dcm

dcm | Member Event

Starts at 10am

Member Webinar

LSS Yellow Belt Session 2 of 3

dcm Member Event

What's Coming Up?

Delivered Live via Zoom | All Sessions Recorded | Free and unrestricted for DCM Members

10am

July 1st

Making Lean Work For Your Organisation

10am

Aug 2nd

Problem Solving & Eliminating of Wasteful Procedures

10am

Sept 2nd

Measuring & Continual Improvement

dcm Member Event

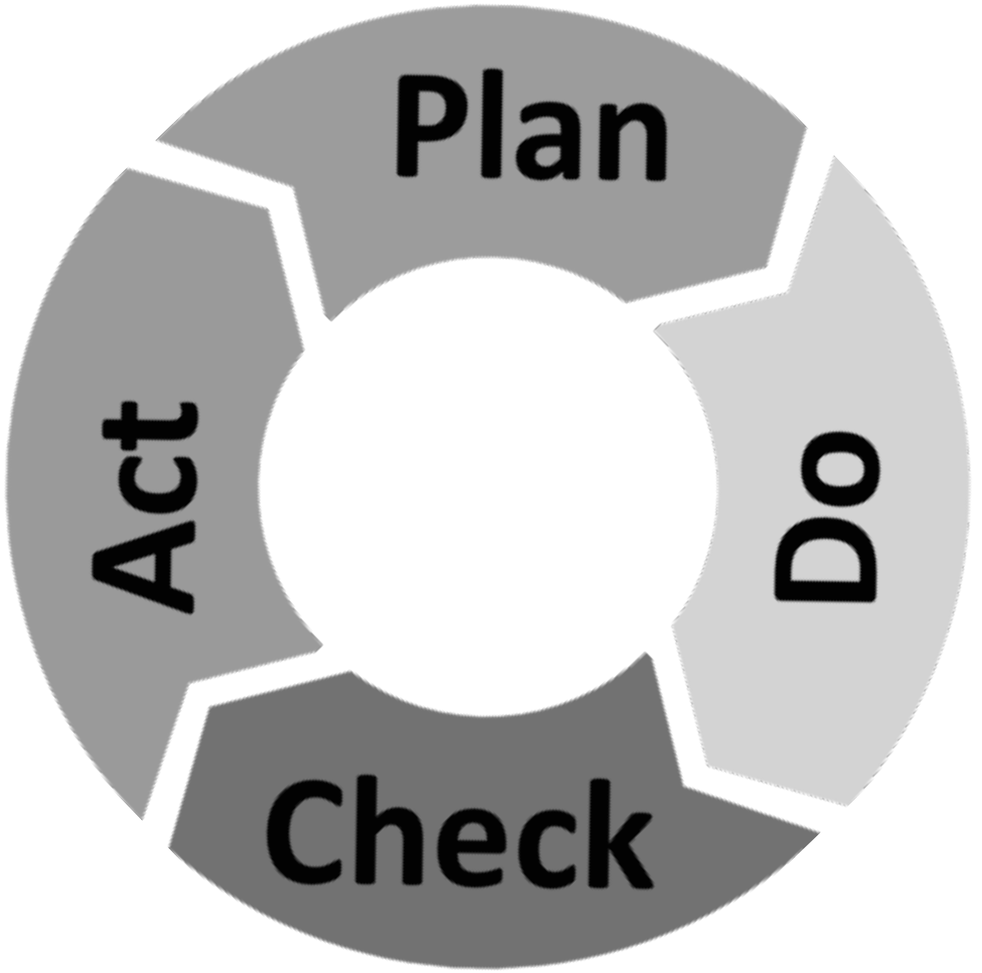
Session Content

- Recap
- Problem Domains
- Continuous Improvement
- Kaizen, A3, DMAIC
- Problem Statements
- Process Mapping

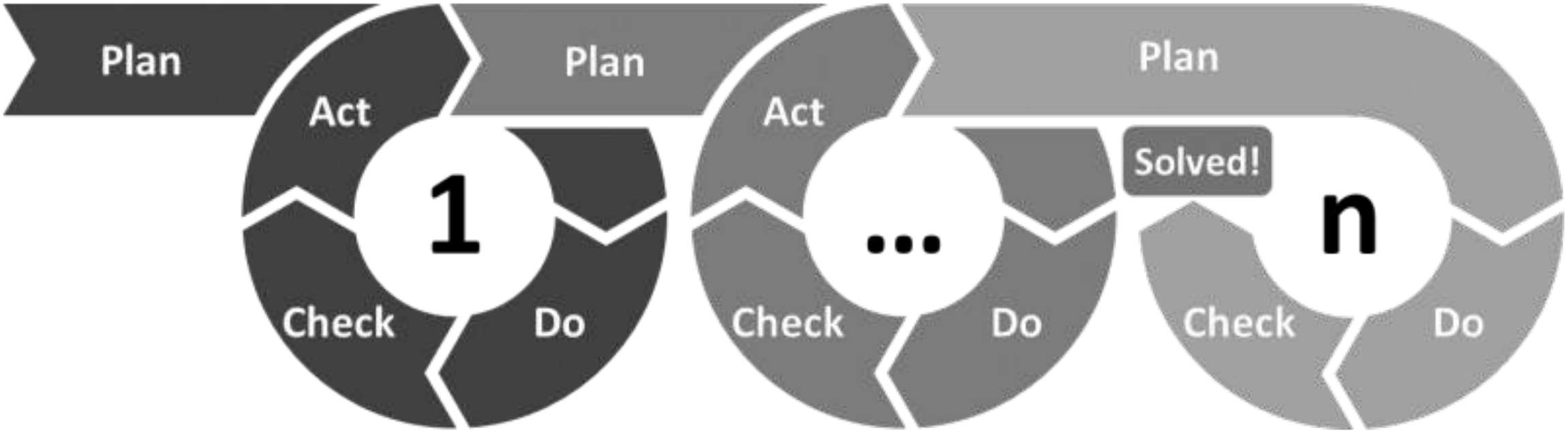
RECAP

- Continuous Improvement
- What is Waste
- Problem Domains

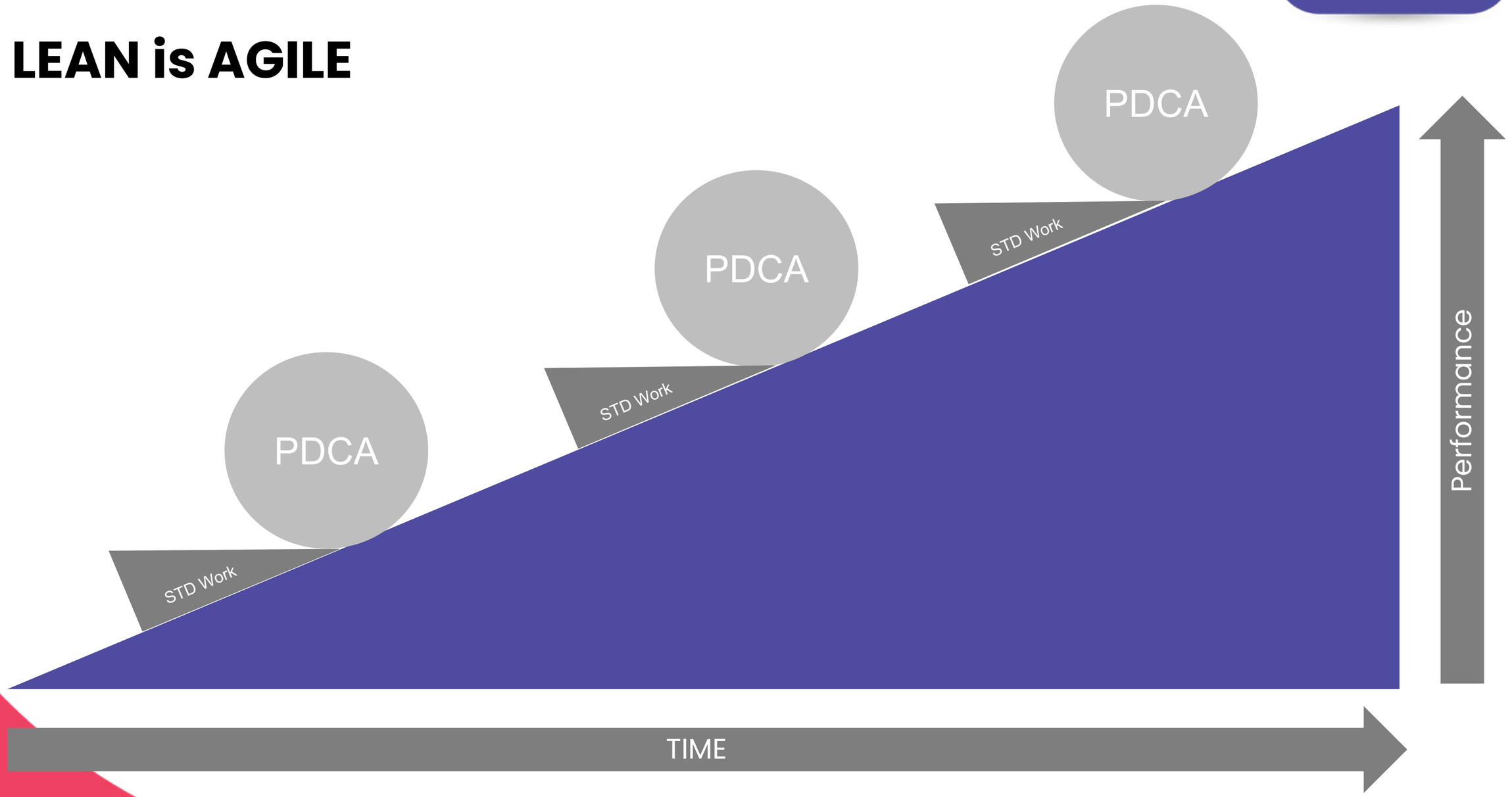
The Deming Cycle



The Deming Cycle



LEAN is AGILE



The nature of “FLOW”

