



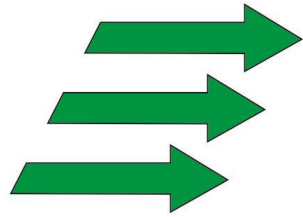
**What is
Lean Six
Sigma and
What is it
used for?**

THE LEAN SIX SIGMA BELT SYSTEM



What is Lean Six Sigma?

Lean and Six Sigma complement each other to provide a comprehensive toolset to increase the speed and effectiveness of any process



LEAN

Reduces Waste
and streamlines a process

+



SIX SIGMA

Reduces Defects
and effectively resolves problems

=



LEAN SIX SIGMA

LEAN + SIX SIGMA successfully
solves problems and improves
processes faster and more efficiently

Principles of Lean Thinking

Lean maximizes productivity while minimizing waste to achieve **Value**

Identify Customers and Value

- Stakeholders and what they value

Identify & Map a Value Stream

- Value Stream Mapping (VSM)

Eliminate Waste

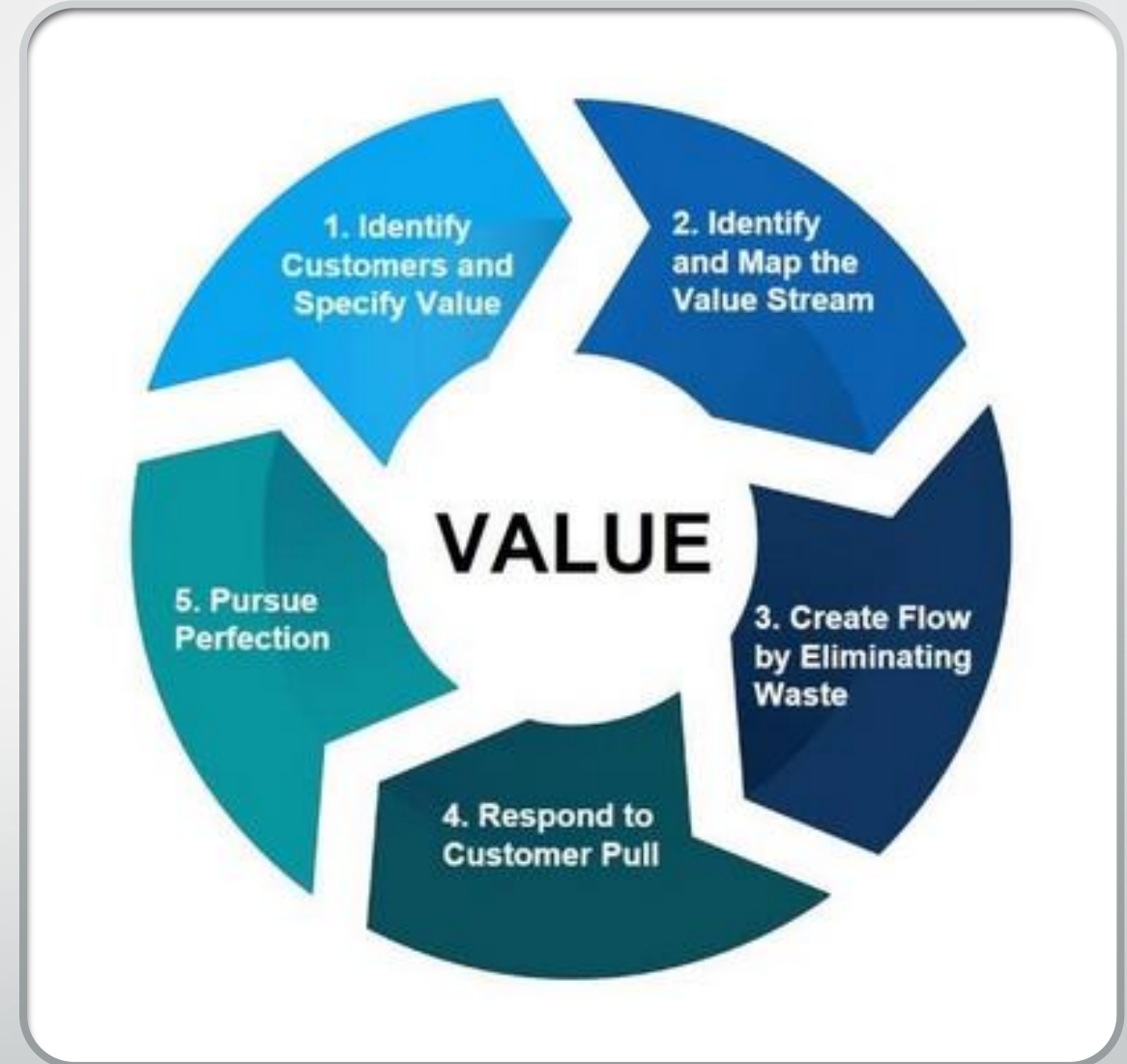
- The 8 Wastes of Lean

Voice of the Customer

- Requirements

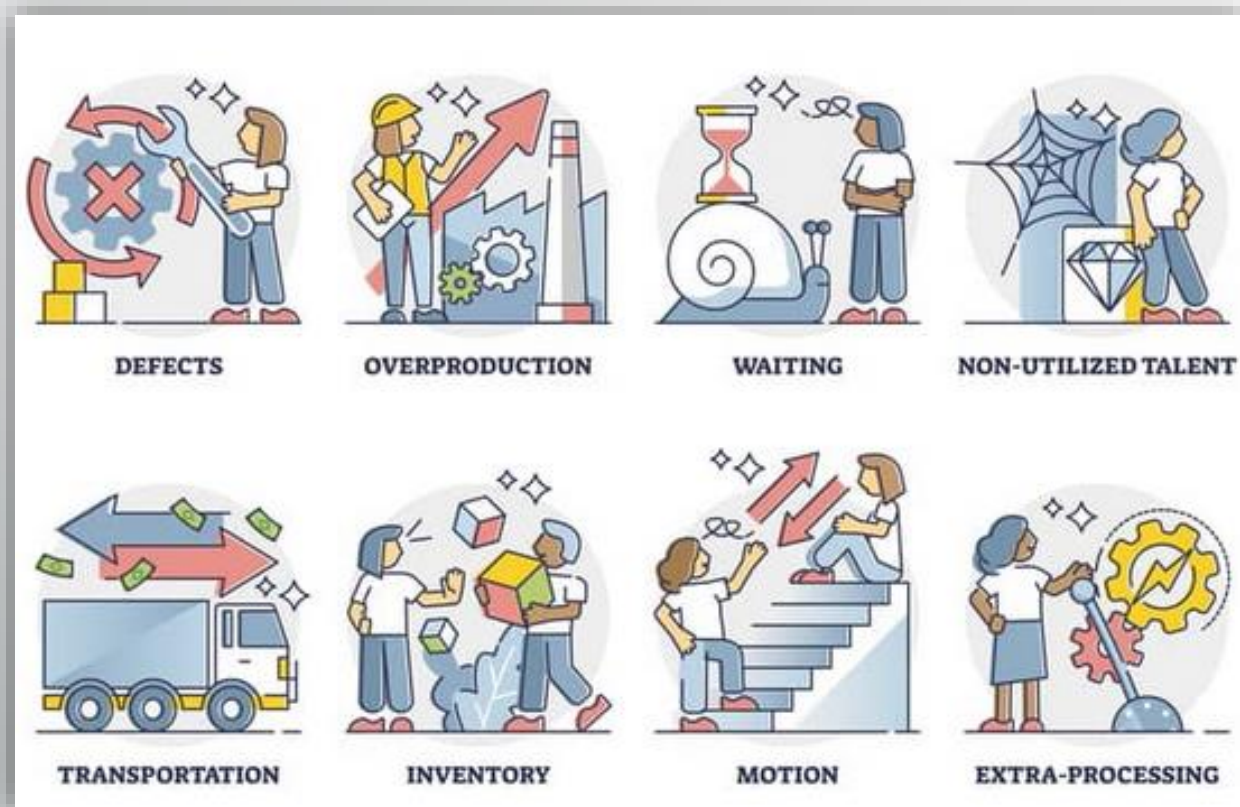
Pursue Perfection

- Continuous Evaluation and Improvement



The 8 Wastes of Lean

“Lean” maximizes productivity while minimizing waste



D: Defects

O: Overproduction

W: Waiting

N: Non-Utilized Talent

T: Transportation

I: Inventory

M: Motion

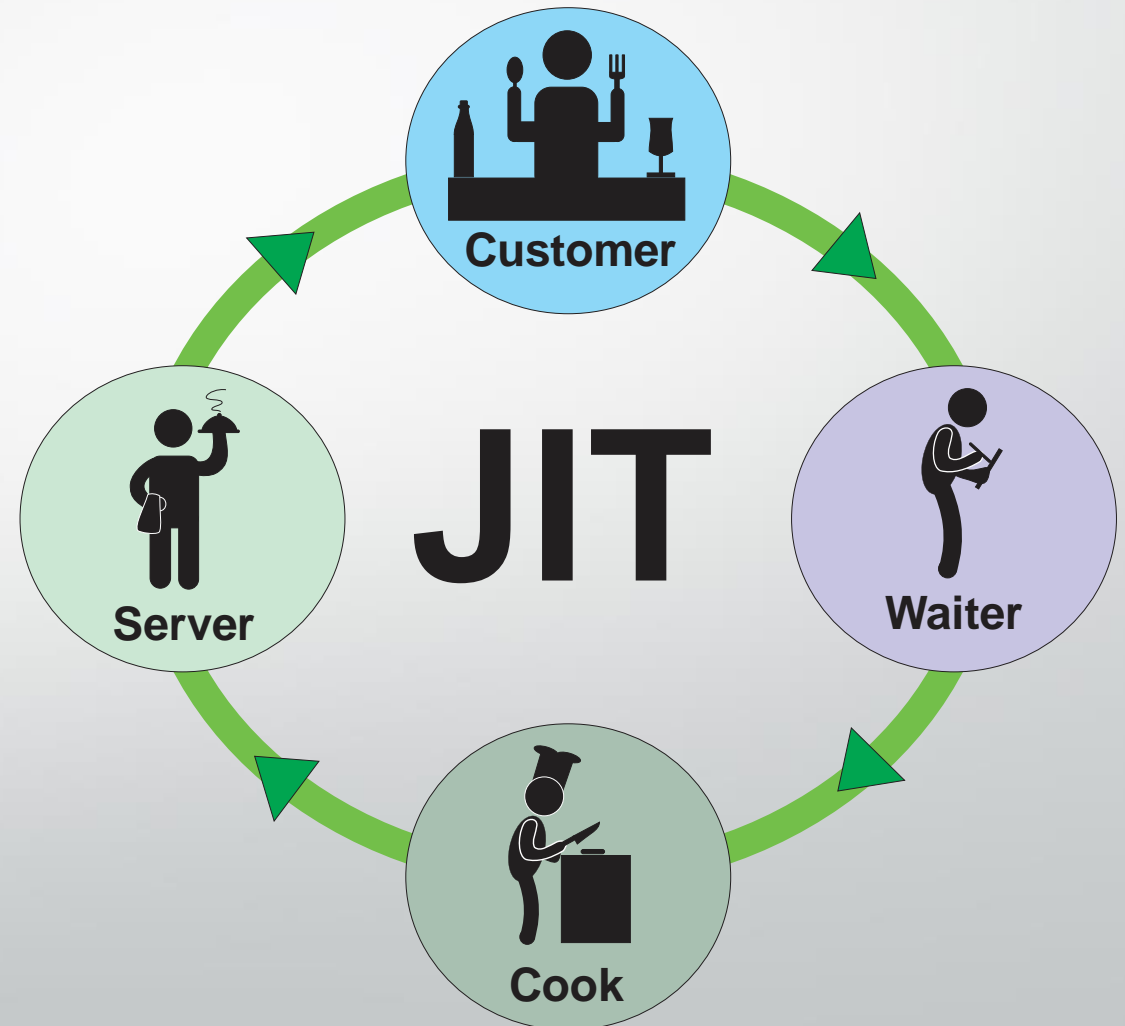
E: Extra Processing

Just In Time

JIT is meeting the demand of the customer exactly, in time, quality, and quantity.

