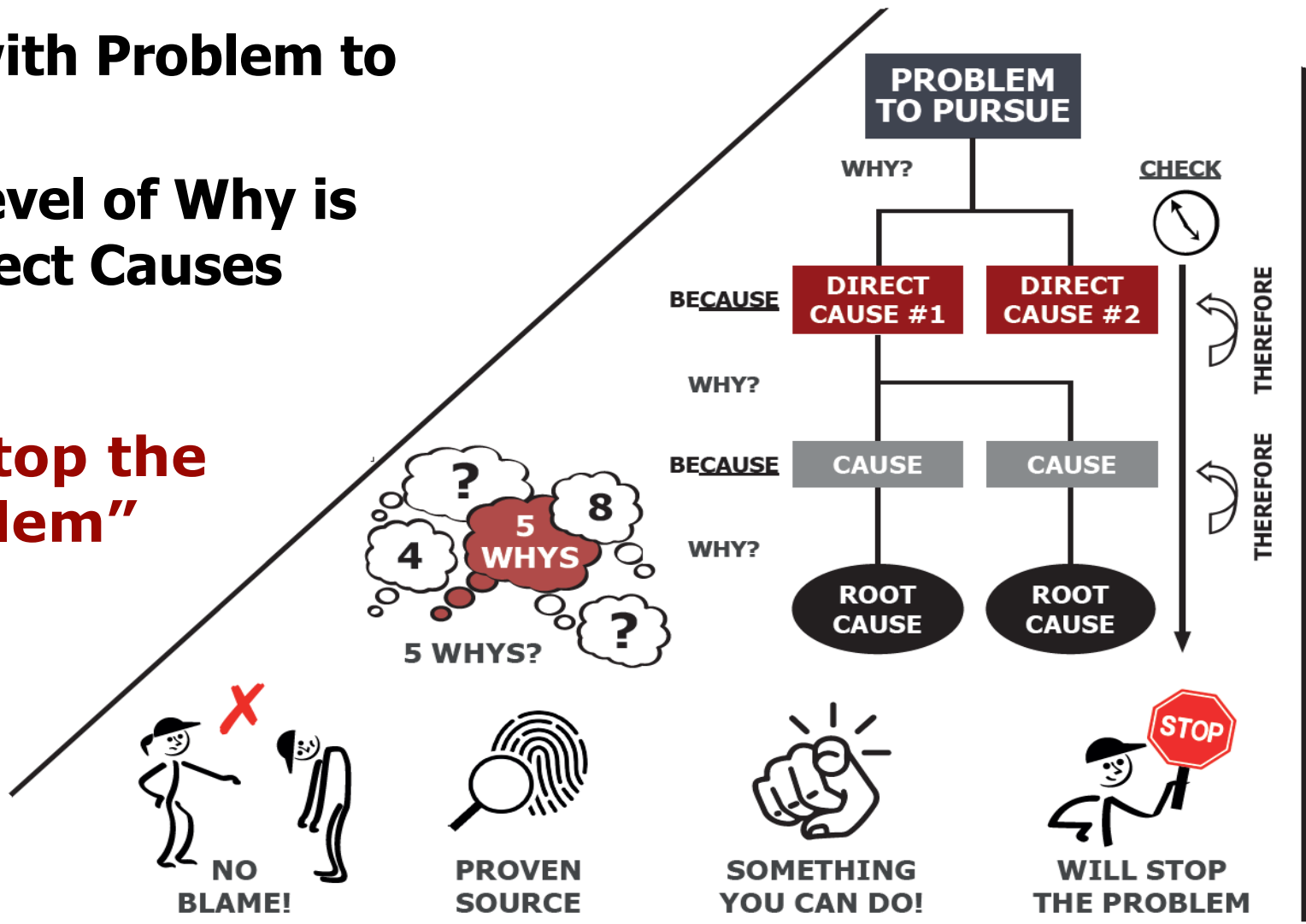
“Be SMART”



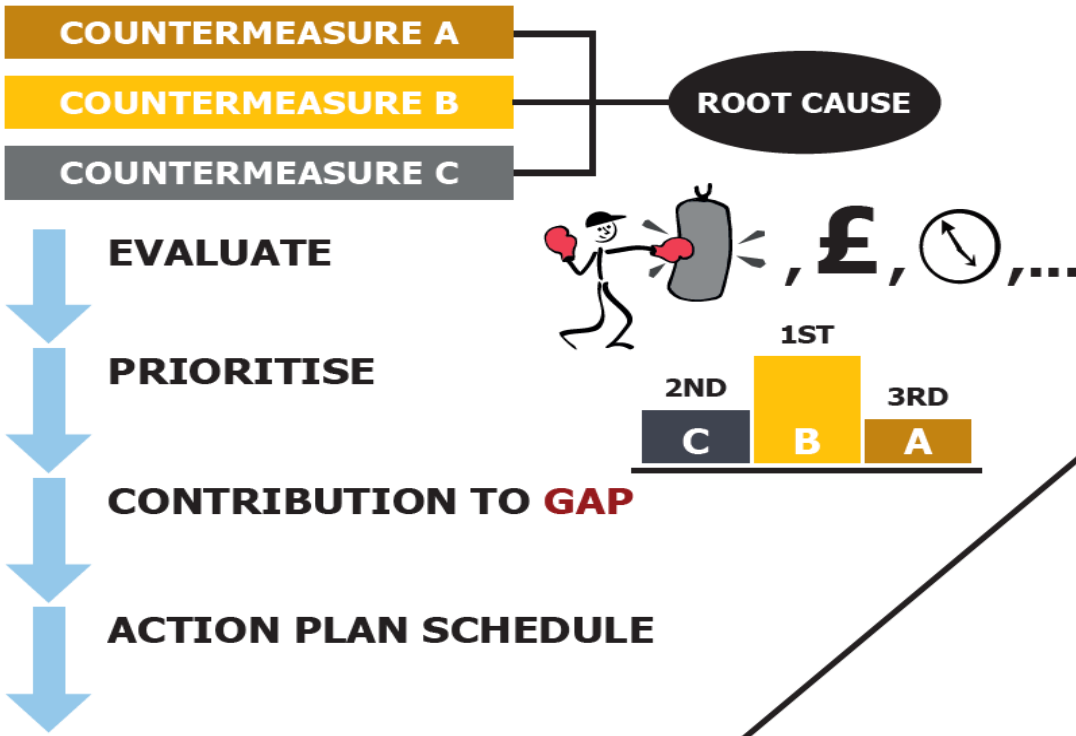
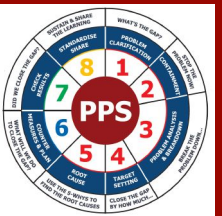
Step 5 - Root Cause