Step 1

Step 2

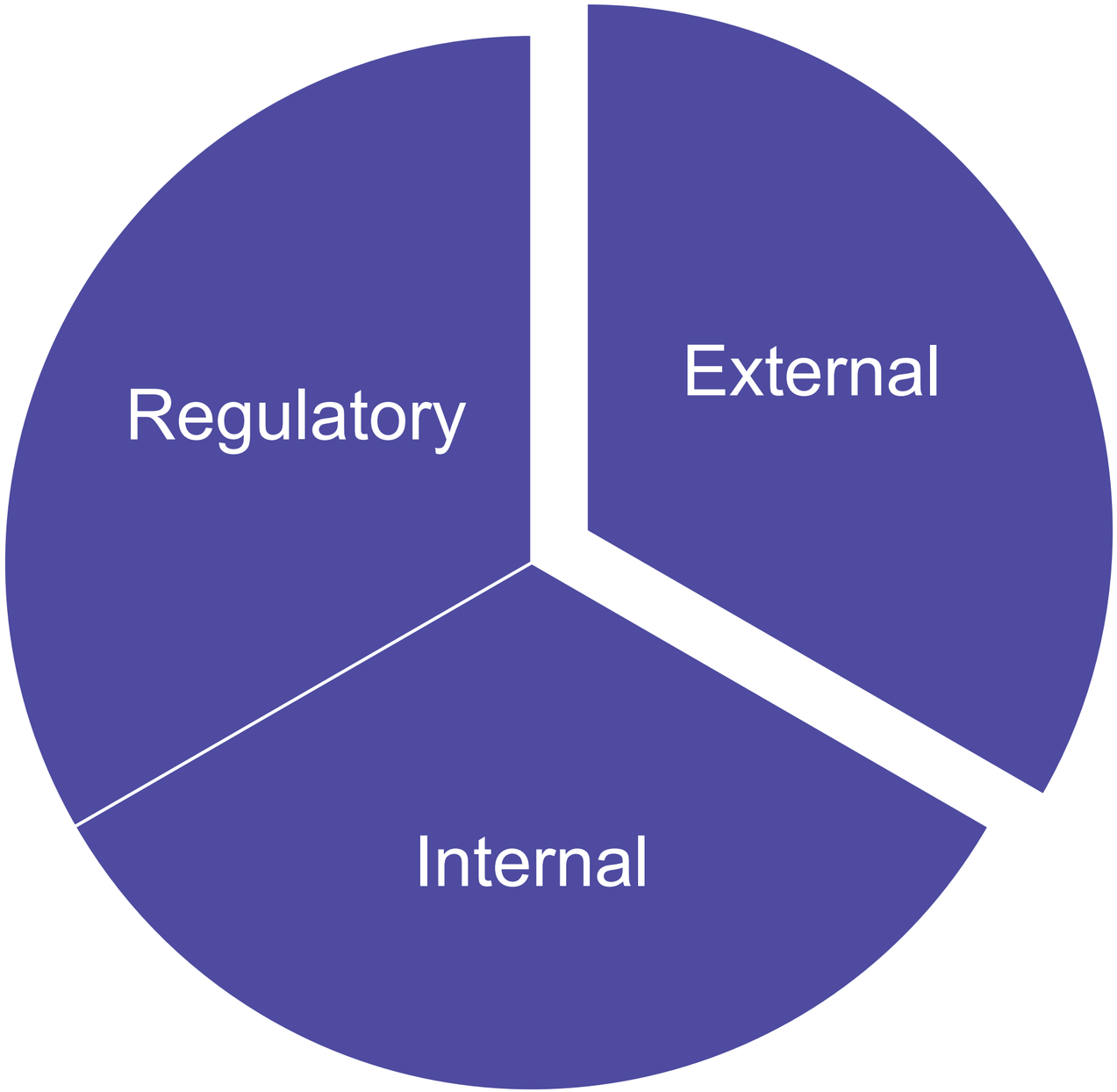
Step 3

LEAN PRINCIPLES

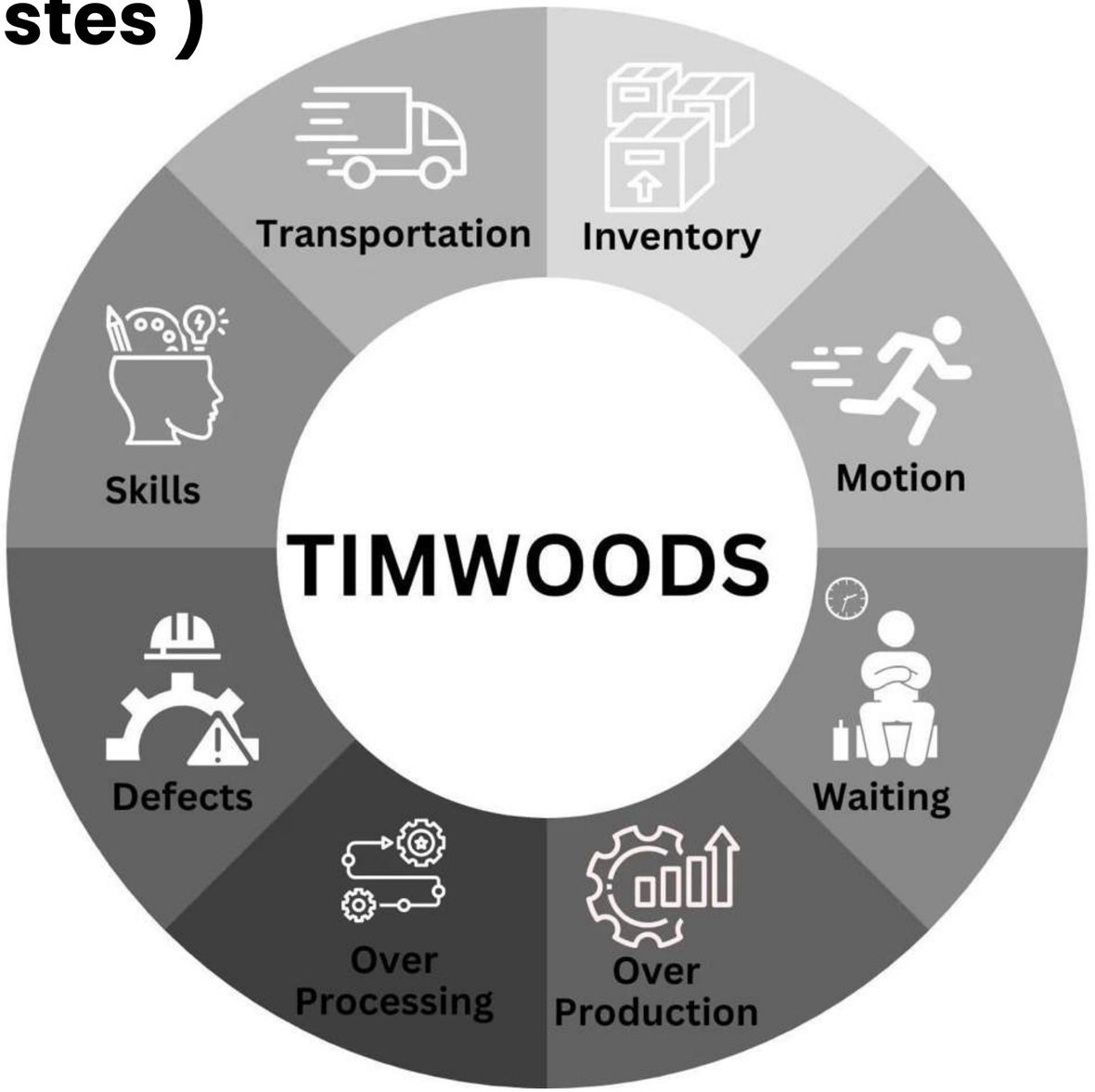
LEAN Principles

What is waste

Customer Types



The 8 Muda (Wastes)