On-Demand Production System

- *Step 1: Maximize Efficiency*
- *Step 2: Maintain Quality Control*
- *Step 3: Choose the right Technology*
- *Step 4: Secure your Supply Chain*



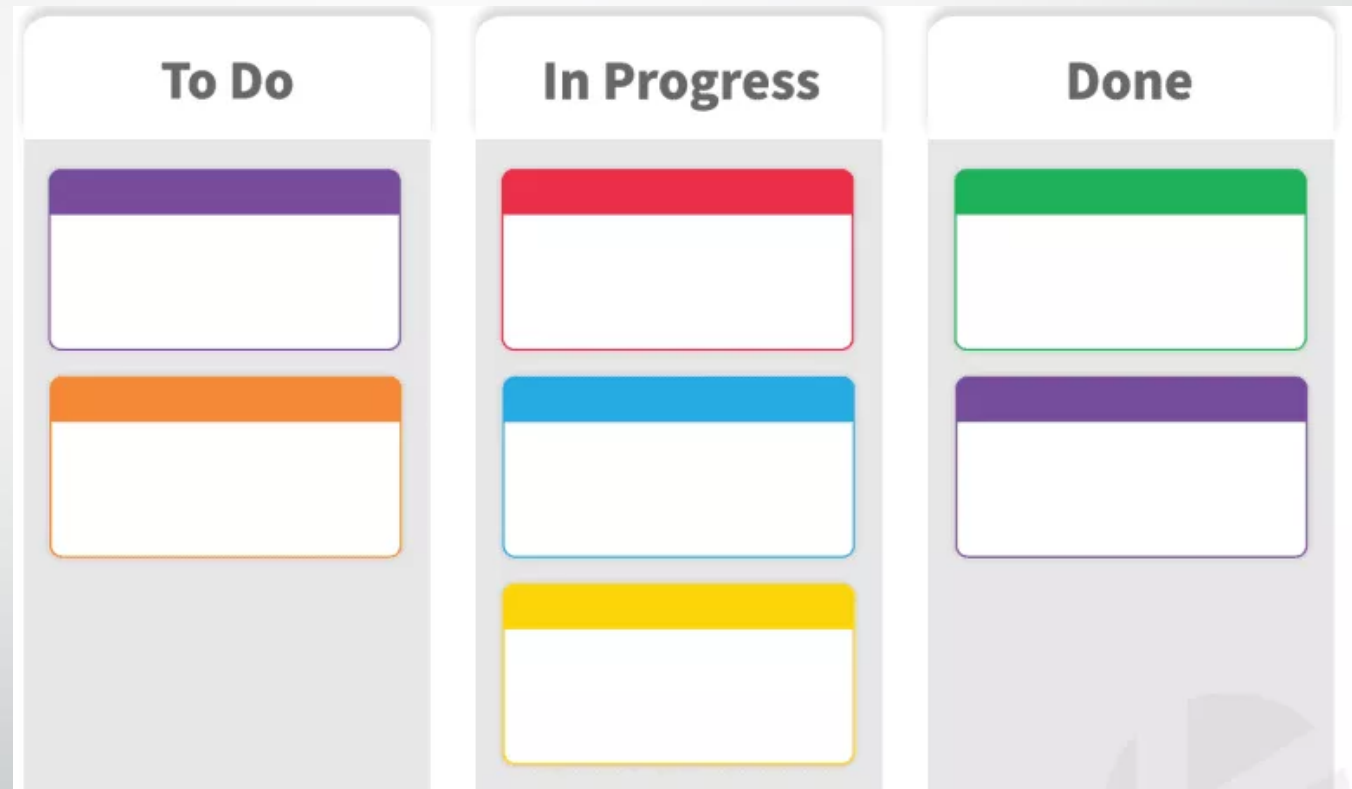
Kanban Board

A physical or digital tool to help visualize work or tasks to be completed

Other possible Kanban columns

- *Backlog*
- *In Queue*
- *In Testing*
- *Validate*
- *Peer Review / Approval*
- *On Hold*
- *Cancelled*

Can have just a few (or many) columns



Six Sigma

Six Sigma is a set of tools and techniques used for process improvement and removing defects.

Six Sigma's golden methodology

DMAIC



The DMAIC process

DMAIC is a data-driven improvement cycle or framework that breaks down problem solving into five phases



Improvement “Where do I start”?



- *What business function takes the most people to support?*
- *Which process experiences the most mistakes (or defects)?*
- *What process cost the most when a mistake happens?*
- *What service receives the most complaints?*
- *What process takes the longest to complete?*
- *What process or service is the most inconsistent?*
- *What risk has the potential to damage our reputation?*
- *Which process, service, or function has the highest risk?*
- *Which process, service, or function has the highest “legal” risk?*



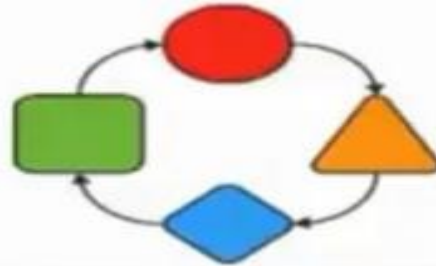
Listen to the Voices



VOC is a term that describes your customer's feedback about their experiences, and expectations for your products or services.

VOC focuses on customer needs, wants & expectations

Voice of the Process



Defines the capability of your processes and details how well your process is doing to meet specifications, targets, and goals.

VOP often comes from the use of Lean Six Sigma statistical tools, such as a run chart or control chart.

Voice of the Business



Details what people want, need, and expect of your business.

