

LEAN Ohio

GREEN BELT

Transforming the Public Sector

Fishbone Root Cause Analysis

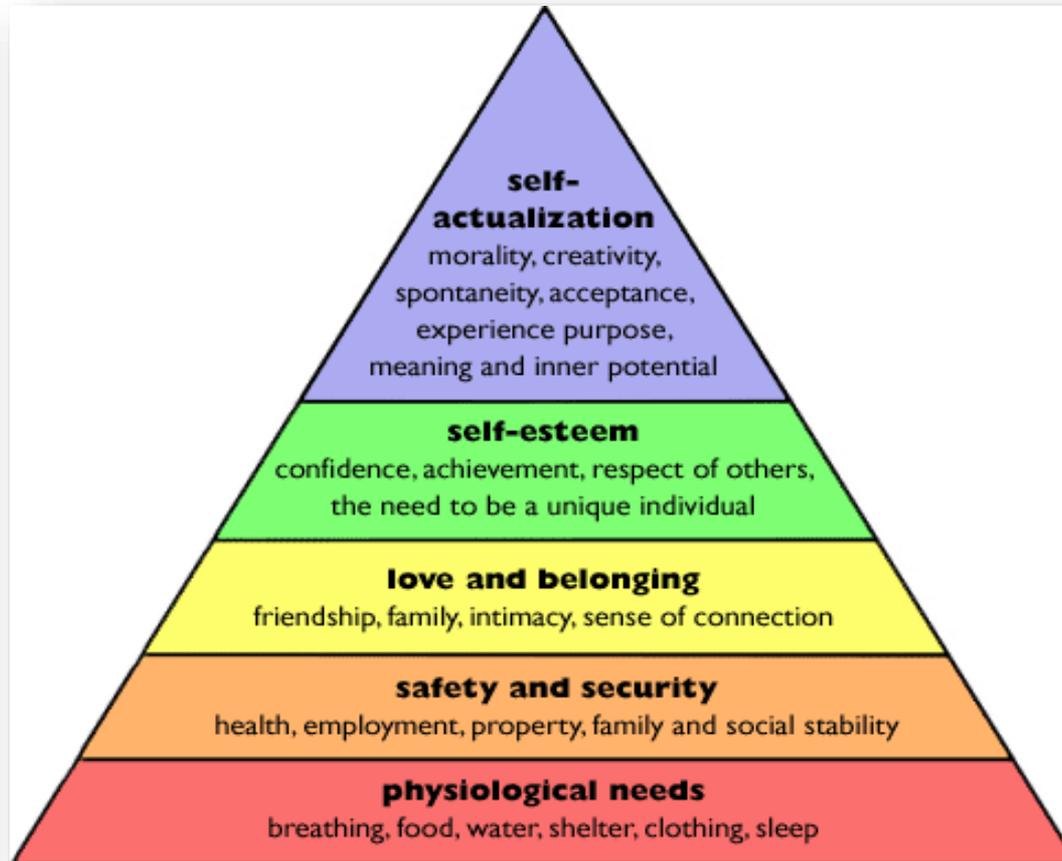
Learning Objectives

- Maslow's Hierarchy of Needs
- Juran's Classification of Customer Needs
- Introduce Root Cause Analysis
- Review 5 Whys
- Identify the purpose of a Fishbone Diagram
- Describe how to use Fishbone Diagram to analyze a problem

“Every problem is an opportunity.”

-Kilchiro Toyoda, founder of Toyota

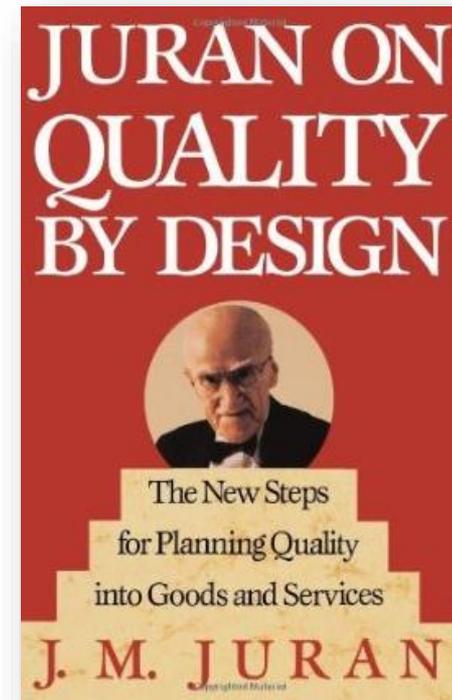
Maslow's Hierarchy



Juran's Classification of Customer Needs

The **customer needs** are complex and will fall into five classifications:

- Stated*
- Real*
- Perceived*
- Cultural*
- Unintended*



Root Cause Analysis

- Getting to the Root of the Problem!



Every problem is an opportunity.”
- *Kilchiro Toyoda, founder of Toyota*

Root Cause Analysis Definitions

- A root cause is a factor that causes a **nonconformance** and should be permanently eliminated through process improvement
- Root Cause Analysis is a collective term that describes a wide range of approaches, tools, and techniques used to **uncover causes of problems**

Root Cause Analysis

- Root Cause Analysis is all about getting to the root of the problem
- We want to make sure we are not treating the symptoms but curing the disease

Example: Takes too long to get permit.....everybody work faster!

Root Cause Analysis Tools

Several Lean Six Sigma Root Cause Analysis Tools:

- 5 Whys
- Fishbone Diagram
- Pareto Chart
- FMEA
- SWOT: Strengths, Weaknesses, Opportunities, Threats

why?

why?

why?

why?

why?

Five Whys

- 5 Whys: By repeatedly asking why you can peel away layers of symptoms to lead to root cause of a problem
 - Help Identify the Root Cause(s)
 - Simple and effective tool
 - Don't stop until you reach an answer that is fundamental

Five Whys Example

Problem Statement: You are on your way home from work and your car stops in the middle of the road.



Five Whys Example

- **1. Why** did your car stop?
 - Because it ran out of gas.



Five Whys Example

- **2. Why** did it run out of gas?
 - Because I didn't buy any gas on my way to work.



Five Whys Example

- **3. Why** didn't you buy any gas this morning?

- Because I didn't have any money.



Five Whys Example

- 4. **Why** didn't you have any money?
- - Because I lost it all last night in a poker game.



Five Whys Example

- **5. Why** did you lose your money in last night's poker game?
- - Because I'm not very good at "bluffing" when I don't have a good hand.



Five Whys Example

- **1. Why** did your car stop?
 - Because it ran out of gas.
- **2. Why** did it run out of gas?
 - Because I didn't buy any gas on my way to work.
- **3. Why** didn't you buy any gas this morning?
 - Because I didn't have any money.
- **4. Why** didn't you have any money?
 - Because I lost it all last night in a poker game.
- **5. Why** did you lose your money in last night's poker game?
 - Because I'm not very good at "bluffing" when I don't have a good hand.



Five Why Example

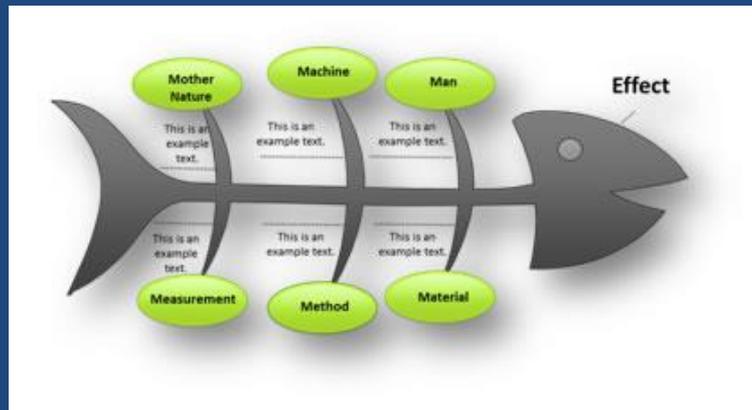
Solution: Stop playing poker?