- Start with Problem to Pursue
- First Level of Why is the Direct Causes

“Will Stop the Problem”



Step 6 – Countermeasures & Plan



- Countermeasures aligned to specific to root causes
- Alternative Ideas
- Evaluate & prioritise
- Make a change
- PDCA process for each countermeasure

ACTION	WHO	M	T	W	T	F

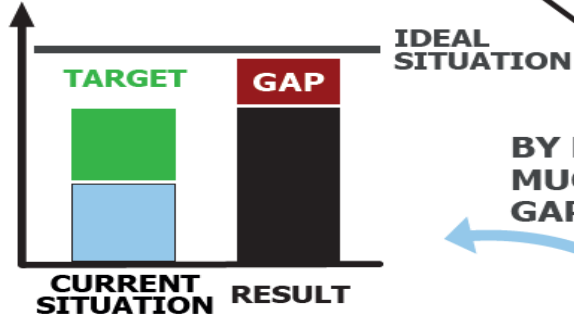
“See Countermeasures through” with speedy action together as a team

MAKES A CHANGE

Step 7 – Check Results



CAN WE REMOVE CONTAINMENT?

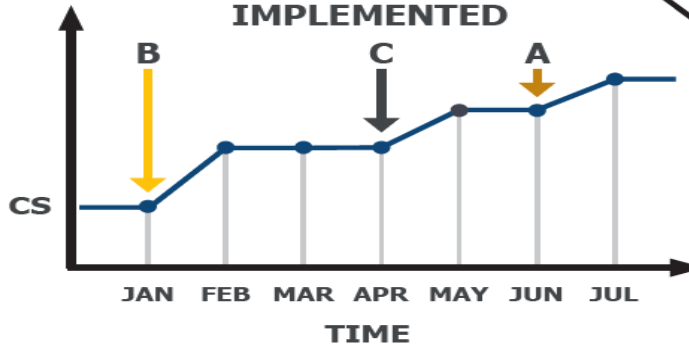


BY HOW MUCH IS GAP CLOSED?

DID WE MEET THE TARGET?



COUNTERMEASURES IMPLEMENTED



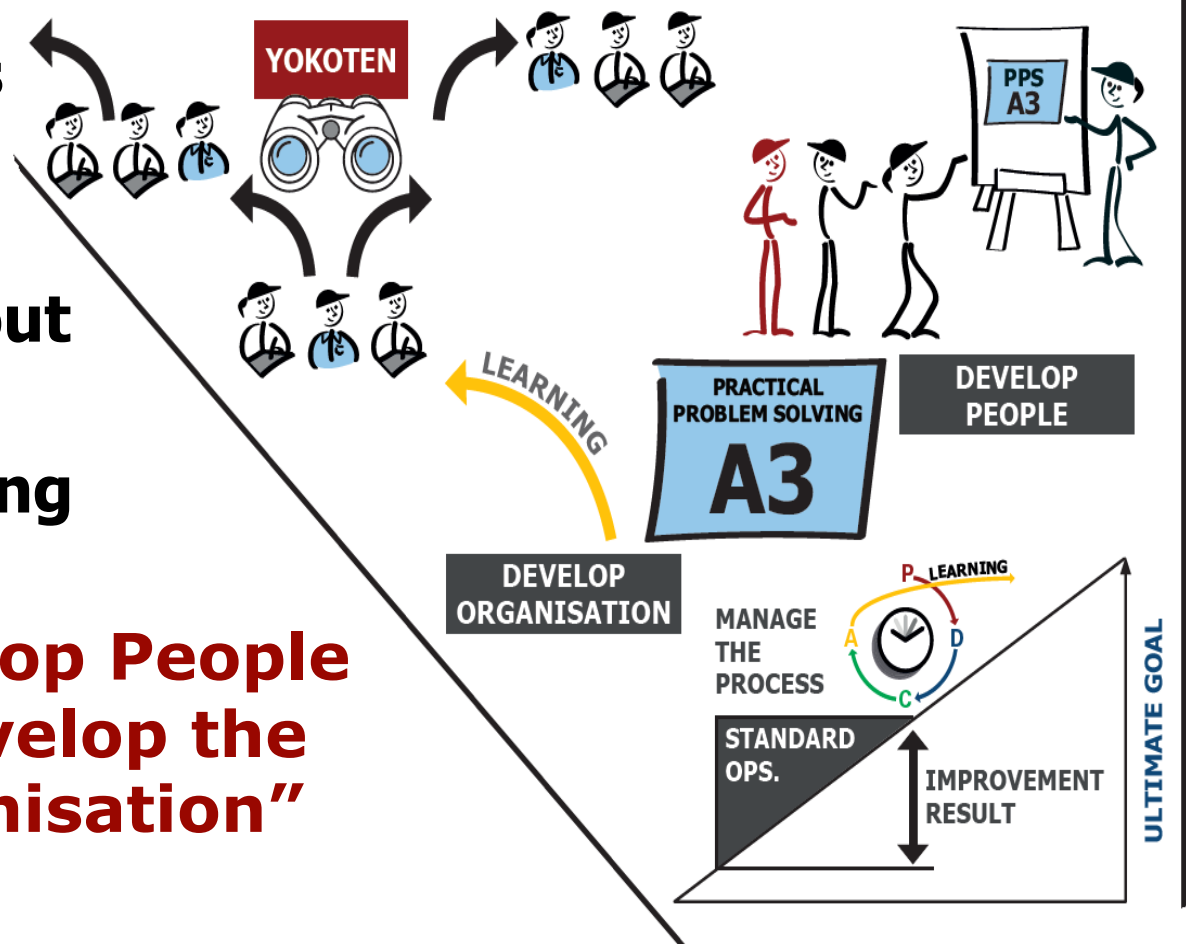
- Did we meet the Target?
- By how did we close the GAP?
- What else do we need to do?

“Can we remove Containment?”