- Financial data
- Stock price
- Return on Investment
- Profits
- Customer ratings

Voice of the Employee

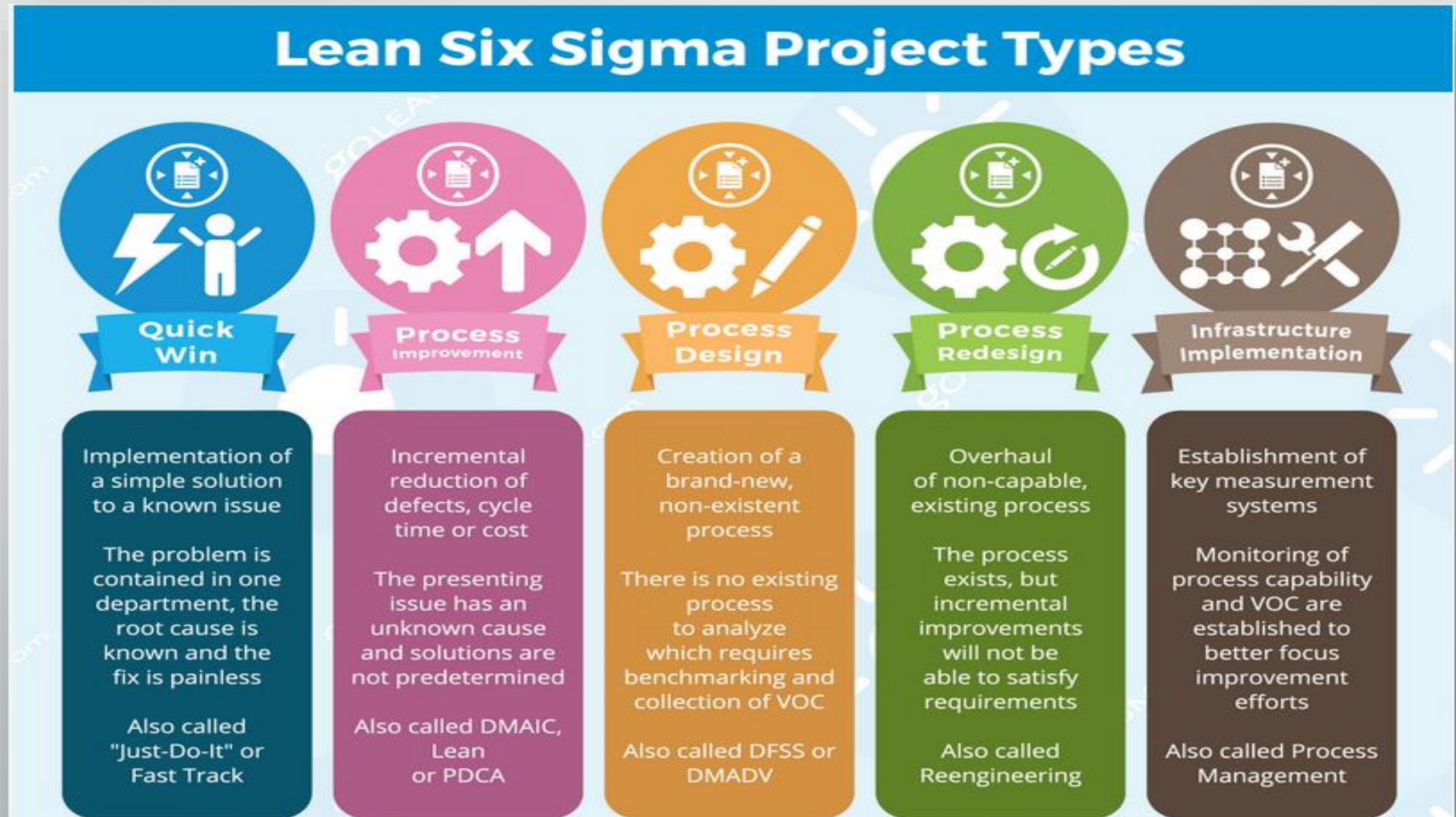


Expresses the needs, wants and expectations of the people who work for the organization.

- Improving employee experience
- Improving workplace culture
- Boosting productivity

Project Selection

You need to first select a Good Project.



What Tools are used in Lean Six Sigma

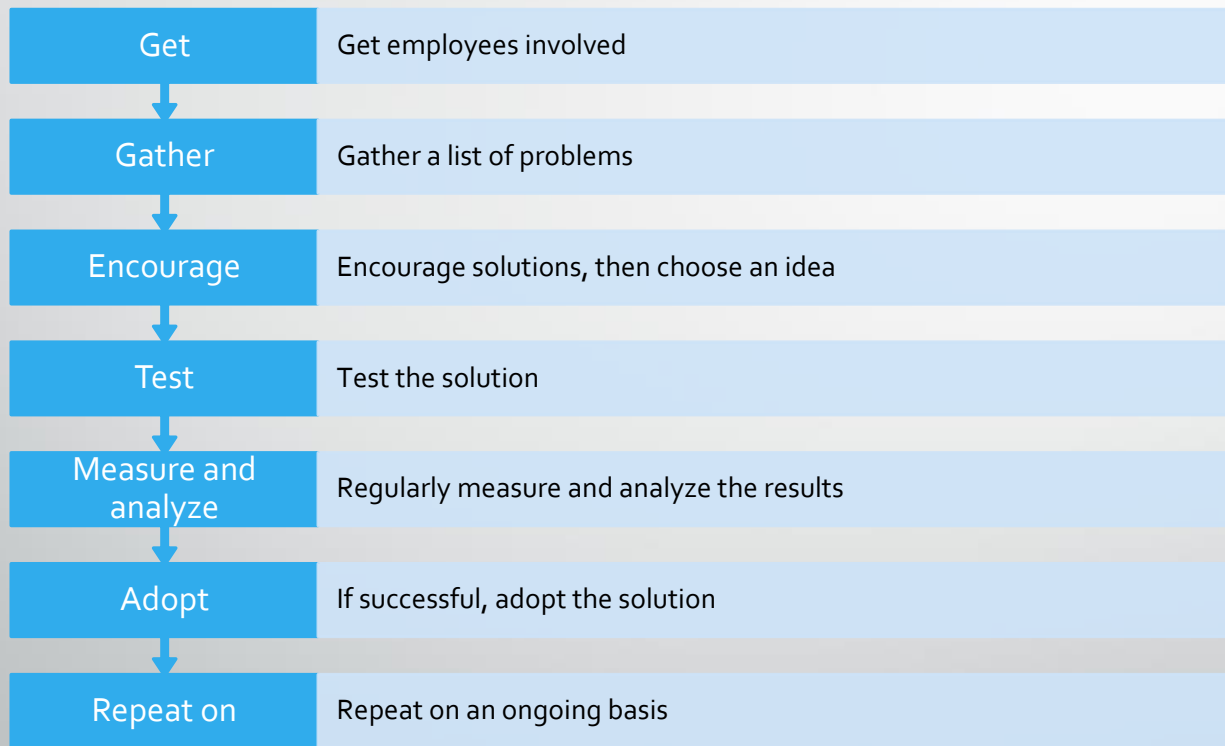
There is a large variety of tools and templates used in Lean Six Sigma.