PROBLEM DOMAINS

Cynefin Model

Simple Problems

Known Knowns

OBVIOUS

Chaotic Problems

Unknowable's

NOVEL

Complicated Problems

Known Unknowns

BEST Practise Experts

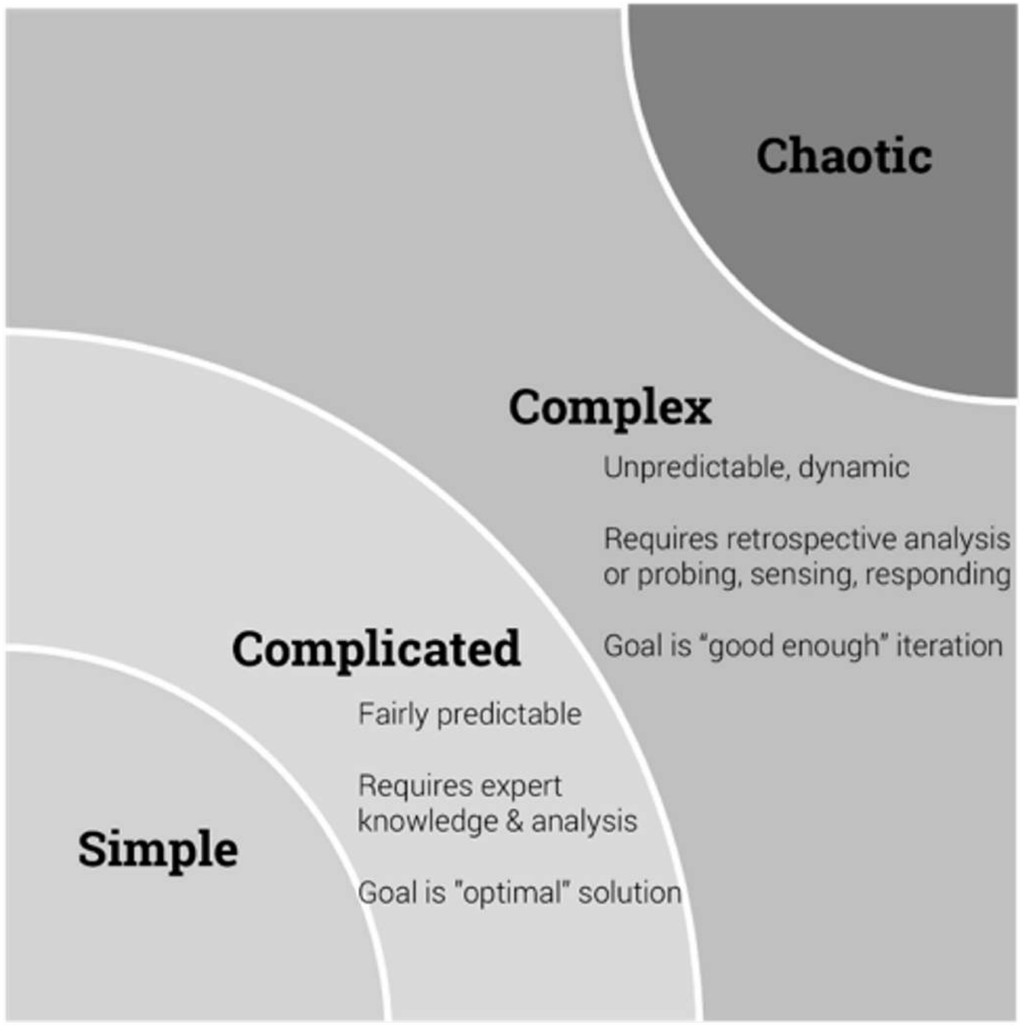
Complex Problems

Unknown Unknowns

PROBE / SENSE AGILITY

Cynefin Model

No agreement



No certainty

Problem Solving

What do we KNOW

What don't we KNOW

How do we Find Out

- Observe ?
- Interview ?
- Measure ?
- Test ?
- Experiment ?
- Trial ?
- Exchange ?
- Reproduce ?
- Dis-assemble
- De-construct
- Consult

Gemba Walks

Go to Gemba

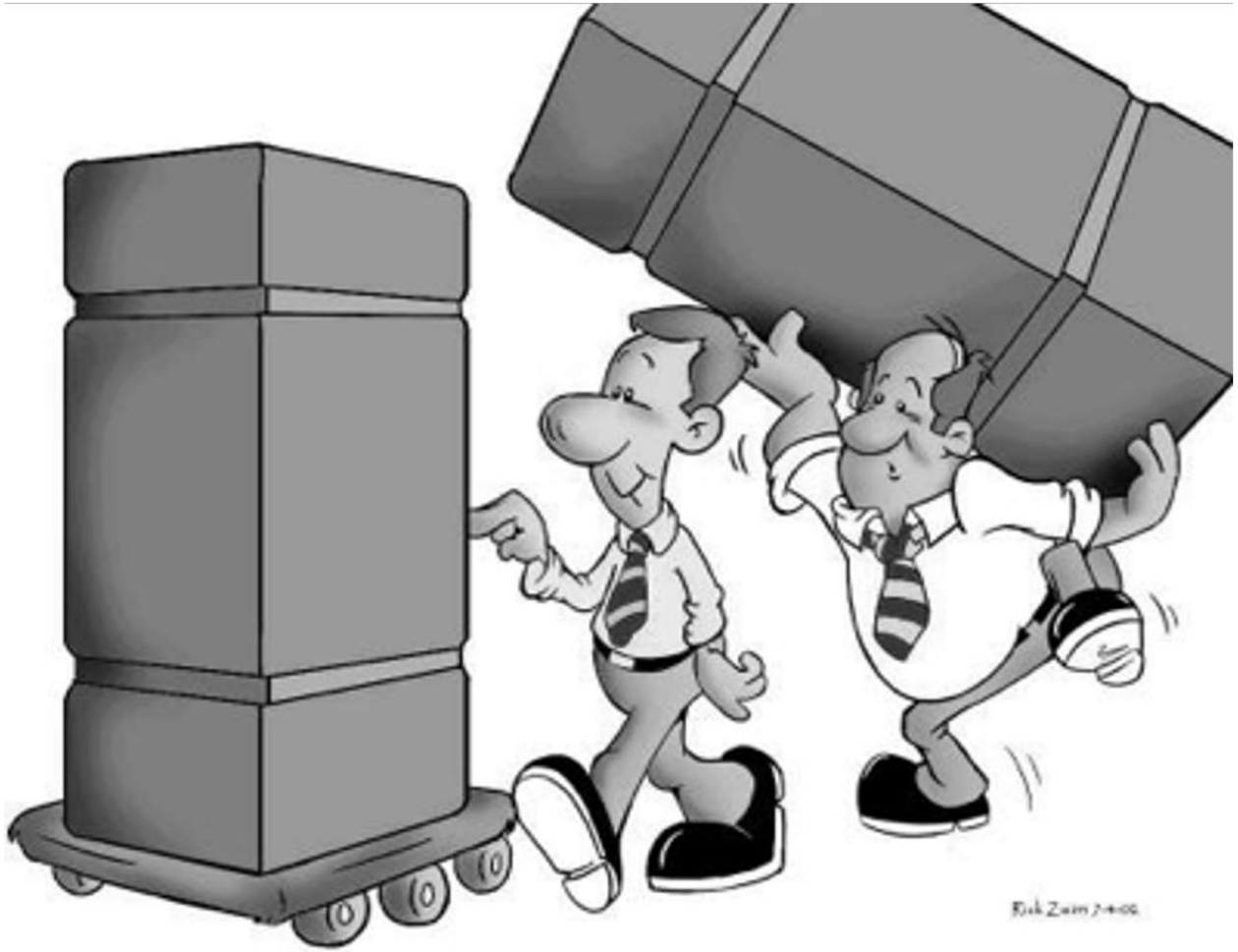
LEAN TEAMS

LEAN Teams Options

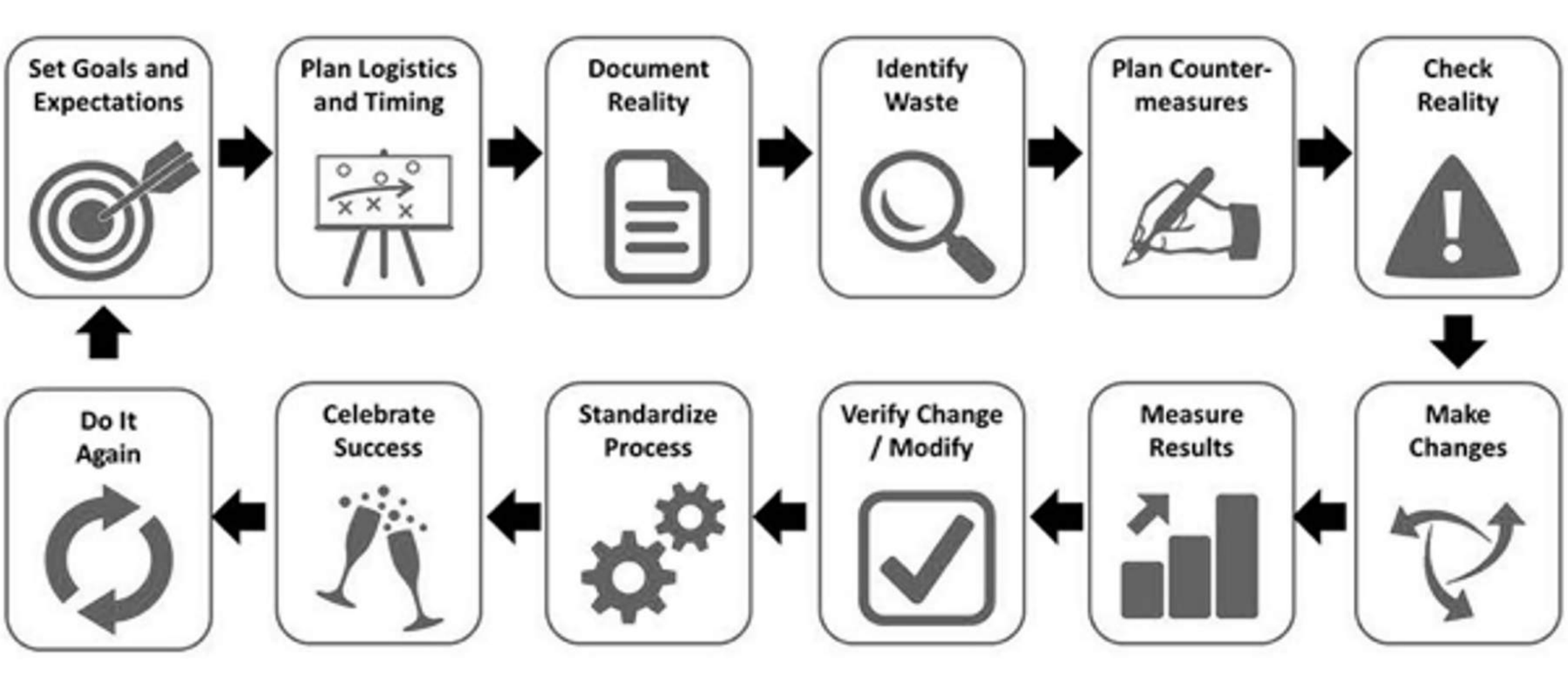
- KAIZEN Teams
- A3 Teams
- DMAIC Teams

KAIZEN

KAIZEN



KAIZEN

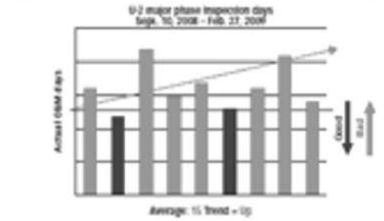

Set Goals and Expectations
Plan Logistics and Timing
Document Reality
Identify Waste
Plan Counter-measures
Check Reality
Make Changes
Measure Results
Verify Change / Modify
Standardize Process
Celebrate Success
Do It Again

A3

Example of completed problem-solving A3 / ONLINE FIGURE 1

1. Clarify and validate the problem.

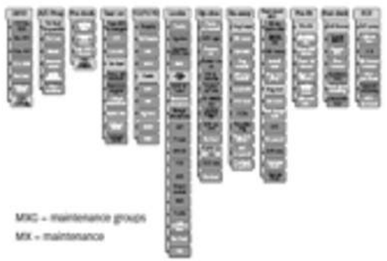
The U-2 major phase inspection is averaging 15 days, exceeding the 13-day inspection target, and it cannot efficiently sustain worldwide U-2 aircraft operational requirements.