Step 8 – Standardise & Share




- Update Standards to sustain the results
- Yokoten - Share out the Learning
- Summarise thinking using an A3




“Develop People & Develop the Organisation”

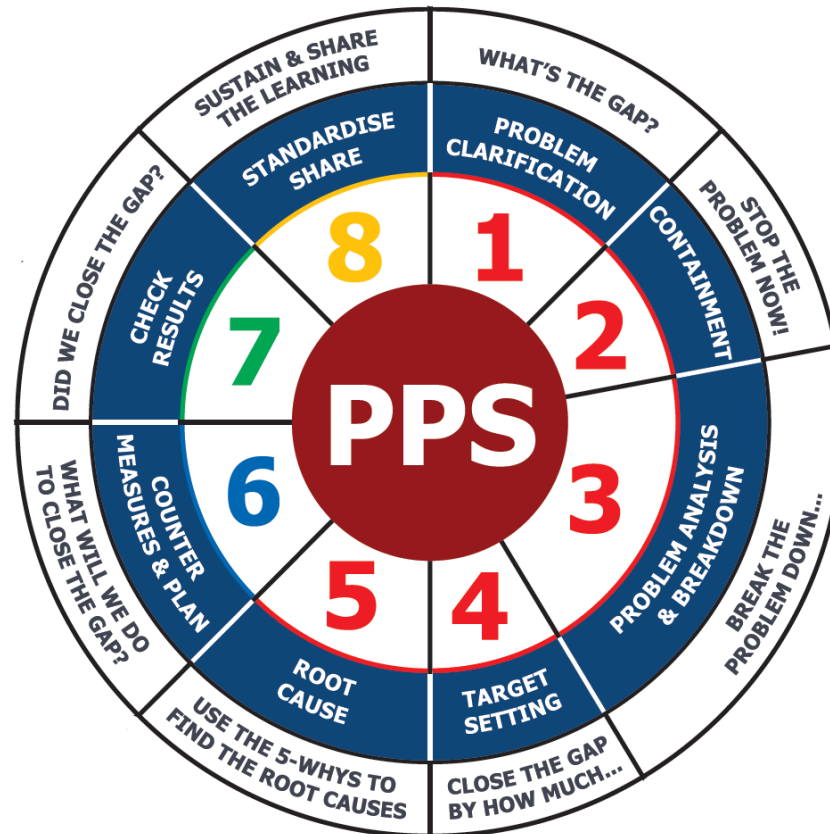
More Detailed PPS Video Overview
Available at www.leanuk.org/Lean Learning

Online Course 

**Overview
8 Step
PPS
Video**

 Lean Learning Journey

What Questions Do You Have?



PPS A3 – 8 Steps

- PPS A3 is how we summarise the problem solving journey.
- All 8 Steps are completed.

Online Course

Lean Enterprise Academy

Practical Problem Solving Level 2

Lean Learning Journey

PPS Title: **Vehicle Operating Costs Reduction**

SITE	PPS LEADER	TEAM MEMBERS	DATE	Signature	Approval
Partline Paris	Michael	Jane, Lisa, Al, Bob, Cyril, Ed, Fran, Terry	8th May	Michael	CWR/125

Step 3: PROBLEM ANALYSIS & BREAKDOWN

1.0 Operating Costs by Period

Period	Cost (EU)
Q2 Last Yr	49439
Q3 Last Yr	50322
Q4 Last Yr	53854
April Actual	57385
April Budget	47306

2.0 Cost Differences by Item - April

Item	Cost Difference (EU)
Repair	7063
Fuel	883
Inspection	0
Consumables	-883
Other	-883

3.0 Monthly Repair Costs by Vehicle Type

Vehicle Type	Last Yr (EU)	April This Yr (EU)
Trucks	~14000	~14602
Forklifts	~2000	~2000
Cars	~1000	~1000
Vans	~500	~500

4.0 Truck Cost by Repair Type In April

Repair Type	Cost (EU)
Accidents	10595
Flat tyres	1766
Parts	883
Others	883

5.0 Time of Truck Accidents During Shift Last Year

Shift	# of Accidents
1st Period	1
2nd Period	2
3rd Period	3
4th Period	3
Normal Shift	12
Overtime	4

6.0 Process Flow - Point of Cause of Truck Accidents Last Year

```

    graph LR
      A[Parked in Fleet Parking Area] --> B[Plant Loading Dock]
      B --> C[In Route to Customer]
      C --> D[Customer Receiving Dock]
      D --> E[In Route with Empties]
      E --> F[In Shop for Maint]
      C --> G[Truck Accidents that occur in route to customers during overtime]
  
```

7.0 Direct Cause Investigation

- Green: Potential Cause Investigated & Confirmed OK
- Yellow: Potential Cause Investigated, Confirmed as a Contributor
- Red: Potential Cause Investigated & Confirmed as Direct Cause

8.0 Driver Recruitment & Training Process Check Result

Process Step	Status
Recruiting	OK
Hiring & Selection	OK
Initial Training	OK
Safety Training	OK
Scheduling & Assignments	OK
Ongoing Training	OK
Assessment & Rectification	OK

Summary of Problem to Pursue


Truck accidents that occur in route to customers during overtime

Direct Causes:


- Lack of skilled & experienced operators
- Working hours too long

PPS A3 – What Good Looks Like

- PPS A3 What the Story Should Look like .
- Visual guidance on creating an A3 PPS Story.

Online Course 

Practical Problem Solving Level 2

Lean Learning Journey 

Title		PPS A3 - What the Story Should Look Like			DATE	PPS LEADER	TEAM MEMBER	DATE	Signature	Approval
Step 1	PROBLEM STATEMENT	Step 3	PROBLEM ANALYSIS & BREAKDOWN							

1.0 Background

- Background information about the problem
- You and your responsibilities
- The scope of the subject/problem
- Why am I tackling this problem as important?
- Where does the Ideal Situation or Goal come from?
- What is the impact to the business

Step 2 CONTAINMENT

Containment Activity (SW, 2H):

What: What is the activity?

When: When is the start date and finish date?

Where: Where will the activity be done?

Who: Who will be involved (name, title)?

Why: What is the purpose of the activity?

How: How will it be done?

How much: What do you expect to achieve?

Step 3 PROBLEM ANALYSIS & BREAKDOWN

Breakdown the Current Situation or Gap

Use Callouts to explain what you concluded from the data.

Next level of breakdown, keep going until you have broken the problem down

Use data and facts to determine:

- What is the problem you are going to tackle?
- When is it happening?
- How is it happening?
- How much of the gap is it contributing to?

Breakdown key points:

- Pareto 80:20 rule
- Collect data if you don't have it
- Use the Problem Solving Tools to analyse the data
- State what the data is telling you!
- Summarise the Problem to Pursue

Point of Cause (PoC) - Where is the Problem happening

Process Steps

Point of Cause

Point of Cause key points:

- Walk back through the process steps
- Go and see for yourself
- Find where the problem happens
- Prove with data

Walk back through the process steps

Establish the Direct Causes - What switches the Problem ON and OFF?