5 Whys and the Fishbone Diagram

The 5 Whys can be used individually or as a part of the fishbone diagram

“If you don’t ask the right questions, you don’t get the right answers. A question asked in the right way often points to its own answer. Asking questions is the ABC of diagnosis. Only the inquiring mind solves problems.” – Edward Hodnett



Fishbone Diagram: Ishikawa

What is a Fishbone Diagram

- A tool to help identify & display potential causes of a problem
- Involves the whole team
- Visually promotes “System Thinking”
- An organized form of brainstorming
- Prioritizes further analysis

Ishikawa Diagram

- First used by Dr. Ishikawa of the University of Tokyo
- Frequently referred to as an “Ishikawa Diagram”



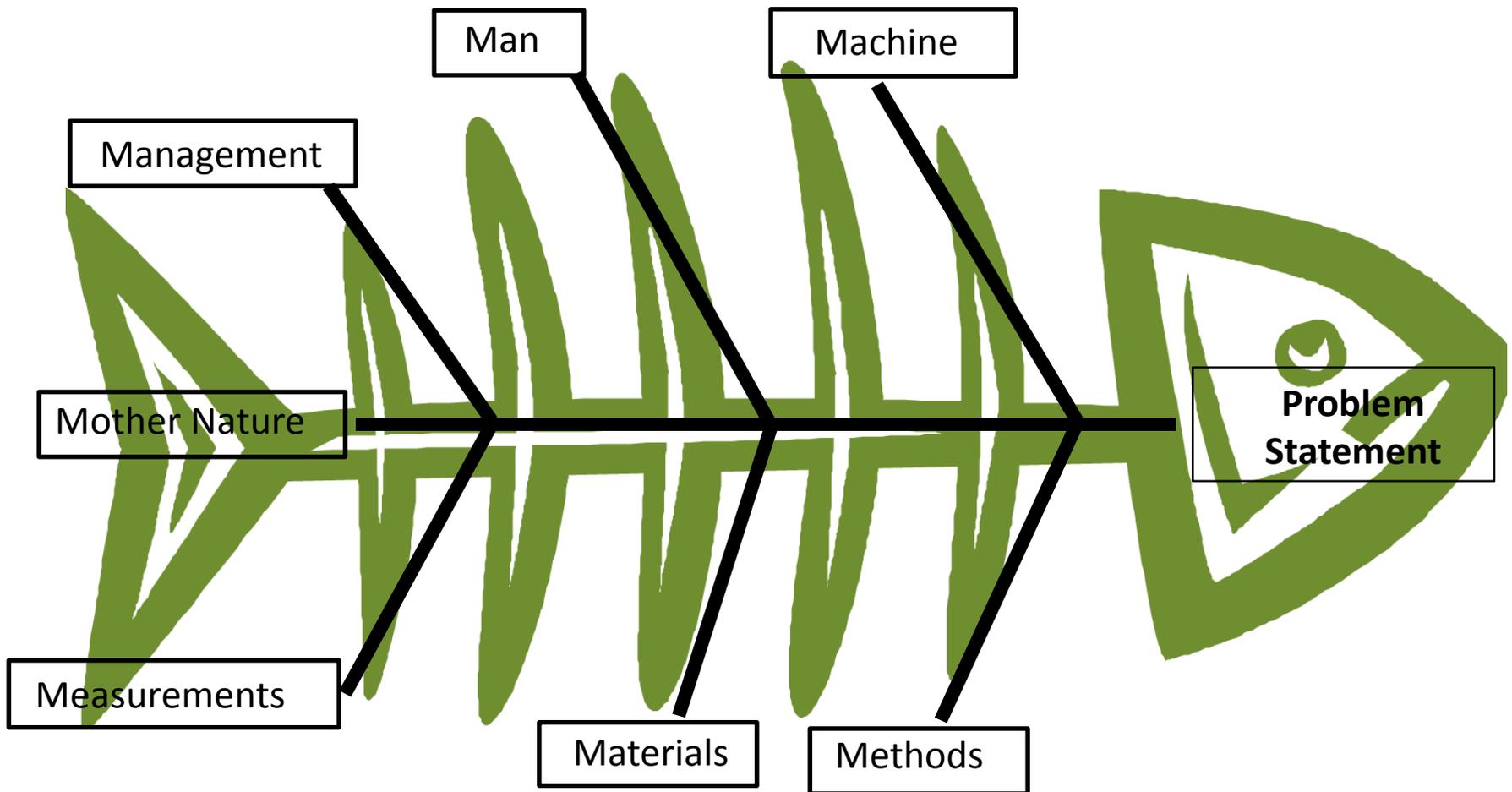
“Failure is the seed of success.”
-*Dr. Ishikawa*