O&M = operations and maintenance

2. Break down the problem/identify performance gaps.

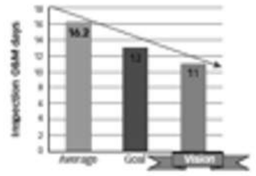
- Lack of communication and schedule between phase and MXG results in personnel availability
- Ancillary tasks reduce maintainer availability
- Current work procedures, attention to detail drive excess MX and inefficiencies



MXG = maintenance groups
MX = maintenance

3. Set improvement target.

Achieve 13-day major phase by July 31, 2010.



O&M = operations and maintenance

4. Determine root cause.

FOD = foreign object damage

5. Develop countermeasures.

Action	POC	Start	End	Status	Remarks	Do-it
Spaghetti diagram and process time for A/C tear down	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for TCI/ TCTO process	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for Looks	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for Ops checks	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for reassembly	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for post dock work cards	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Time in motion study	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Quality assurance pass rates	TSgt Bernard	Jan. 15	Jan. 21			X
Phase roll out stats	Mr. Rowan	Jan. 15	Jan. 15			X
Paper doll	Mr. Rowan	Jan. 15	Jan. 15			X
Consumable usage data for kitting				C/W		

A/C = aircraft
TCI = time change item
TCTO = time compliance technical order
POC = point of contact
Ops = operations
C/W = complied with

6. See countermeasures through.

Action	POC	Start	End	Status	Remarks	Do-it
Spaghetti diagram and process time for A/C tear down	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26	C/W		X
Spaghetti diagram and process time for TCI/TCTO process	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26	C/W		X
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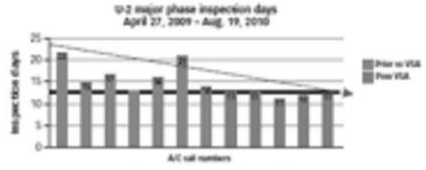
7. Confirm results and process.



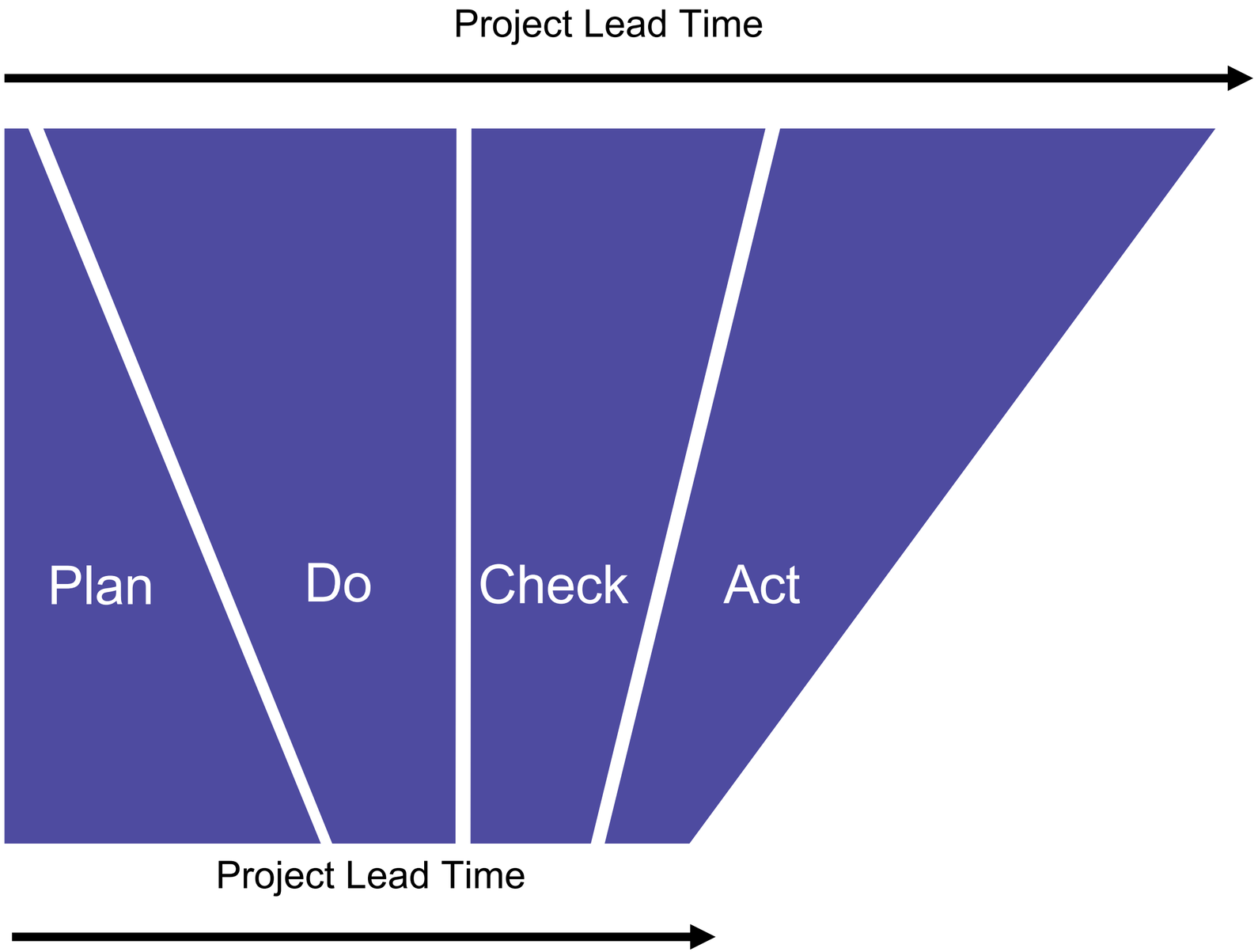
VSA = value stream analysis
A/C = aircraft

8. Standardize successful processes.

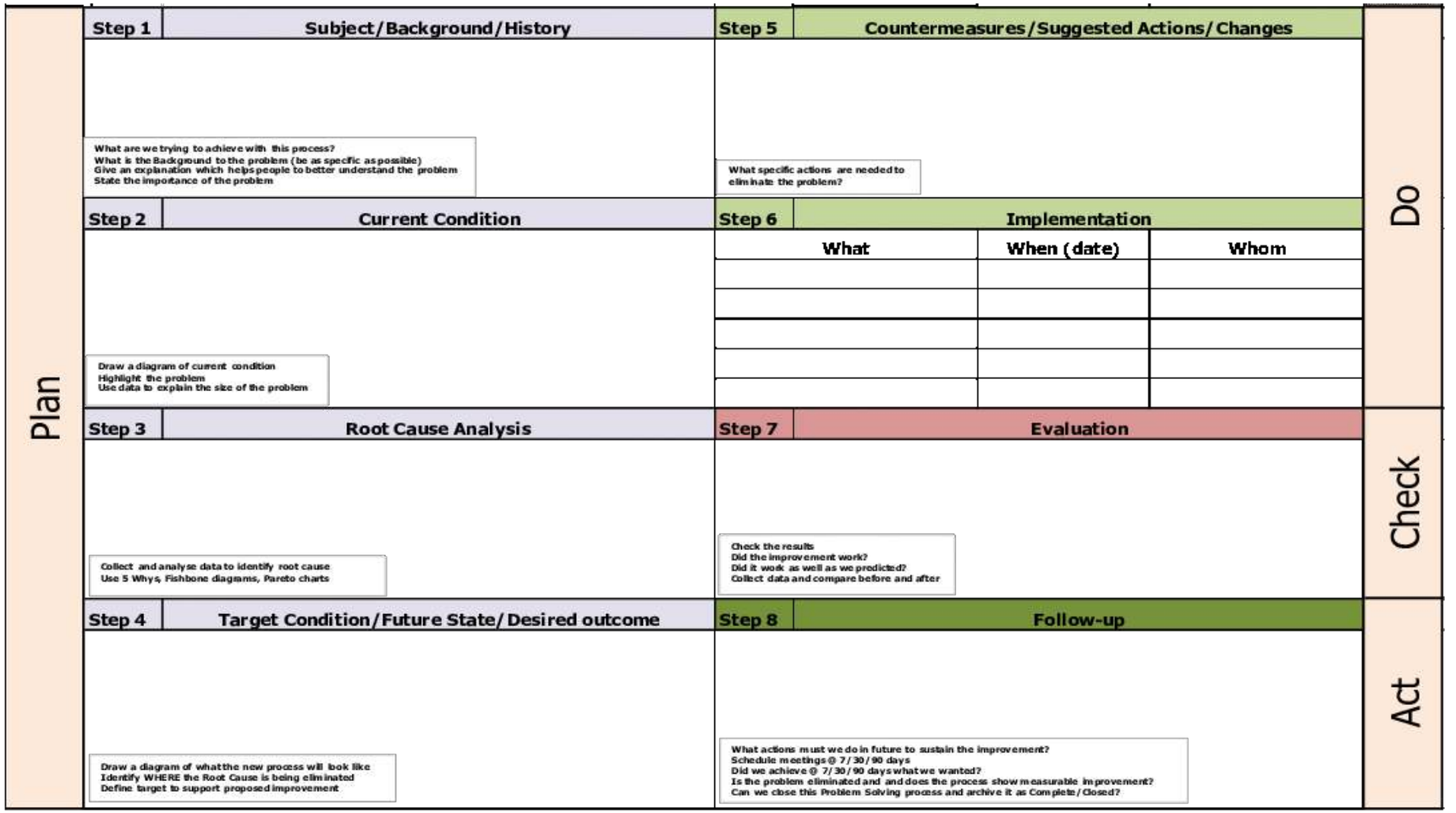
- Implemented in-house training manager and plan.
- Created standard inspection task flowchart.
- Established biannual ancillary block training week.
- Realign critical inspection tasks to proper shift.
- Reassigned aircraft phase prep tasks among AMXS and MXS.
- Acft refuel and defuel in hanger.
- Standardized parts kits.
- Event A3 uploaded to CPI-MT.