PROCESS WALK INTERVIEW SHEET
VOICE OF THE CUSTOMER
5S SYSTEM
RACI MATRIX
FISHBONE DIAGRAM
FMEA
PARETO CHART
SWIMLANE MAP
COPQ
PRIORITY MATRIX
KAIZEN
THREATS & OPPORTUNITIES MATRIX
5 WHY'S
PROJECT CHARTER
REGRESSION ANALYSIS
POKE-YOKE
KANBAN
VALUE STREAM MAPPING
STAKEHOLDER ANALYSIS
PROJECT SELECTION TOOL
DMADV
MISTAKE PROOFING
COMMUNICATION PLAN
SIPOC

THREATS & OPPORTUNITIES MATRIX SIPOC

Kaizen

Kaizen is a compound of two Japanese words that together translate as “*Good Change*” or “*Improvement*”.



Using Six Sigma for Risk Analysis

The main purpose of Six Sigma tools and techniques in risk analysis is to improve cycle times and use statistical data to do away with errors and defects.

- 1. Identify the Risk*
- 2. Gather Risk Metrics*
- 3. Evaluate the degree of Risk*
- 4. Use Quantitative methods*
- 5. Cause and Effect Matrix*
- 6. Monitors and Controls*



Risk Analysis and Management

Once you have identified a risk and determined its probability and impacts, you can move onto the next steps of Risk Management.

Risk Mitigation

- *What steps need to be taken to reduce (or eliminate) the chance of the risk from becoming realized?*
- *Or do we want to Avoid, Transfer, or Accept the risk?*



Cost to Reduce (Mitigate)

- *It is important to understand what it will cost to mitigate a risk.*
- *If Management is risk adverse, then they may want to spend the additional money to prevent, eliminate, avoid, or transfer a risks possible impacts.*



Risk Response

- *How will you respond if a risk is Realized?*
- *Are there secondary risks once a response has been implemented?*

Stakeholder Analysis

Stakeholder Analysis enables you to outline who has a vested interest in how a process or project performs.

Remember that stakeholders do not receive the product or service.

It helps you determine how and when to reach out and communicate with stakeholders to build buy-in

This is critical to a project's success.