- Use a Fishbone Diagram to help structure Potential Causes
- Prove with Data the Direct Causes

Show the Data/Facts/Evidence to Prove the Direct Causes

State how much of the Gap these Direct Causes represent

Summarise the Problem to Pursue

- Short simple statement of the Problem
- What, Where, When, How, How Much

Direct Causes key points:

- Cause/Effect relationship on the problem
- Light switch test! ON/OFF
- Prove with data or by experiment
- They are the first "Why" in Step 5

Summarise the Direct Cause(s)

- Direct Cause 1
- Direct Cause 2

How much of the Gap do they represent

You do not need to show a Fishbone if you can prove it with data already

Check

Root Causes

The "Who and When"

Benefit Summary

Are learning points? Are inside your area and outside Departments, Plants, Regions, etc. Are the benefits? What, when, how much?

- Evaluation Method for PPS A3's.
- Learn how to Teach & Coach PPS & A3's with Us!

Online Course
Practical Problem Solving

PRACTICAL PROBLEM SOLVING (PPS) A3 EVALUATION CRITERIA			
1.0 Problem Clarification		5.0 Root Cause Analysis	
Expected Content	Evaluation Levels	Coaching Questions	Coaching Questions
<ul style="list-style-type: none"> - Background / context / w hy solve this? - Clarify the Ultimate Goal, Ideal and Current Situation - Clear Problem Statement - Gap clearly visualised 	<ol style="list-style-type: none"> The Problem is not clearly stated or clarified. Although the problem is stated it is not clear w hy it is a problem or w hy they are tackling it. Background, gap analysis and problem statement 	<ol style="list-style-type: none"> Describe the problem to me in your own words? What is the impact of this problem on your area or the business? What w ill be the benefit if w e solve this problem? Where w ould you like to be, in the future say, for this KPI? 	<ol style="list-style-type: none"> Root cause analysis is insufficient/ illogical. Root cause(s) have been specified, but based upon intuition, opinion or pre-conception w/out adequate investigation - w ill not stop the problem.

1.0 Problem Clarification

Expected Content	Evaluation Levels	Coaching Questions
<ul style="list-style-type: none"> - Background / context / w hy solve this? - Clarify the Ultimate Goal, Ideal and Current Situation - Clear Problem Statement - Gap clearly visualised 	<ol style="list-style-type: none"> The Problem is not clearly stated or clarified. Although the problem is stated it is not clear w hy it is a problem or w hy they are tackling it. Background, gap analysis and problem statement (UG,IS,CS) are complete & it is easy to understand w hat the problem is and w hy selected. In addition, broader view s are stated such as impact on the business, organisational strategy. Also, the content is simple, clear and easy to share w ith no explanation. 	<ol style="list-style-type: none"> Describe the problem to me in your own words? What is the impact of this problem on your area or the business? What w ill be the benefit if w e solve this problem? Where w ould you like to be, in the future say, for this KPI? Where should w e be for this KPI? Where are w e currently for this KPI? So, w hat's the difference between the Ideal and Current situation? How does this problem affect other Departments/Customers? What w ould happen if w e did nothing? How did you decide or select this problem? Where does the Ultimate Goal come from?

Expected Content	Evaluation Levels	Coaching Questions
<ul style="list-style-type: none"> - SMART Target Statement. - Clear explanation of by how much the GAP is expected to close by solving the Problem to Pursue (contribution) - GAP closure is clearly visualised. - Target is stated, logical & fulfils the SMART criteria. It is clearly visualised and shows by how much it w ill close the gap and by when. Management and tracking method is clear. - Also, it takes in to account the longer term impact e.g look across potential for the problem/target. - Simple, easy to share and understand by anyone. 	<ol style="list-style-type: none"> Target is stated and visualised but does not connect to the Problem to Pursue/Direct Causes. Target is stated and visualised but does not show by how much it w ill impact on the gap. Target is stated, logical & fulfils the SMART criteria. It is clearly visualised and shows by how much it w ill close the gap and by when. Management and tracking method is clear. Also, it takes in to account the longer term impact e.g look across potential for the problem/target. Simple, easy to share and understand by anyone. 	<ol style="list-style-type: none"> So, tell me w hat your target is going to be? What factors did you consider when setting the target? How much do you expect the target to close the gap by? How did you determine by "how much" and by "w hen"? How do you plan to manage the target? What makes you think that the target is feasible? What w ill be the benefit in the long term if w e achieve the target?

PPS A3 – Evaluation Onsite

TITLE Scrap Reduction SRS Assembly (APU A & B) - PPS A3

PPS NO.	OPEN DATE	CLOSE DATE	SIGN OFF	SIGN OFF
TAT-01	16. Jan. 2017.			

Step 1 PROBLEM STATEMENT

1.0 Background

- 2016 "Scrap % to sales" SPOVC
- In 2016 "Scrap % to sales" reduced 3.21% (2016) by the Plant Scrap R...
- SRS Assembly (APU A, 34 cells) and mechanical are main contributors to 2016 total scrap.
- In 2017 "Scrap % to sales" metric has been replaced by "CoPQ to sales", but its numerator still contains Scrap cost.
- Based on 1.46% CoPQ target for 2017, SRS Scrap % to Products cost targets have been determined.

Step 2 CONTAINMENT

2) Filling out Weekly APU-A scrap reduction weekly meeting (using 2nd & 3rd level analysis from SMART, Go & See)

3) Review of APU-A weekly scrap reduction action lists

How: APU A SRS scrap target: 4.10%
APU B SRS scrap target: 1.8%

Step 3 PROBLEM ANALYSIS & BREAKDOWN

Illustration of 3789 scrap defects and OK welding

CM&P118 (ESD-90 machine)

ESD-90 GADUP Pie chart of scrap reasons

3.3 Direct cause Investigation

3.3.1 Direct cause Investigation

3.3.2 Occurrence

3.3.3 Root Cause

The problem "CM&P118 Defect" is caused by the following root cause:

- 1) 11 (100%) units were 110 defects observed in 11 lots
- 2) 11 (100%) units were 110 defects observed in 11 lots
- 3) 11 (100%) units were 110 defects observed in 11 lots

Step 4 TARGET SETTING

Target State

Eliminating hereby red to 2016 together, to

This should result in a Scrap Cost saving of 16.6M (20.5 - 11.2 + 11.7 - 72.1M), or 0.15% of the 1.12% Gap.

Step 5 ROOT CAUSE ANALYSIS

5.1 Why?

5.2 Why?

5.3 Why?

5.4 Why?

5.5 Why?

Step 6 DEVELOP & PLAN COUNTERMEASURES

1) No any alert of S1 or S3 level approaching S1 or S3.