When to use a Fishbone Diagram

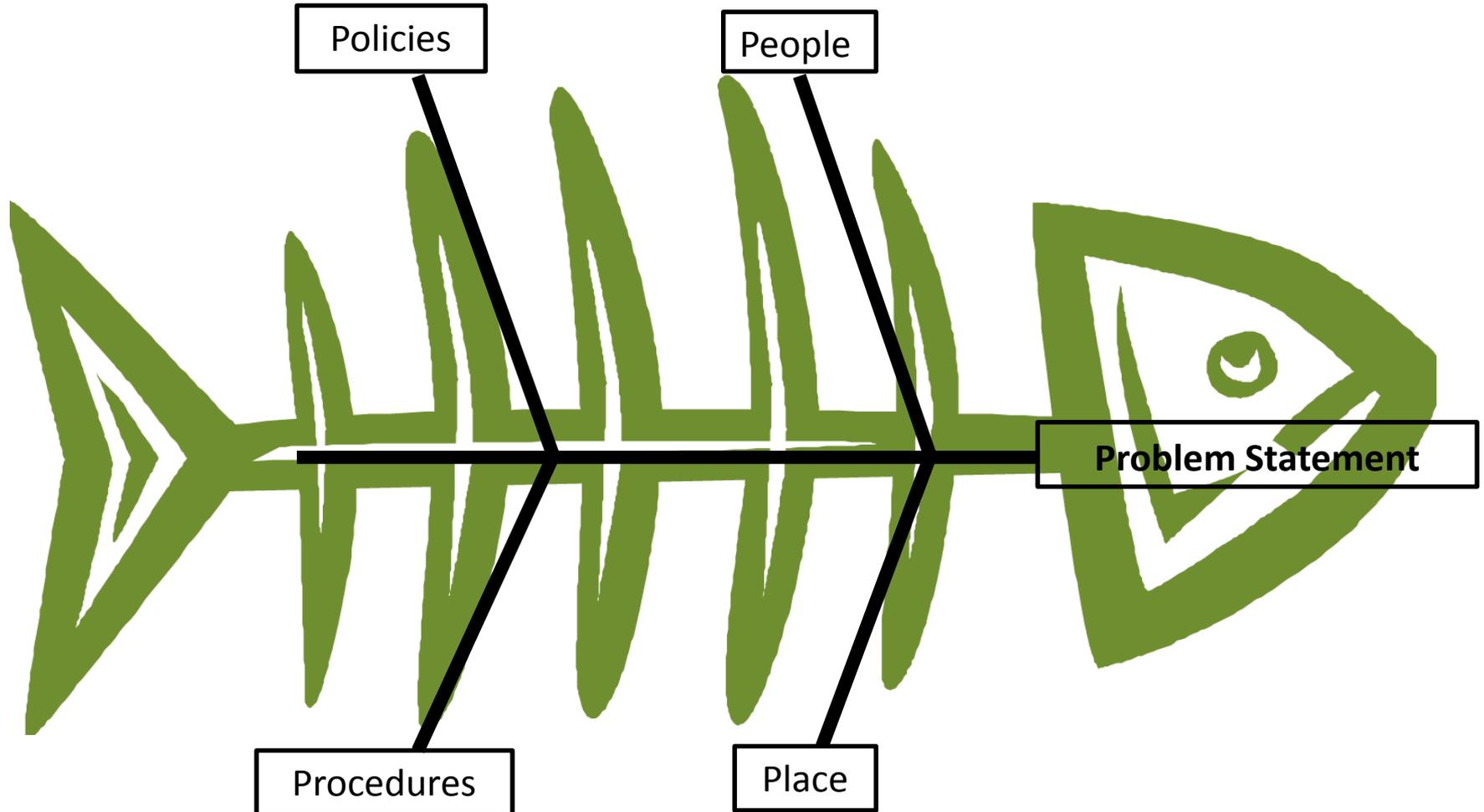
Use during Define to assess the current situation