AMXS = aircraft maintenance squadron
MXS = maintenance squadron
CPI-MT = continuous process improvement management tool
Acft = aircraft
TCTO = time compliance technical order
TCI = time change item

A3



A3


Plan
Step 1
Subject/Background/History
What are we trying to achieve with this process?
What is the Background to the problem (be as specific as possible)
Give an explanation which helps people to better understand the problem
State the importance of the problem
Step 2
Current Condition
Draw a diagram of current condition
Highlight the problem
Use data to explain the size of the problem
Step 3
Root Cause Analysis
Collect and analyse data to identify root cause
Use 5 Whys, Fishbone diagrams, Pareto charts
Step 4
Target Condition/Future State/Desired outcome
Draw a diagram of what the new process will look like
Identify WHERE the Root Cause is being eliminated
Define target to support proposed improvement
Step 5
Countermeasures/Suggested Actions/Changes
What specific actions are needed to eliminate the problem?
Step 6
Implementation
What
When (date)
Whom
Step 7
Evaluation
Check the results
Did the improvement work?
Did it work as well as we predicted?
Collect data and compare before and after
Step 8
Follow-up
What actions must we do in future to sustain the improvement?
Schedule meetings @ 7/30/90 days
Did we achieve @ 7/30/90 days what we wanted?
Is the problem eliminated and and does the process show measurable improvement?
Can we close this Problem Solving process and archive it as Complete/Closed?
Do
Check
Act

A3

A3 & PDCA Cycle

Background & Support Data
(PLAN)

Describe the Current state
What are we trying to solve.
(PLAN)

Set Goals and Targets.
Define what success looks like
(PLAN)

Perform Root Cause Analysis
(PLAN)

Design Counter Measures
(PLAN)

Implement the Countermeasures
(DO)

Follow UP (Check)

Follow UP (Act)

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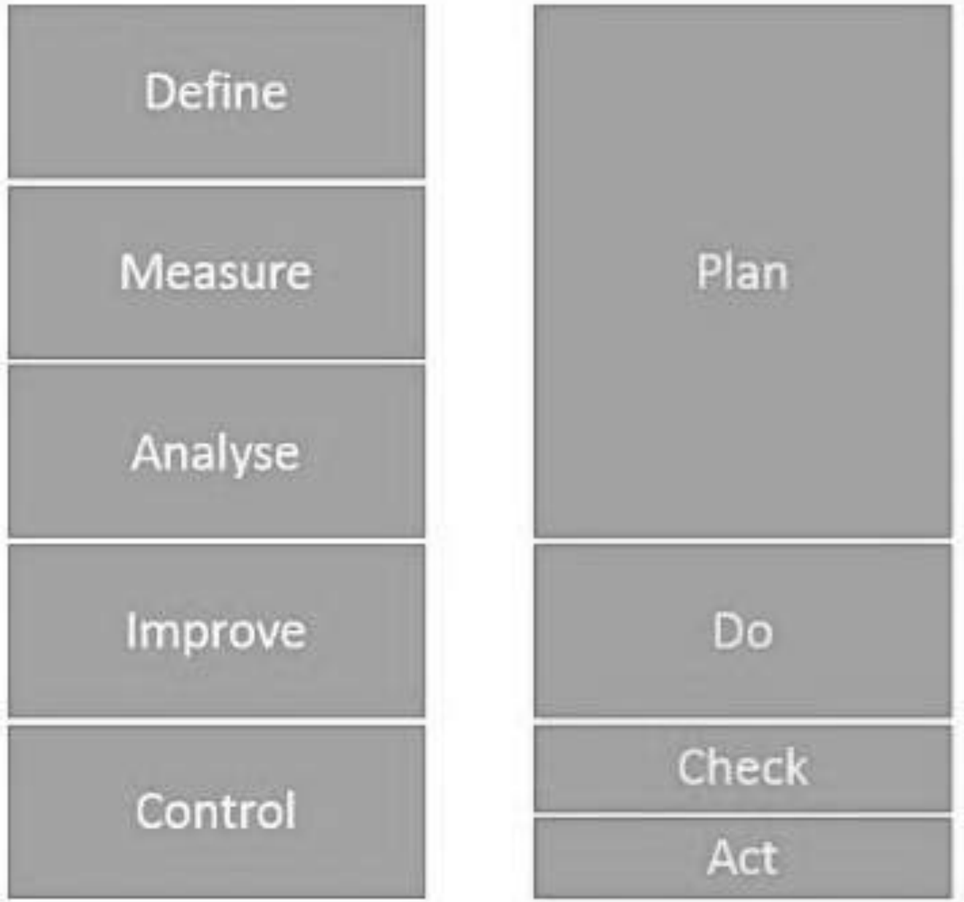
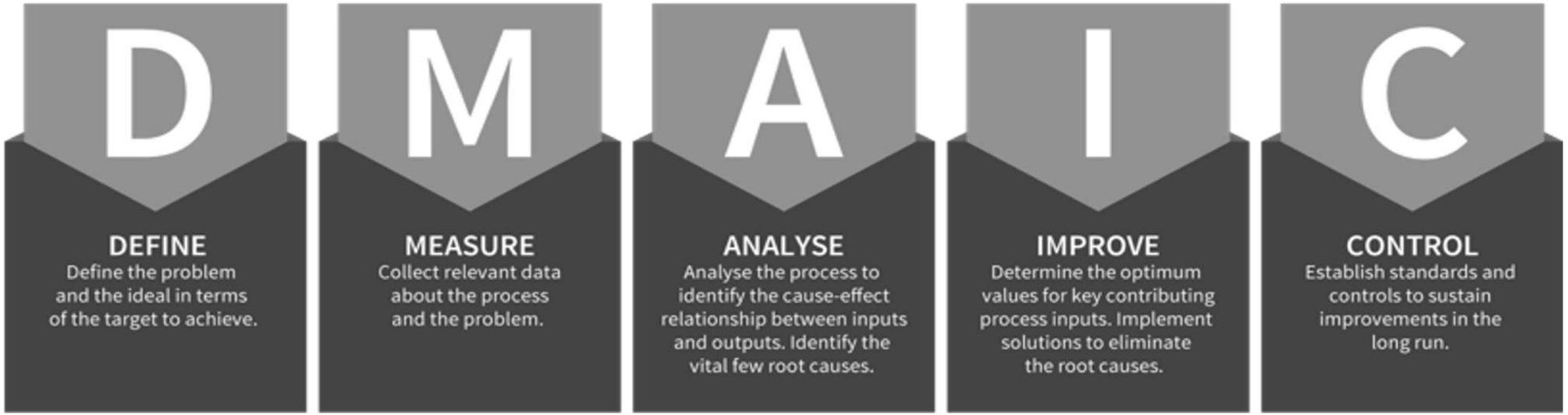
DMAIC

DMAIC v's PDCA



DMAIC

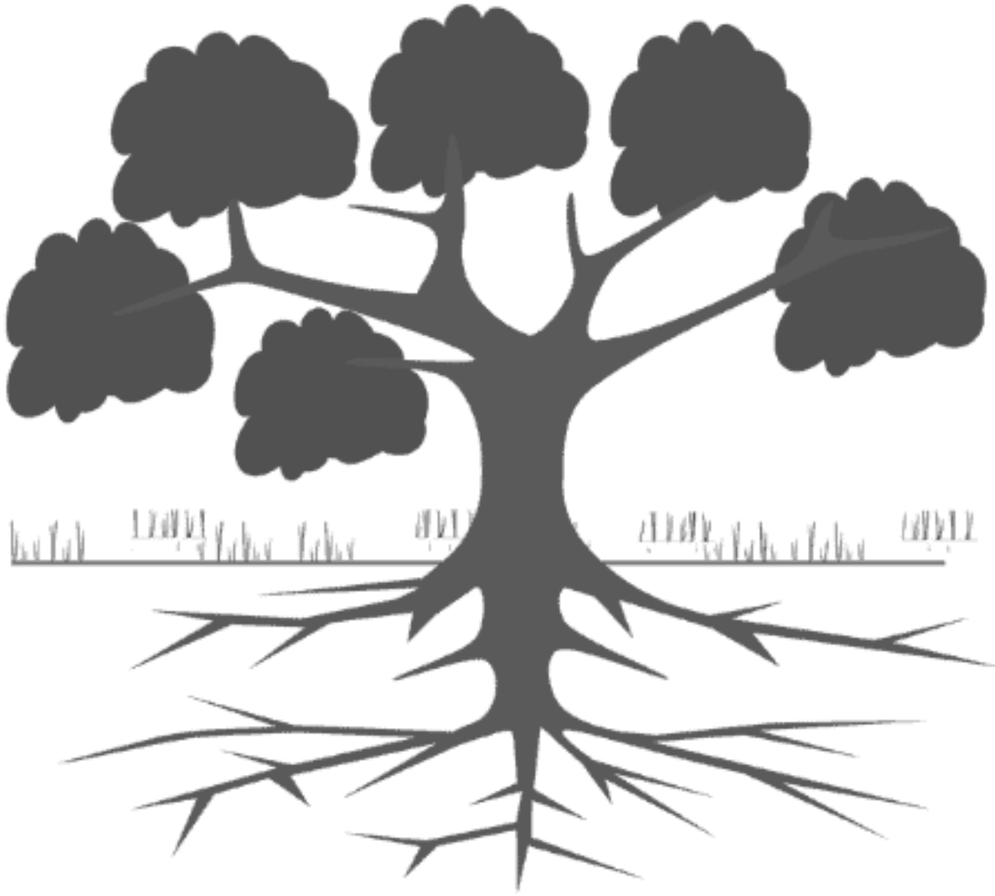

D
DEFINE
Define the problem and the ideal in terms of the target to achieve.
M
MEASURE
Collect relevant data about the process and the problem.
A
ANALYSE
Analyse the process to identify the cause-effect relationship between inputs and outputs. Identify the vital few root causes.
I
IMPROVE
Determine the optimum values for key contributing process inputs. Implement solutions to eliminate the root causes.
C
CONTROL
Establish standards and controls to sustain improvements in the long run.