2) Machine setters don't follow S1 defect stop method when adjusting control panel of welding station.

3) No available UCL and CL lines on the S10 charts.

4) Not available 1st defect stop regulation for ESD-90 machines.

5) S10-3800_1st defect stop regulation for SRS Automated Area' instruction doesn't include ESD-90 machines.

6) Machine setters adjust wire something during starting up the experience / don't setup test station.

7) Inaccurate adjustment of wire something station.

8) Retaining tag level provided in the rubber surface of something it.

9) Smoothing station doesn't work efficiently in CM&P118.

10) Most likely it is a supplier quality issue of Delphi NDR (material material analysis is in progress by TAT).

11) S10-3800' instruction has not been upgraded with S10-90 machines.

12) Not available official instruction (parameter list) for wire something station.

13) Design issue of wire something station (short talk remaining).

Name Rating Coaching Comments

Step 7 CHECK RESULTS (MONITOR) - OCTOBER STATUS

Standardise & Share

Share

PPS A3 – Evaluation Online

Lean Enterprise Academy		PPS A3 Coaching Session Ratings and Progress Summary																																																				
Delegate #	Review Sessions		#1								#2								#3								#4								#5																			
	Dates		17/12/19								19/01/20								18/02/20								24/03/20								20/04/20																			
	Delegate Name	PPS Ratings	PPS STEPS								A3	Average	PPS STEPS								A3	Average	PPS STEPS								A3	Average	PPS STEPS								A3	Average												
PPS Title		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8			1	2	3	4	5	6	7	8			1	2	3	4	5	6	7	8			1	2	3	4	5	6	7	8						
#1	David Marriott	Plan	3.0	3.0	3.0						3.0	3.0	3.0						3.0	3.0	3.0	3.0	3.0						3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
	Vehicle Operating Costs	Actual	1.8	2.4	1.7						2.0	1.9	2.9	2.4					2.5	2.7	3.1	3.0	2.9	2.7	2.5				2.8	2.8	3.5	3.0	3.1	3.0	2.9	3.0	2.5	2.5	3.0	2.9	3.0	3.3	3.0	3.3	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1

Notes: Target is to achieve at least an average rating of 3.0 or above to demonstrate capability in the application of the PPS A3 process to solve a problem.
 In Reviews #1, #2 and #3 the greyed out Steps are not expected to be evaluated.
 The A3 Document must be rated in each Review.

Lean Enterprise Academy		PPS A3 - Coaching Sessions Feedback and Ratings						
Review Session #	Coach Names		David Brunt			Peter Watkins		
	PPS Step	Average	Rating	Coaching Comments		Rating	Coaching Comments	
17/12/19	1	1.8	2	Background too wordy. No dates on Gap Analysis graph. Gap not stated.		1.5	Make background clearer with bullet points instead of paragraph.	
	2	2.4	2.5	When did Containment start?		2.2	What has been the impact and learning from Containment.	
	3	1.7	1.5	Needs further investigation.		1.8	Still need to define the Problem to Pursue.	
	A3	2.1	2	Not very visual, lots of words and difficult to read.		2.2	Visuals better, need to work on flow and logic story.	
19/01/20	1	2.9	3	Make background clearer with bullet points instead of paragraph.		2.8	Background too wordy. No dates on Gap Analysis graph. Gap not stated.	
	2	2.9	2.8	What has been the impact and learning from Containment.		3	When did Containment start?	
	3	2.4	2.5	Still need to define the Problem to Pursue.		2.3	Needs further investigation.	
	A3	2.6	2.5	Visuals better, need to work on flow and logic story.		2.7	Not very visual, lots of words and difficult to read.	

- Delegate Ratings and Comments are Captured during Online Reviews and Feedback Sessions.
- Scores are rolled up in to a Progress Summary.
- Evolution of their Capability Development is Captured.

PPS A3 – Typical Outcome

Step 1 PROBLEM CLARIFICATION

1.0 Background
 DCS Grosspetersdorf is a plastic molding plant for EDS housing (110 IMMs) replacement > 40 new IMMs since 2013
 In 2016 we were not able to reach COPQ target: 0.88 IM \$
 copq: 1.22 IM \$ / copq[%] by 1,72%
 Target declaration is given by top management
 Ideal Situation: copq[%] by 1,20%
 Ultimate Goal: copq[%] by 10-20% Yr on Yr

1.1 Gap Analysis
 copq (M\$) 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0
 Actual Situation 2016: 1.22 M\$ (1.72% above target)
 Ideal Situation 2017: 1.20 M\$ (1.20% target)
 Ultimate Goal 2018: 0.88 M\$ (0.88% target)

1.2 Problem Statement
 Ultimate Goal:
Gap = £215,000
 Problem Statement:
 COPQ[%] have a GAP of 0.6 %
 COPQ have a GAP of 26 % or 0.5 M\$

Step 4 TARGET SETTING

Target Statement
 Reduce the number of broken cores per month to 80 by July
 Maximum number of broken cores Last year = 917
 This year = 807 (25% reduction)
 COPQ costs of broken cores 2016: 1.22 M\$ (1.72% above target)
 Based on share of broken cores 2016 (25%) = 429,000 \$
 This should result in a COP Cost saving of (429,000 \$ * 25%) = 107,250 \$ or 0.1 M\$

Target = £72,000

Broken cores COPQ Costs [M\$]
 Last Year 2016: 1.22
 Target Year 2017: 0.88
 Impact: 0.34 M\$

Step 2 CONTAINMENT

Containment Action (SW, 2H):
 What: COPQ & QIP Costs meeting
 When: daily, weekly tuesday 15:00 pm
 Where: shop floor, BS meeting area
 Who: quality, toolshop, logistic, engineer... process
 Why: to review, manage and action COPQ costs
 How: daily action tracker, weekly action tracker, monthly COPQ[%] tracker
 How much: COPQ [%] by 1.22%

daily action tracker, weekly action tracker, monthly COPQ[%] & cost tracker

Step 5 ROOT CAUSE ANALYSIS

PROBLEM TO PURSUE
 BROKEN CORES on tools

Direct Cause(s)
 1. Tool core not appropriate designed
 2. High volume tools are worn out
 3. Molding process (wear of cores)