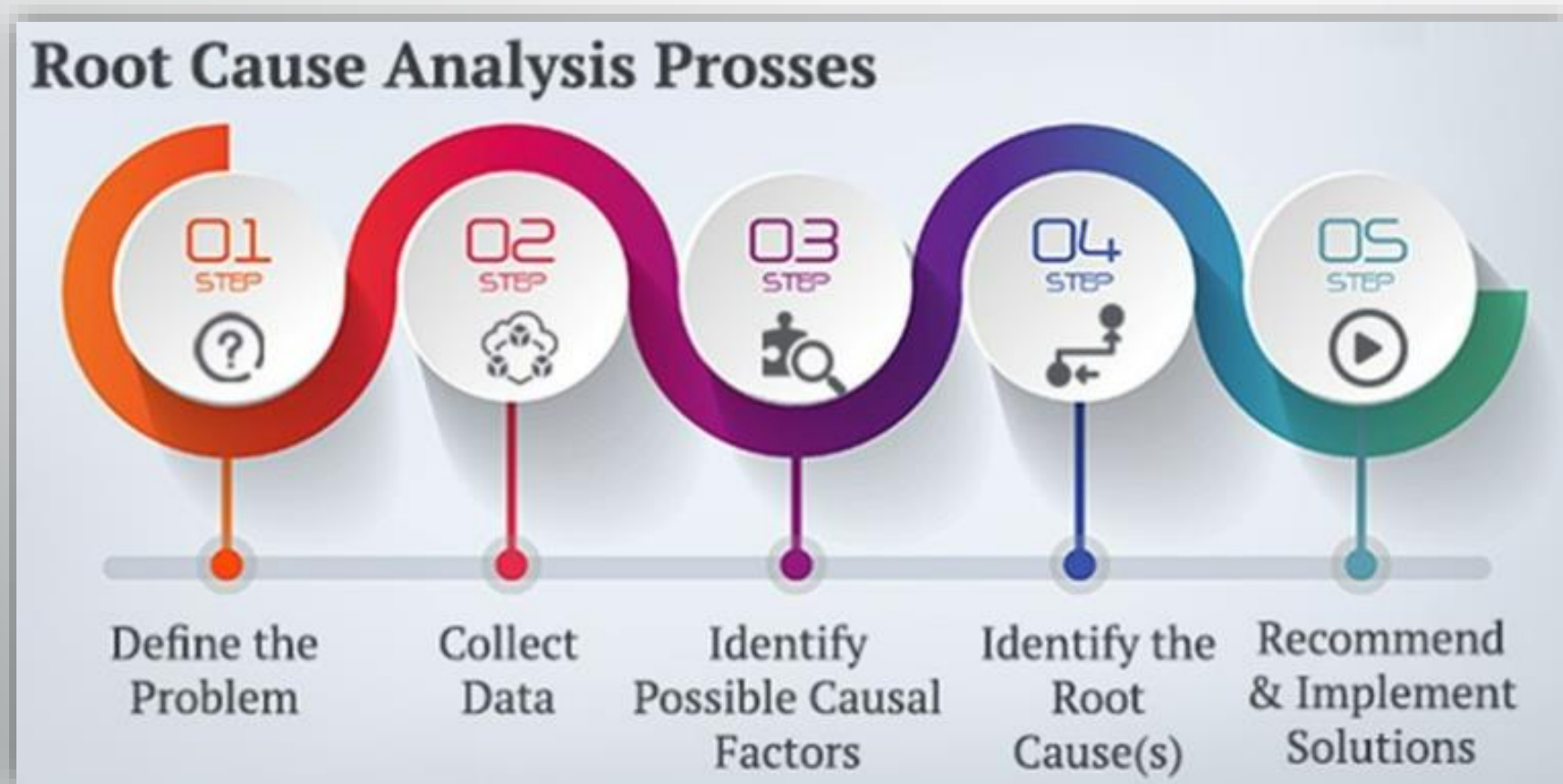


Root Cause Analysis (RCA)

Definitions:

A **Root Cause** is defined as the core issue (or highest-level cause) that caused a nonconformance.

Root Cause Analysis (RCA) is defined as a collective term that describes a wide range of *approaches, tools, and techniques* used to uncover the true cause of a problem.



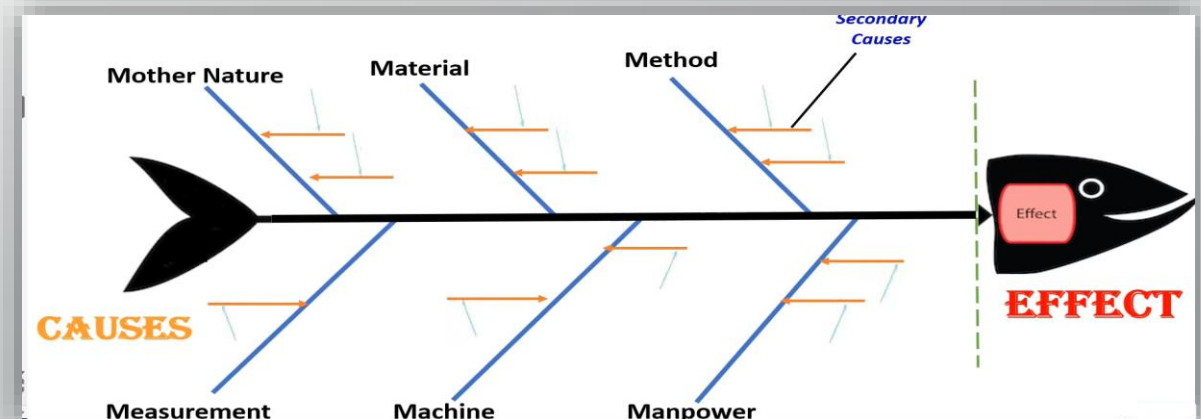
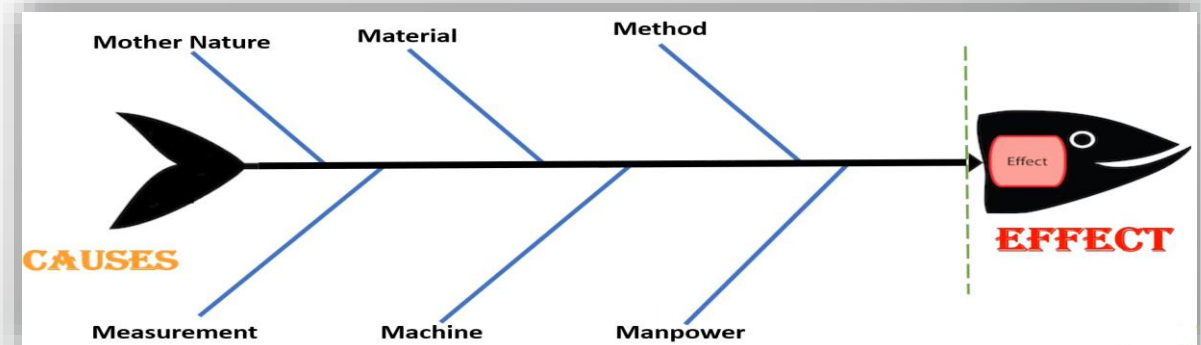
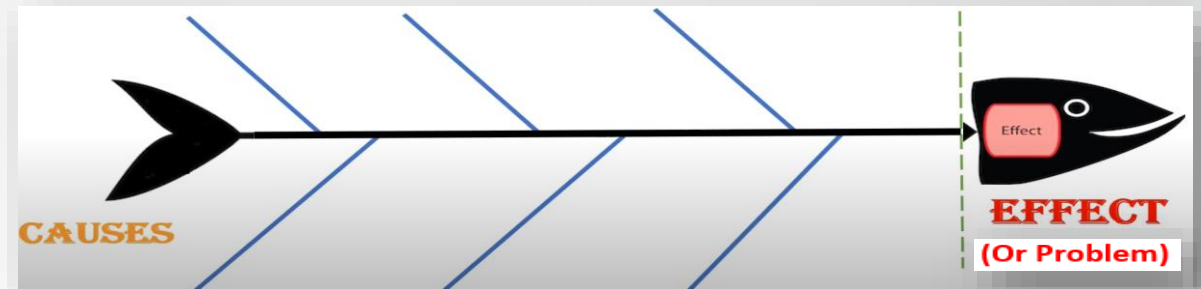
Cause and Effect Diagram

Also known as the "Ishikawa" or "Fishbone" Diagram

A graphical tool used to explore and display possible causes of a certain effect (or problem) and to help identify a root cause.