PROBLEM STATEMENTS

What is a Problem

- Undesired situation
- A matter or situation regarded as unwelcome or harmful and needing to be dealt with and overcome.

What is a Problem



Above the surface you see the

Symptoms

of the problem

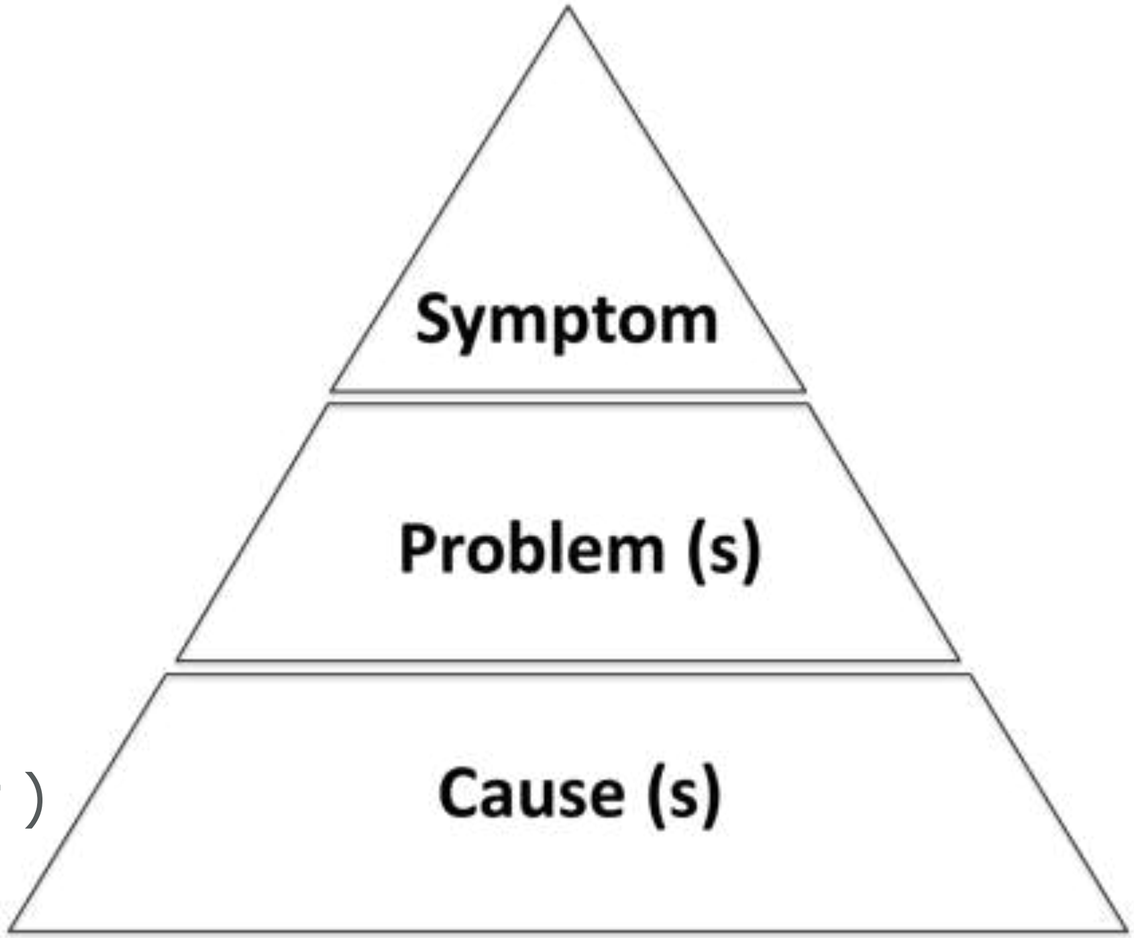
Dig deeper to find the

Root Cause

of the problem

Symptoms V’s Root

- Symptoms (what we see)
- Root Cause (trigger / enabler)



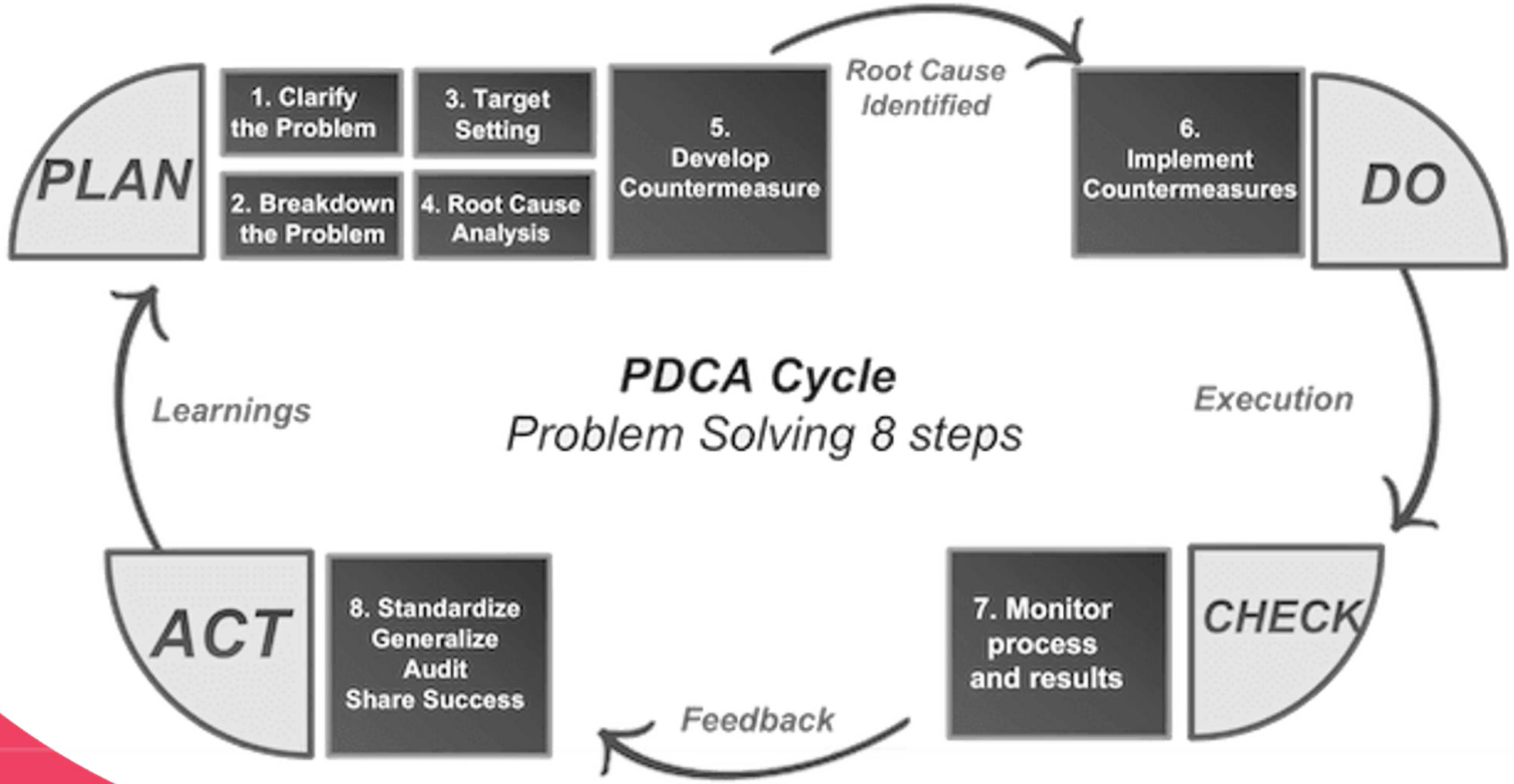
Barriers

- Confirmation Bias
- Rigid Mentality
- Functional Fixedness
- Unnecessary constraints
- Irrelevant Information

What is a Solution

- Implement(ed) Counter Measure(s)
- The most effective arrangement of Tasks, Actions and resources to overcome the problem permanently.