Why 1: problem of radius, not firm wear of cores, no consideration of linear expansion during heat/cold change
 Why 2: Tool utilization is too high > 70%
 Why 3: wear and fitting of core is not good enough
 Why 4: volume fitting up (high temp)
 Why 5: higher injection pressure (too high, top pressure used)
 Why 6: tool designer is not aware of the core technologies in production
 Why 7: capacity tool is not available in time
 Why 8: "wear" after a check on complete tools not possible
 Why 9: Operators did not fit well enough
 Why 10: molding parts are not filed out (PFO)
 Why 11: no feedback process exists from plant to the tool designer
 Why 12: unexpected delays
 Why 13: MFC planning / MFC coordination not well enough
 Why 14: to have availability in tool shop area
 Why 15: Operators are not trained to the correct standard
 Why 16: NFO is not easy to detect (happens only sporadic)
 Why 17: waiting tool procurement process is not effective enough
 Why 18: classification (color/mark) for different tools not defined
 Why 19: fitting standard is not corrected/defined
 Why 20: missing of control instruments to analyse the recording process by cavity pressure sensors

Root Causes:
 1. no feedback process exists from plant to the tool designer
 2. waiting tool procurement process is not effective enough
 3. classification (color/mark) for different tools not defined
 4. fitting standard is not corrected/defined
 5. missing of control instruments to analyse the recording process by cavity pressure sensors

Step 3 PROBLEM ANALYSIS & BREAKDOWN

COPQ by nature 2015-2016
 COPQ 2016: 1.22 M\$ (1.72% above target)
 IM \$ Core: 890,000 \$
 IM \$ Non-Core: 330,000 \$

Break down of Defects 2016
 what are the main defects for core?
 what causes the high COPQ costs?
 number of broken cores per month 2016/2017
 Average 17819 pcs total 917 to 2016

TOP 3 direct causes:
 1. Tool core not appropriate designed
 2. High volume tools are worn out
 3. Molding process (wear of cores)

Core Breakages of High Volume Tools ..606, ..819. 3 Direct Causes

Improvement of cores 17819-6: no consideration of linear expansion during heat/cold change
 High volume tools are worn out: tools with high utilization, core has less availability in tool-shop area (only "bank" quality of tool repair possible)
 Molding process (wear of cores): tool 17819-b / # of broken core on 100 000 pcs

Step 6 DEVELOP & PLAN COUNTERMEASURES

Root Cause Countermeasures	Practical Countermeasures	Impact (%)	Effort	Done	Yr	Mth	Day	Done	Done
waiting tool procurement process is not effective enough	waiting tool procurement process is not effective enough	2	2	3	7	2016	12	15	100%
classification (color/mark) for different tools not defined	classification (color/mark) for different tools not defined	2	2	3	7	2016	12	15	100%
fitting standard is not corrected/defined	fitting standard is not corrected/defined	2	2	3	7	2016	12	15	100%
missing of control instruments to analyse the recording process by cavity pressure sensors	missing of control instruments to analyse the recording process by cavity pressure sensors	2	2	3	7	2016	12	15	100%

Step 7 CHECK RESULTS (MONITOR) - February STATUS

number of broken cores by month results
 Last Year 2016: 1.22
 Target Year 2017: 0.88
 Result: 0.88
 Impact: 0.34 M\$

Result = £74,000

Step 8 STANDARDISE & SHARE

STANDARDISE
 involve tool designer from plant for new tool start up
 implementation of control instruments by cavity pressure on critical tools (statistical process)
 classification (color/mark) for different tools
 new guideline procedure for job & correct handling operators (length, approach, broken etc.)

SHARE
 share with Manufacturing Engineering & Production and Toolshop. AMPC as well in the plant
 Post on A3 to share Company wide for all molding plants in the Division
 share with Marketing, Service and regional sites

The Elephant in the Room !

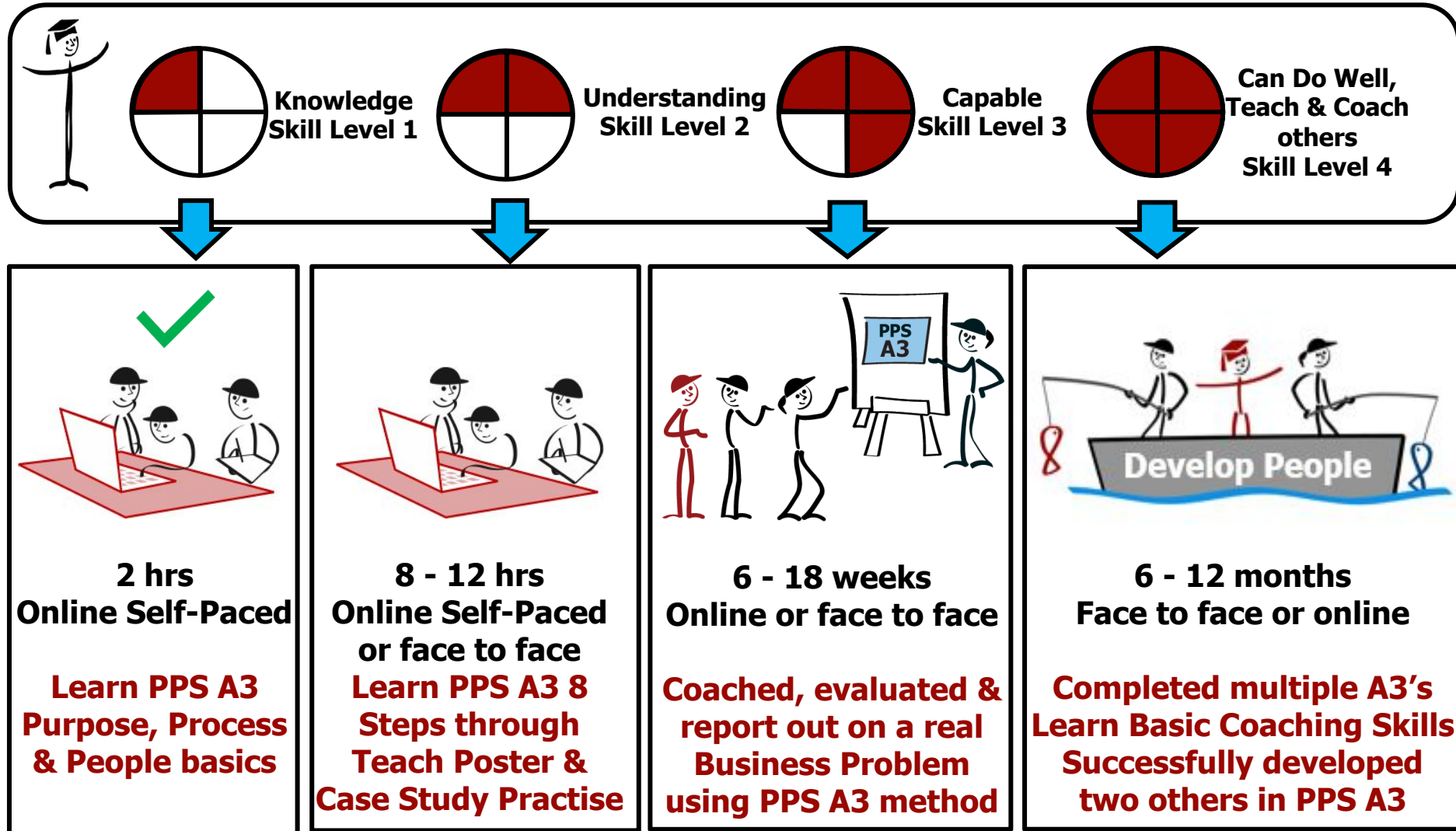
How do you get individuals or organisation's to learn this well ?