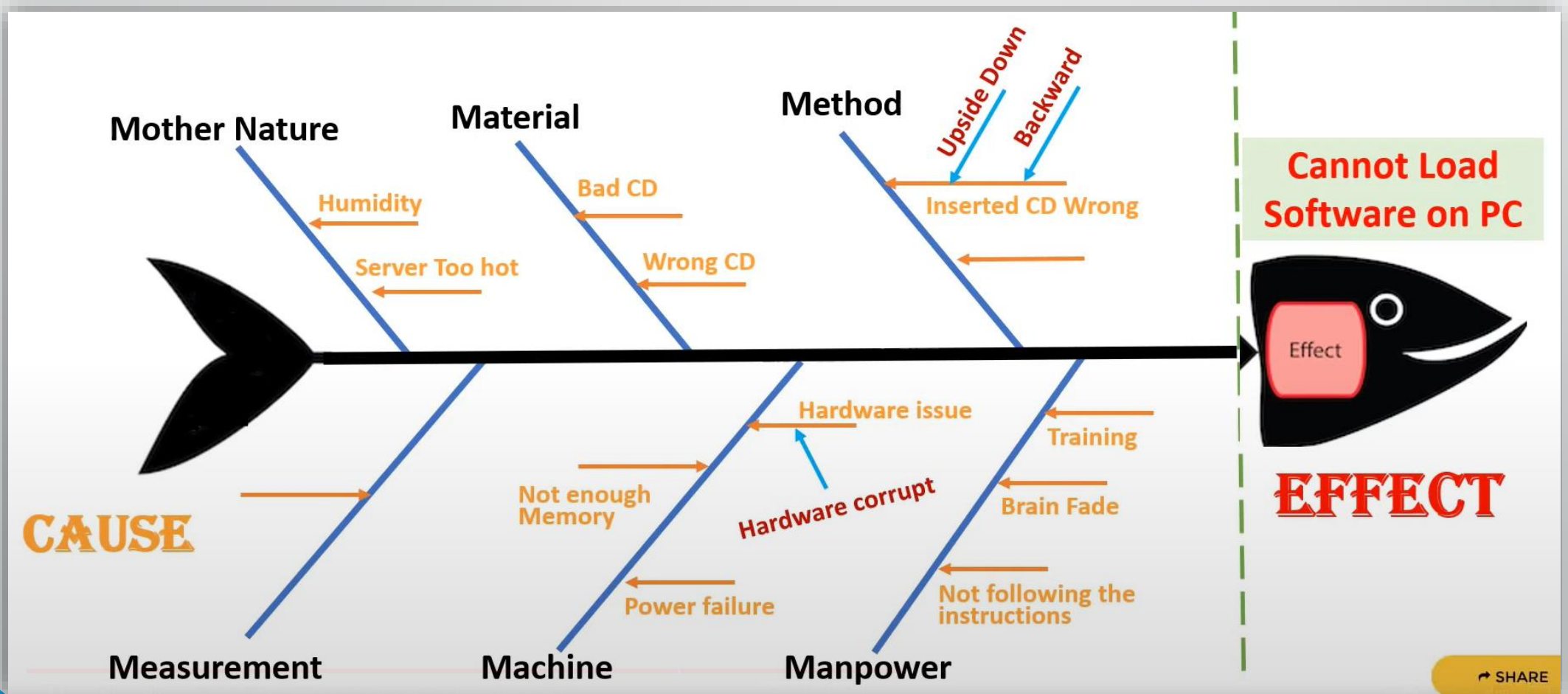
Determine categories for the possible causes of the effect or problem you are experiencing.

Fill in causes under each category and identify any "Secondary" causes or "Tertiary" causes.



Cause and Effect Diagram

A Fishbone diagram provides the framework to now begin to conduct further troubleshooting to eliminate causes and ultimately identify your true root cause.