Problem Solving



RCA Tools

Soft Tools

- Brainstorm
- Mindmaps & Process maps
- 5 Why’s
- W5H
- Fishbone Analysis
- Workshops
- 6 Hats Thinking
- Kepner- Tregoe
- FMEA

Hard Tools

- Hypothesis Testing
- Design of Experiments
- MultiVary Studies
- Taguchi Analysis
- Pareto Analysis
- Regression Analysis
- SPC
- ANOVA
- AI Models

Construct a Statement

- Problem Statement
- A GOOD Problem Statement should
  - State the current undesired situation
  - Quantify the problem
- A GOOD Problem Statement should NOT
  - Assume the cause
  - Assume the solution
  - Assume any blame

Construct a Statement

- A GOOD Problem Statement (example)

  – During the period 1st Jan 2023 until June 30th 2023, >15% of customer queries were not resolved first time leading to 250hours of overtime to handle the escalations costing €12,500

- **Provides the facts**
- **Provides timescales and impact to the business**
- **Clear and concise – non objectionable**

Construct a Statement

- A GOOD Problem Statement - structure

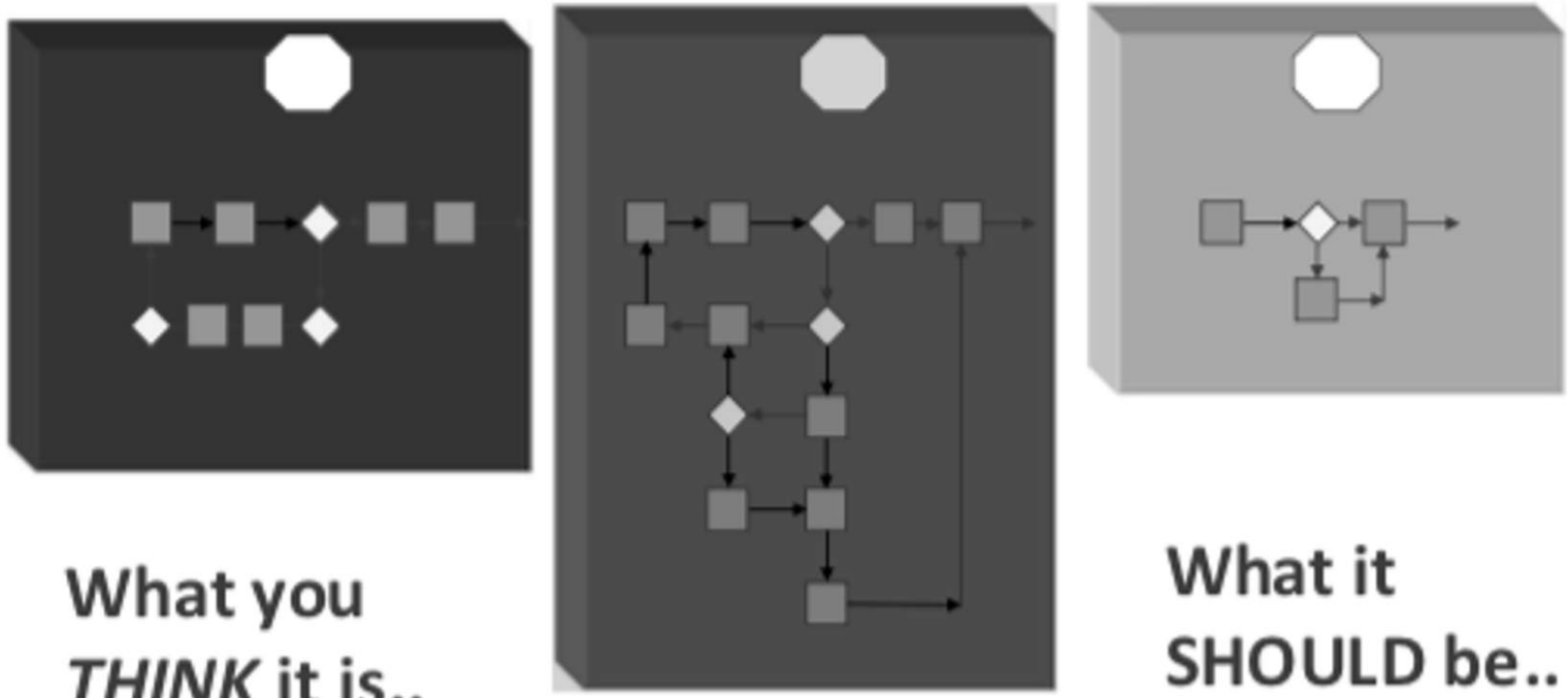
  (Item) is a problem because it affects (Case / impact) and we have established the (evidence).

- Item : is a condition, procedure, hardware, equipment or process
- Case / impact : is quality, cost, service and or frequency
- Evidence : is a symptom(s) or data collected