Better, Faster & Cheaper



Lean Learning Journey for PPS A3



Skill Levels 1 – 4 Remote Coaching A3 8 Step Problem Solving

Plan

Teach Sessions


Short burst
Learning



Online
Homework


Online Course Lean Enterprise Academy

Practical Problem Solving Level 1



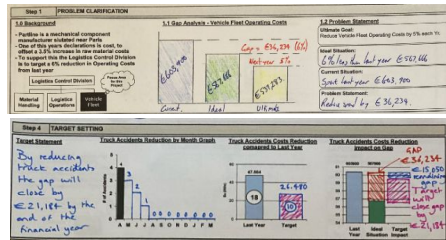
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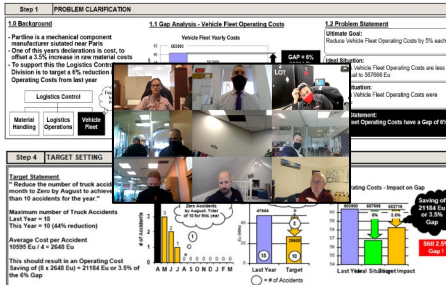


Do

Confirm Learning
Leaders Complete
Homework



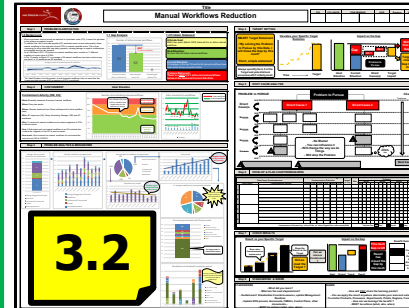
Debrief with
Answers



Check

Develop
Capability

Coaching on
your Actual
Problem



Review &
Evaluate
Online
Together

Act


Teach &
Coach Others

Learn how to
Teach &
Coach Others




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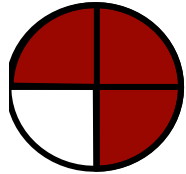


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Practical Problem Solving Level 2
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Become Self
Reliant



Capable – Skill Level 3

PPS Title
Cash & Billing - Sales form errors

File Version: Aplus PPS A3 Blank Template Ver2.0

LEAN ENTERPRISE ACADEMY

Step 1 PROBLEM CLARIFICATION

1.0 Background
The Cash & Billing team receive forms from the relevant area of the business for them to raise invoices, credit notes and customer account amendments.
These forms often contain errors which the team either have to fix themselves or cause a delay in billing to request the correct information from the relevant finance analyst.
Delays in our ability to invoice, cause delays in the charity receiving money from customers.

1.1 Gap Analysis -

1.2 Problem Statement
Ultimate Goal:
Error rate to be 0% on billing documents received by the Cash & Billing team
Ideal Situation:
Error rate to be halved to 4% on billing documents received by the Cash & Billing team within 6 months
Current Situation:
9% error rate on billing documents received by the Cash & Billing team.

Step 2 CONTAINMENT

Containment Action (SW, ZH):
What: Errors to be sent back to the Finance Analyst rather than to the Cash & Billing team.
When: Whenever an error is received
Where: Cash & Billing team

Check
Therefore
IAT Code
Therefore

Error rate at start 9%
Error rate now - <1%
Monthly time saving: 6 hours

Hannah

Key Learnings:

- Easy to jump to conclusions on the cause of an issue, this way allows us to focus our efforts in the right place
- Working as a team and cross teams support is necessary
- Can be a challenge to change the “blaming” etc, but good results happen when we manage it

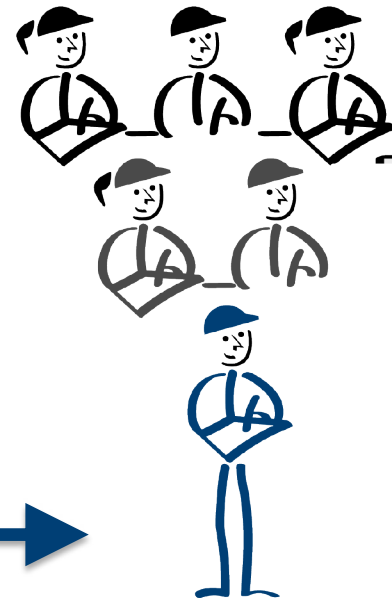
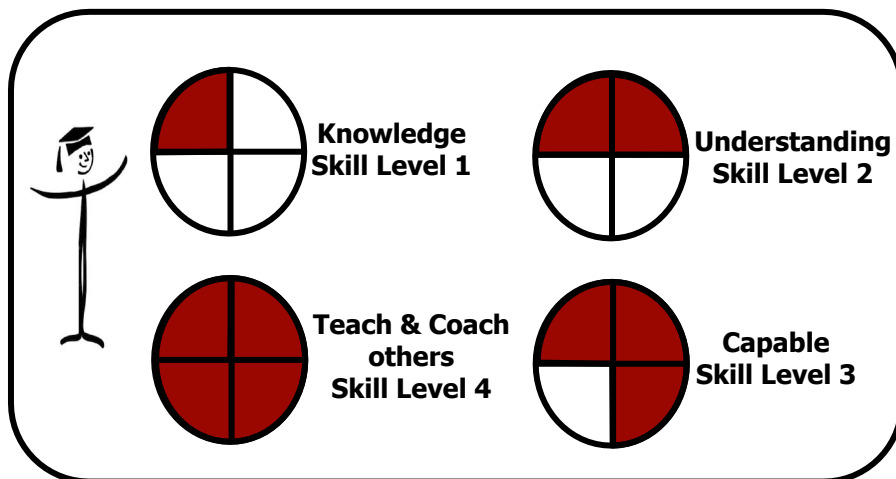
Benefits:

- Allowed a mindset change from “having a moan” to “how can we work to find solutions”
- Empowered teams to see they can implement improvements
- Reduction of error rate from 9% to less than 1% which relieves frustrations & time in the process

Our Purpose:

We are a not for profit organisation, established to help customers become self-reliant on their lean journey. Through research, products and services we provide better, faster and cheaper ways to learn and improve.