The 5 Why's

The 5 Why's is the ultimate tool for determining a root cause of a problem

Problem: I was late for work

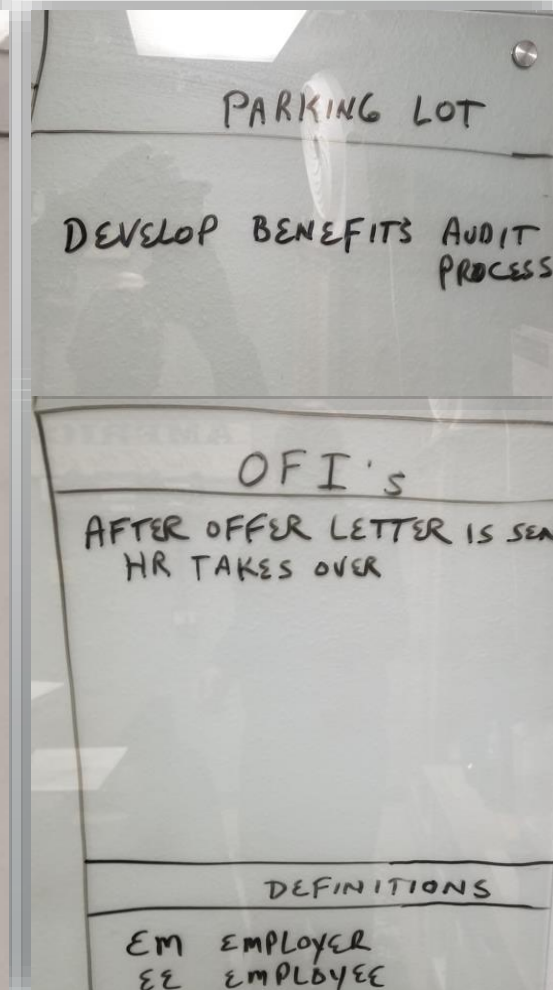
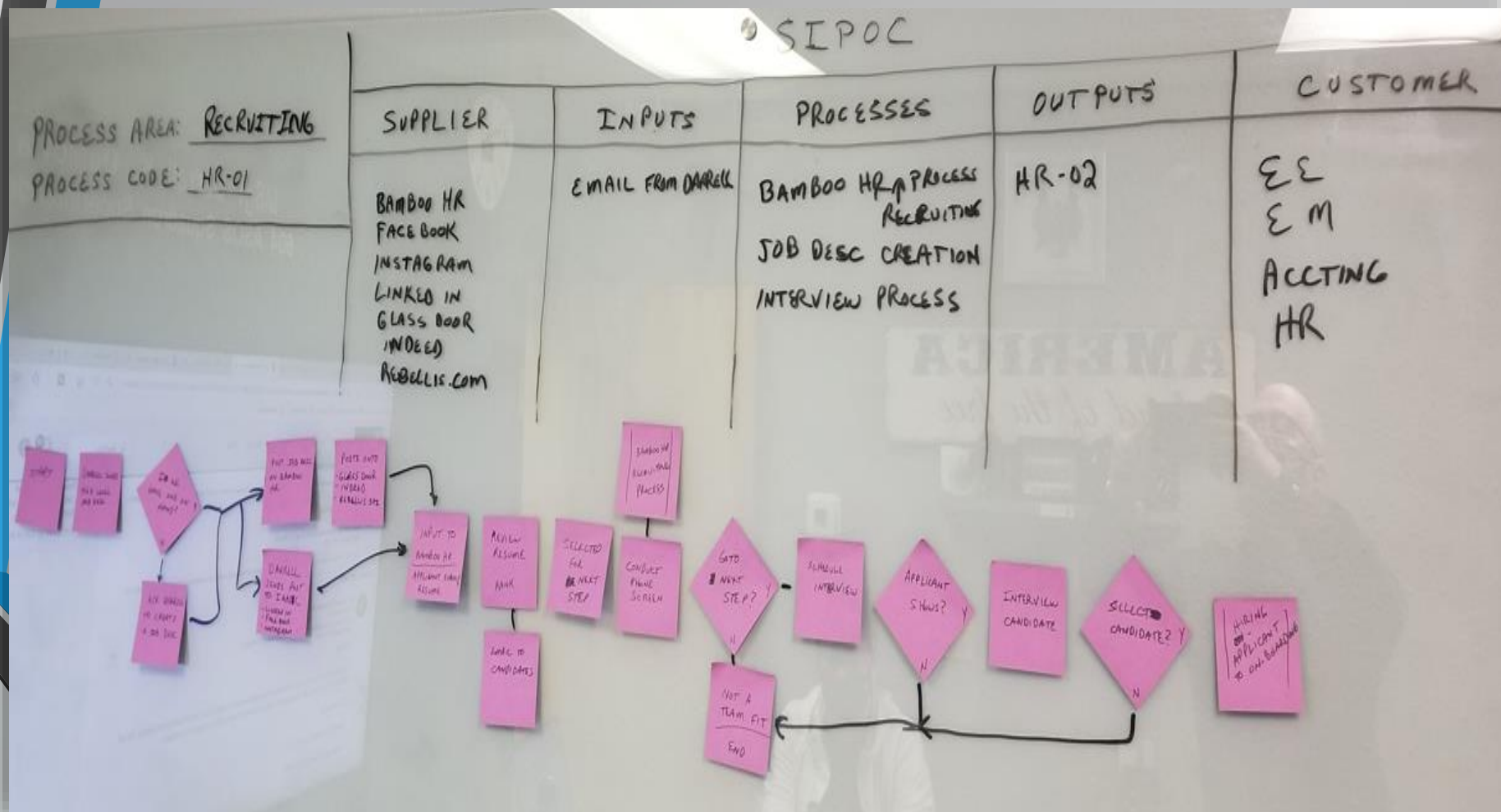
- **Why?**
 - "Because I ran a red light and got a ticket"
 - **Why?**
 - "Because I was in a hurry"
 - **Why?**
 - "Because I woke up late"
 - **Why?**
 - "Because my alarm didn't go off"
 - **Why?**
 - **"Because I forgot to set my alarm when I went to bed"**



Value Stream Mapping (VSM)

Components:

Process Name, Process Code, SIPOC, Current State Map, Parking Lot, OFI's, Definitions



Project Completion

Now you need to conduct a review to ensure all your goals and objectives have been met.

Are there other entities or organizations that will be affected by the results of this project?



Stakeholders

Customers

Users

Management

Legal

Human Resources

Other Departments



Sustain your accomplishments

Metrics



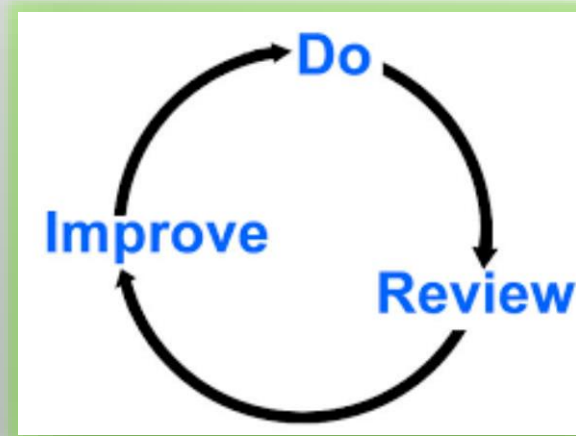
Documentation



Training



Review & Improve



The image features seven silhouettes of people in various celebratory poses, such as jumping and raising their arms, set against a bright sunset or sunrise background. The scene is reflected in a dark surface below, creating a symmetrical effect. The overall mood is one of joy and achievement.

*Celebrate
your success!*

Resources

- Lean Six Sigma Institute (LSSI):** <https://www.leansixsigmainstitute.org>
- Management & Strategy Institute (MSI):** <https://www.msicertified.com>
- Voice of the Customer:** https://www.youtube.com/watch?v=Jzcxo_5ifjM
- Just in Time:** <https://www.thinkleansixsigma.com/article/just-in-time>
- Lean 6S:** <https://www.creativesafetysupply.com/articles/6s-safety/>
- DMAIC Process:** <https://www.simplilearn.com/dmaic-process-article>
- Kaizen Events:** <https://www.leansixsigmadefinition.com/glossary/kaizen/>
- Fishbone Diagram:** <https://asq.org/quality-resources/fishbone>
- The 5 Whys Method:** <https://www.lean.org/lexicon-terms/5-whys/>
- Smartsheet Lean Six Sigma Templates:** <https://www.smartsheet.com/free-lean-six-sigma-templates>
- Stakeholder Analysis Templates:** <https://slidemodel.com/templates/stakeholder-matrix-powerpoint-template/>
- Value Stream Mapping:** <https://www.atlassian.com/continuous-delivery/principles/value-stream-mapping>

QUESTIONS?

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