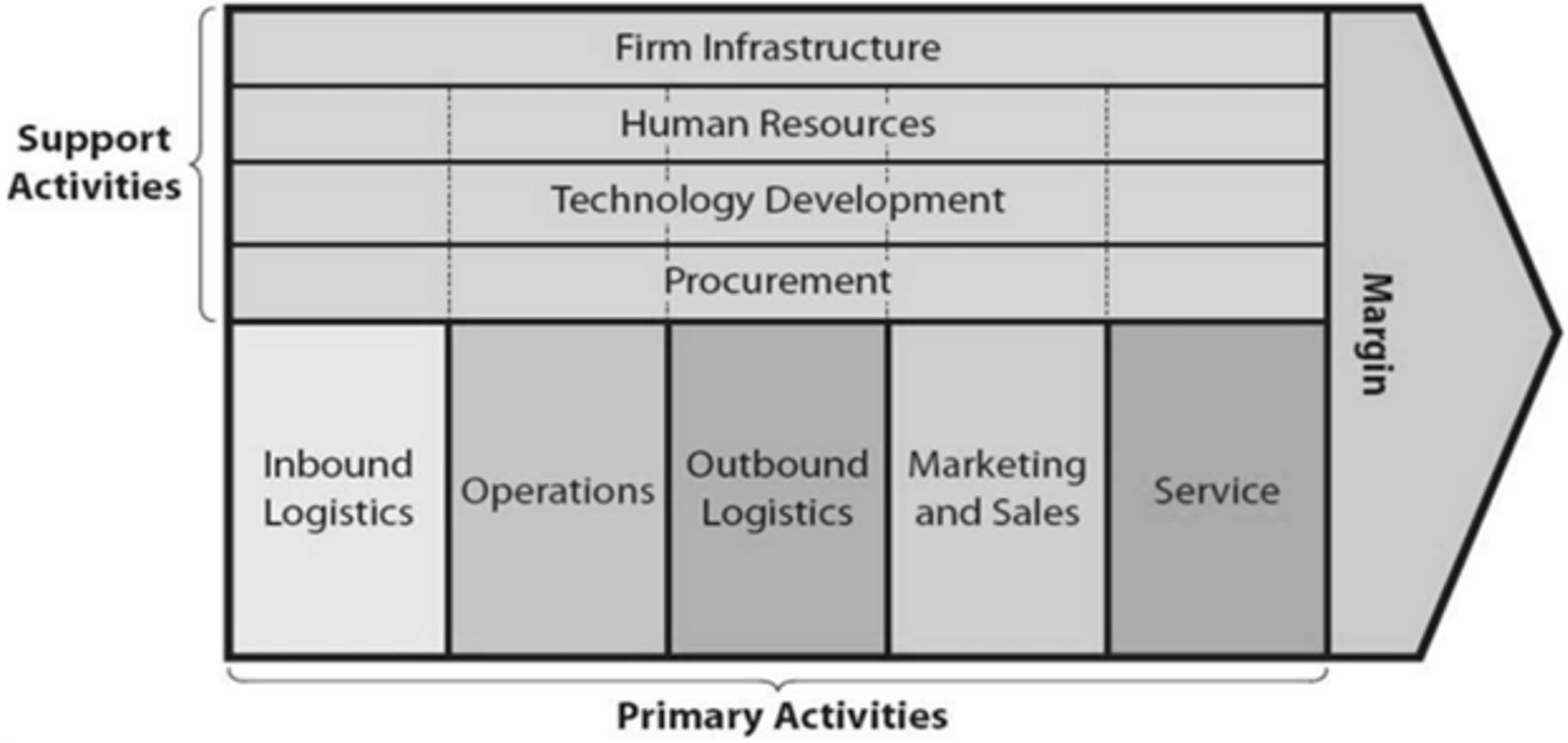
PROCESS MAPPING

Process mapping

Process mapping



Process mapping



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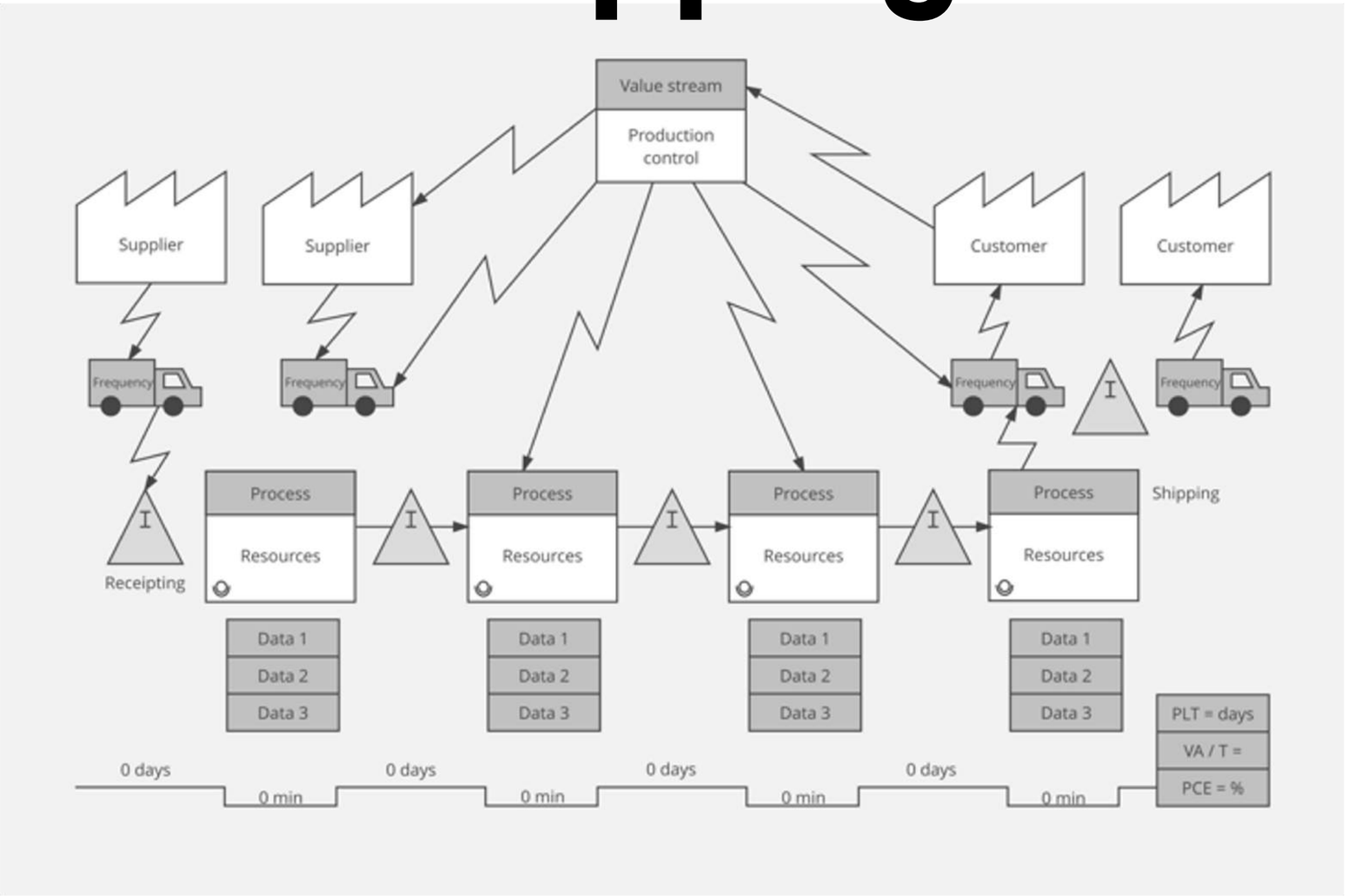

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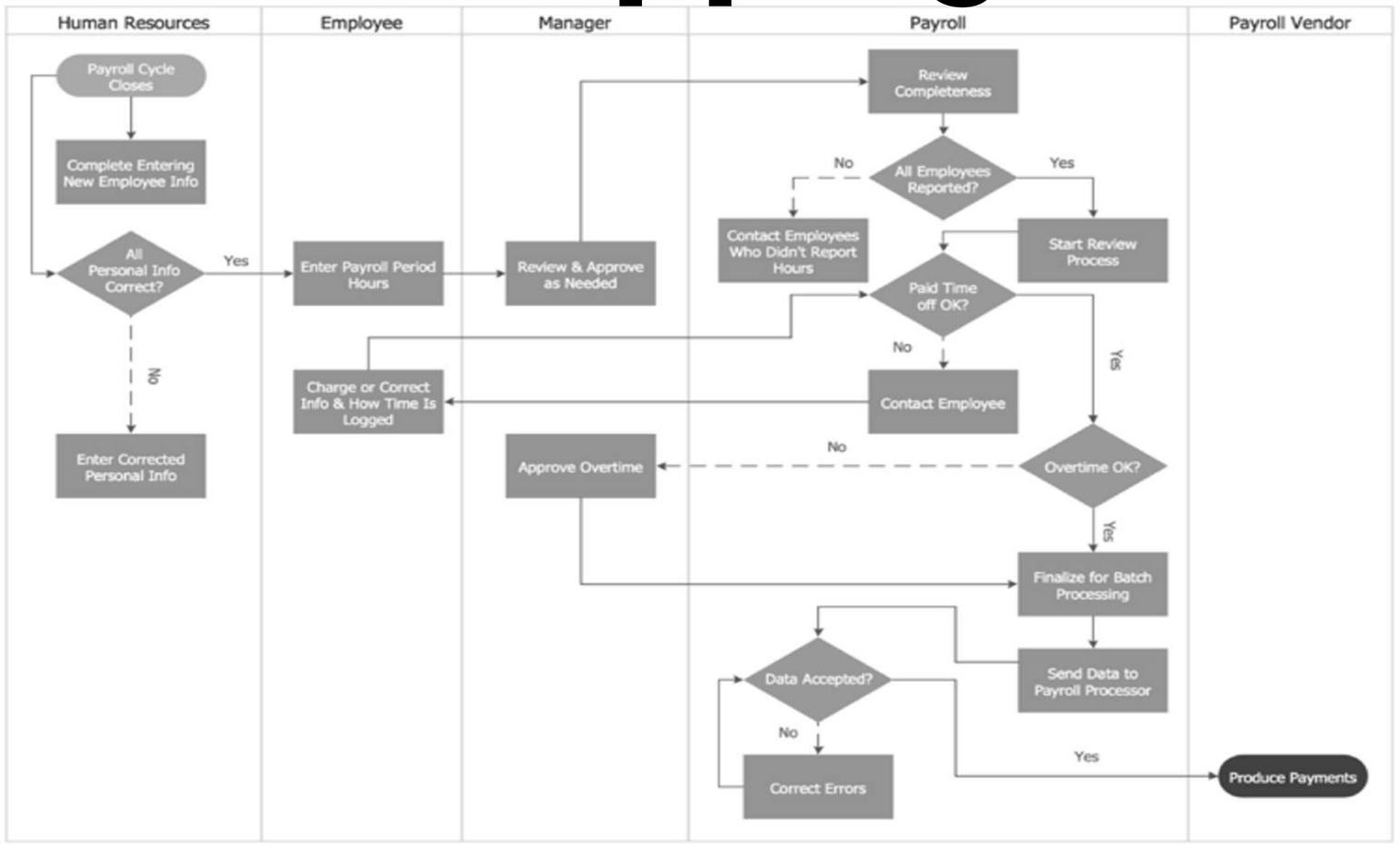

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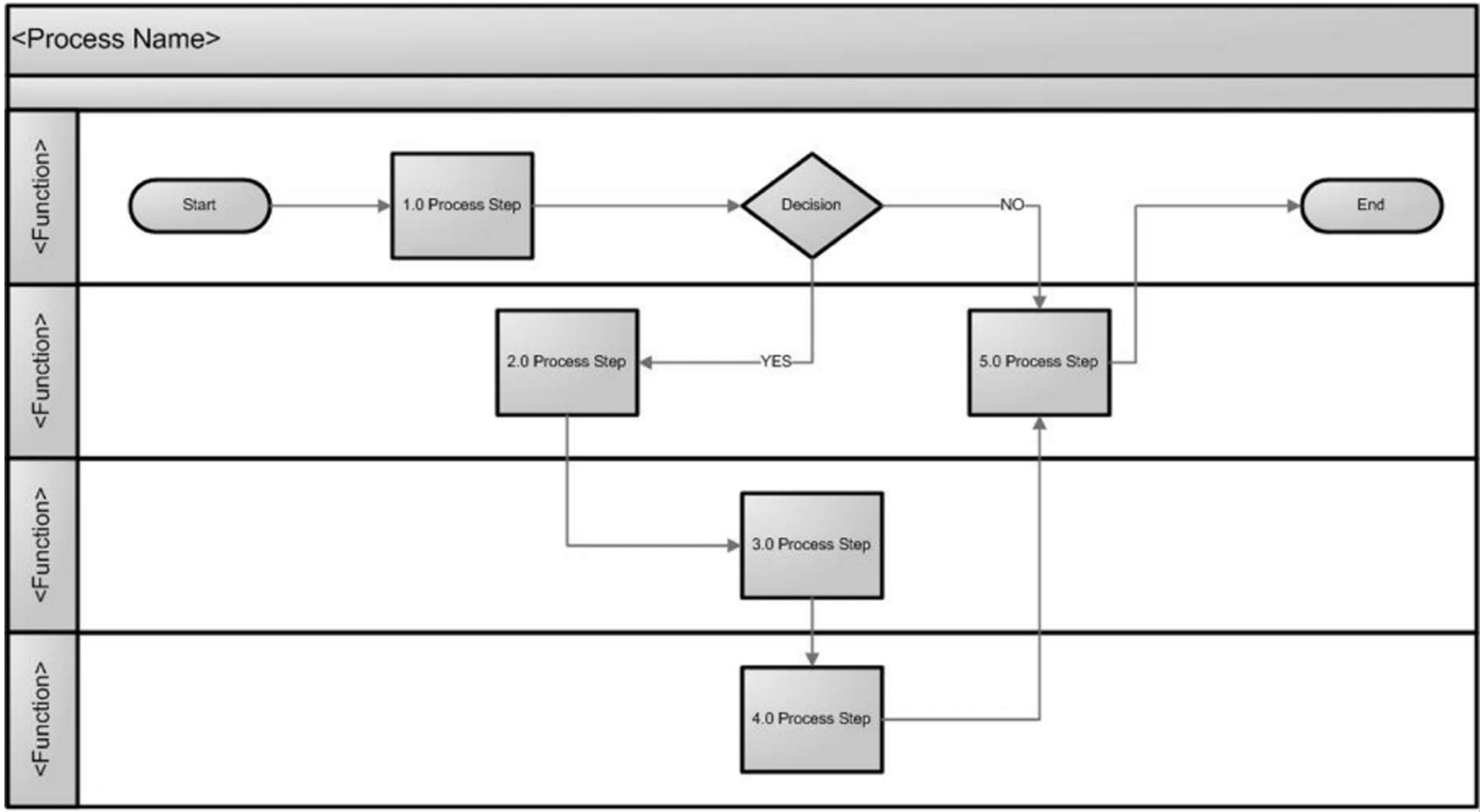

QUESTIONS & ANSWERS?

Ask Away.

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