Our Approach:




Develop capability to teach others – cascade the learning

Introduction to Problem Solving

8 Step Practical Problem Solving

1. PURPOSE Problems are Good!

"Having no problems is the biggest problem of all!"
Tatsuhiko Ohno



LEAN TRANSFORMATION FRAMEWORK

① VALUE-DRIVEN PURPOSE: What Problem are we trying to solve?

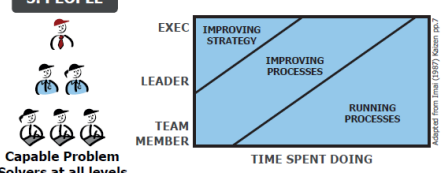
② How do we do & improve the actual work?

③ How do we develop the capabilities we need?

④ What management system & leadership behaviours are required to support the new way of working?

⑤ What Basic Thinking, Mindset & Assumptions drive this change?

3. PEOPLE Roles & Responsibilities



Leadership

GO TO THE GEMBA

Leaders as Teachers

Management Routines

2. PROCESS Four Key Elements

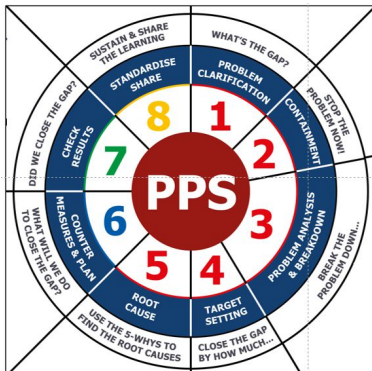
① ② ③ ④

P-LEARNING

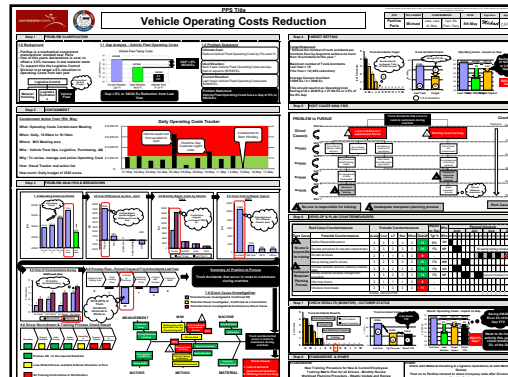
PROBLEM SOLVING FRAMEWORK

Types	Four Types of Problems				Problem Properties		Analysis Required		Approach	Who
	1	2	3	4	Quantity	Difficulty	Time	Depth		
Advanced	✓	✓	✓	✓	Few	Hard	Long	Deep	Scientific, data & fact driven	Technical & Specialists
Practical	✓	✓	✓	✓	Many	Easy	Short	Shallow	Team Leaders/ Members	Leadership & Specialists
Rapid	✓	✓	✓	✓	Many	Easy	Short	Shallow	Fix it now	Everyone
React	✓	✓	✓	✓	Many	Easy	Short	Shallow	Fix it now	Everyone

8 Steps Overview



PPS A3 and Evaluation Method



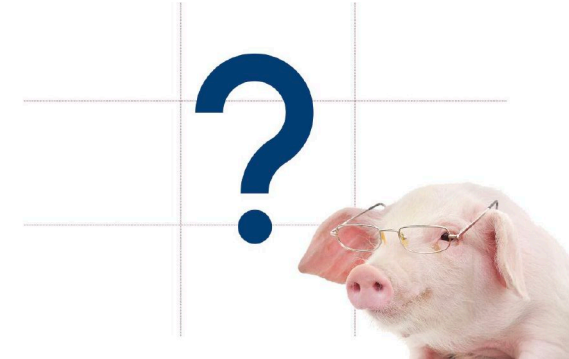
PRACTICAL PROBLEM SOLVING (PPS) A3 EVALUATION CRITERIA	
1.1 Problem Clarification	1.2 Problem Clarification
2.1 Containment	2.2 Containment
3.1 Problem Analysis & Breakdown	3.2 Problem Analysis & Breakdown
4.1 Target Setting	4.2 Target Setting
5.1 Root Cause Analysis	5.2 Root Cause Analysis
6.1 Develop & Plan Countermeasures	6.2 Develop & Plan Countermeasures
7.1 Check Results & Monitor	7.2 Check Results & Monitor
8.1 Standardise & Share	8.2 Standardise & Share
9.1 A3 Document	9.2 A3 Document

What Questions Do You Have ?

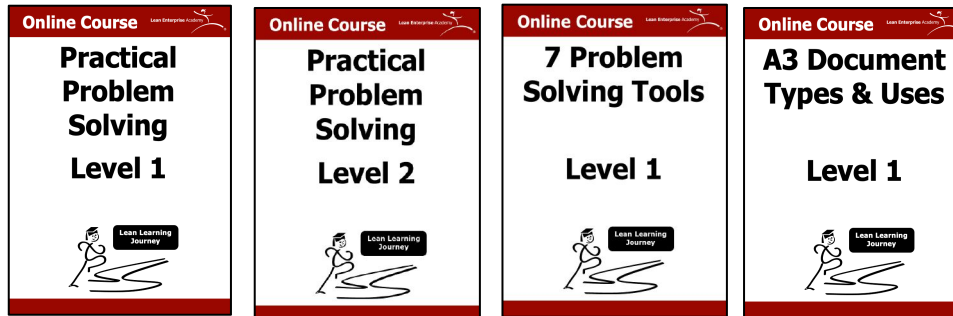
Our Next Webinar Topic: **Lean Standardised Work**

28th April 3:30pm UK time

Visit: www.leanuk.org/Events

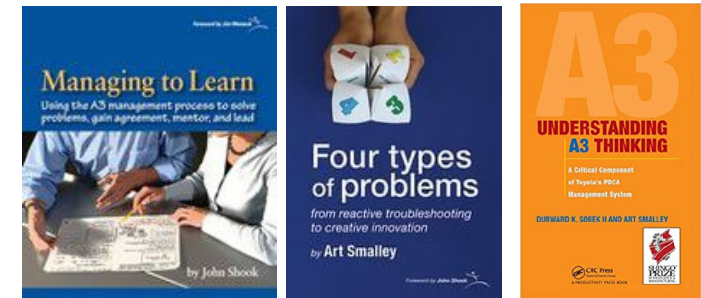


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