- To identify possible causes of a problem
- To identify the most likely cause and discover root causes
- To ensure that all perspectives are looked at and nothing is overlooked
- To preclude jumping to solutions
- To move from opinion to testable theories

How to use a Fishbone Diagram



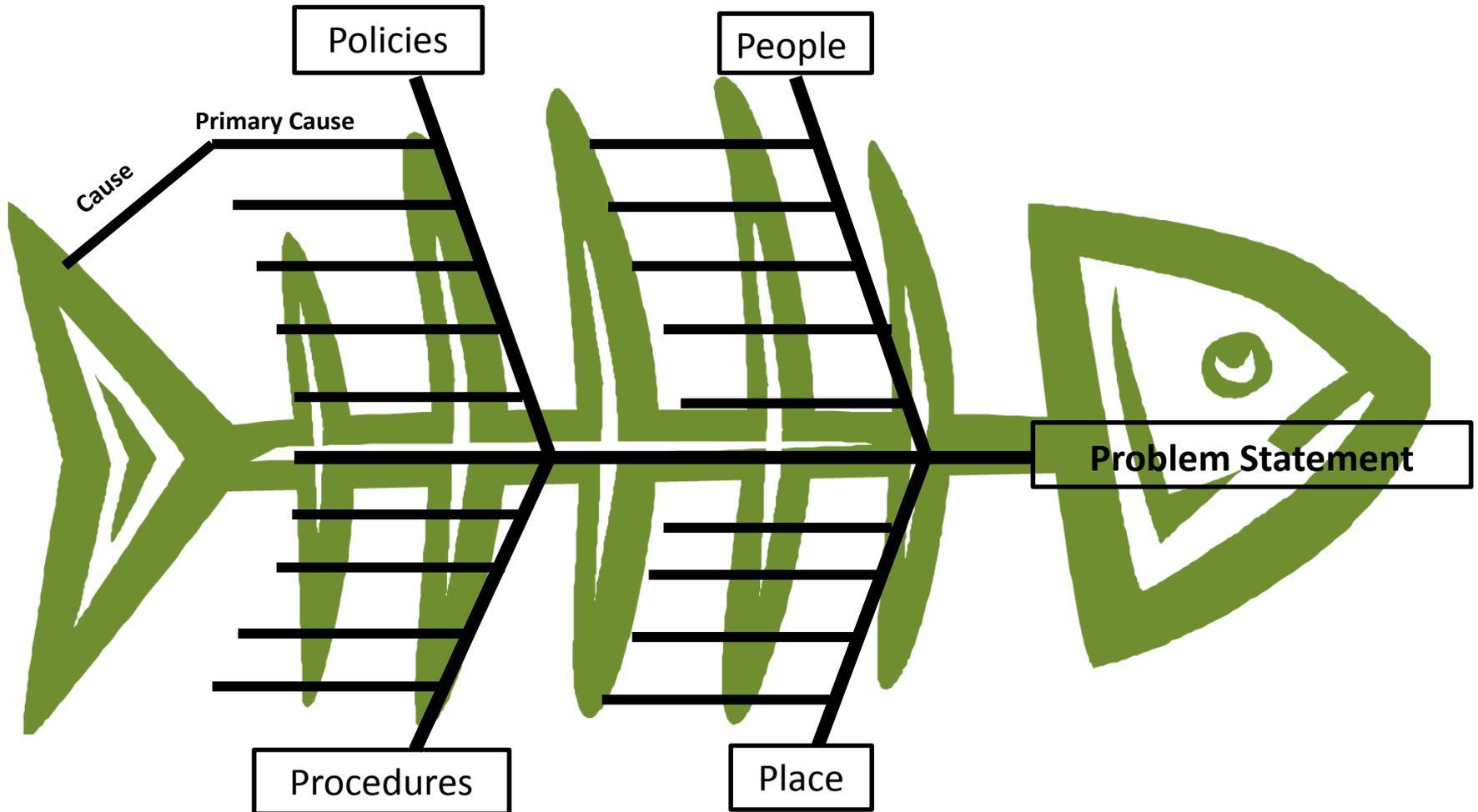
How to use a Fishbone Diagram



How to use Fishbone Diagram

- Select a problem
- Select categories
- Draw a fishbone
- Brainstorm; ask “Why?”
- Keep asking “Why?”

Fishbone Diagram: Design



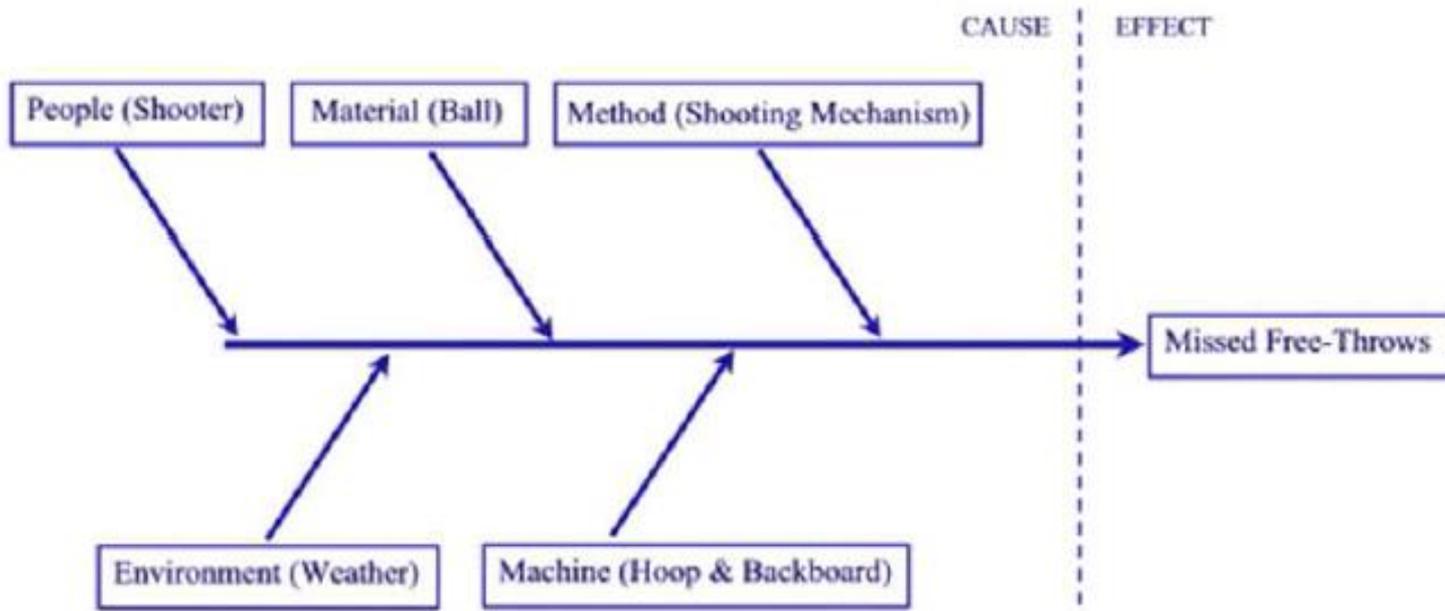
Example

Problem Statement:

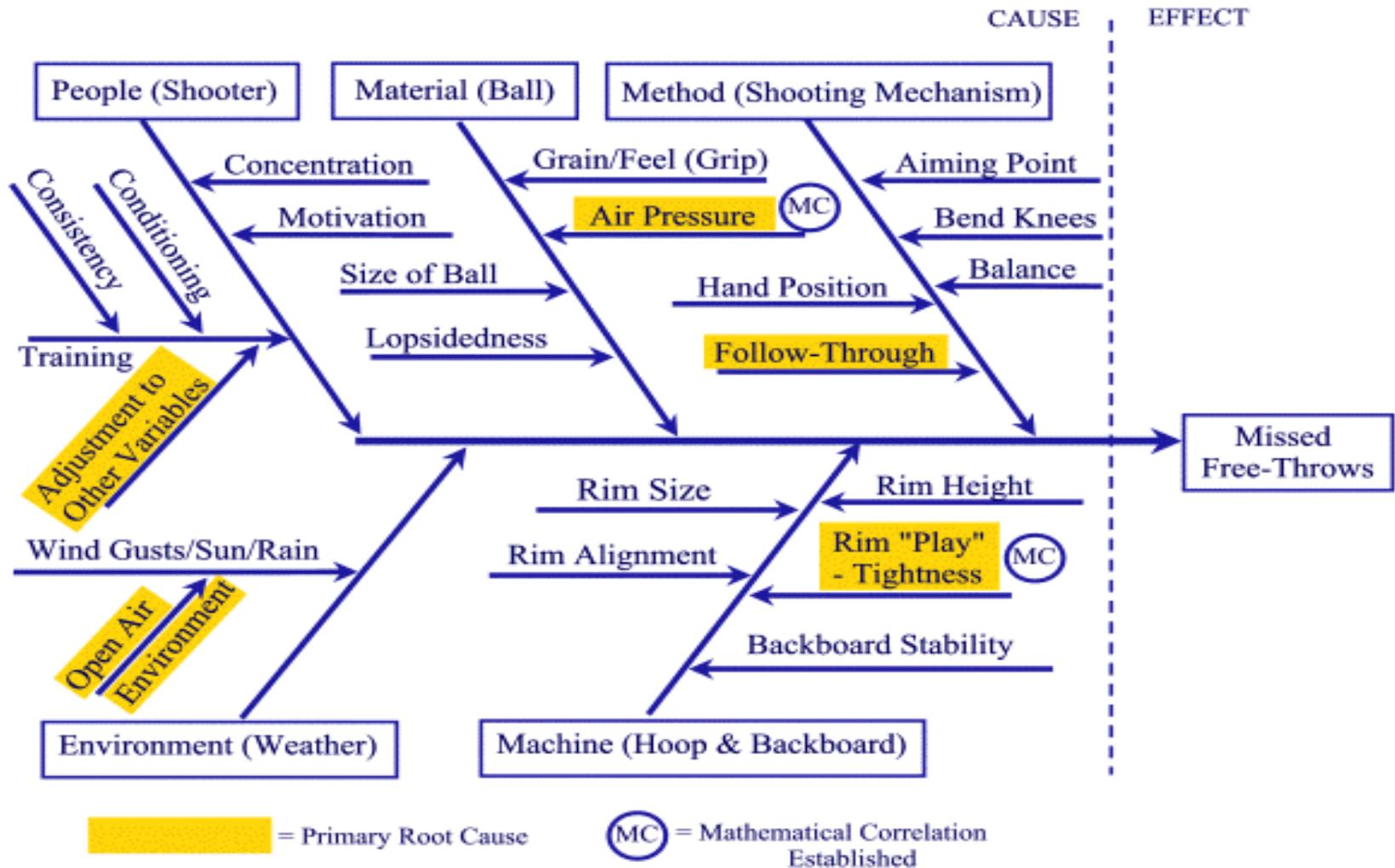
The team keeps missing free throws



Fishbone Diagram



Fishbone Example



Next Step: Analyze the Data

Identify most likely cause

- Causes that have the biggest impact
- Causes that occur often

Verify causes

- With data
- That the causes actually produce the effect that you think they do

Fishbone Diagrams: Tips

- Dig deeply into the causes of the causes
- Use data to verify
- **DON'T JUMP TO CONCLUSIONS!**



Key Learning Points

The Green Belt should now be able to:

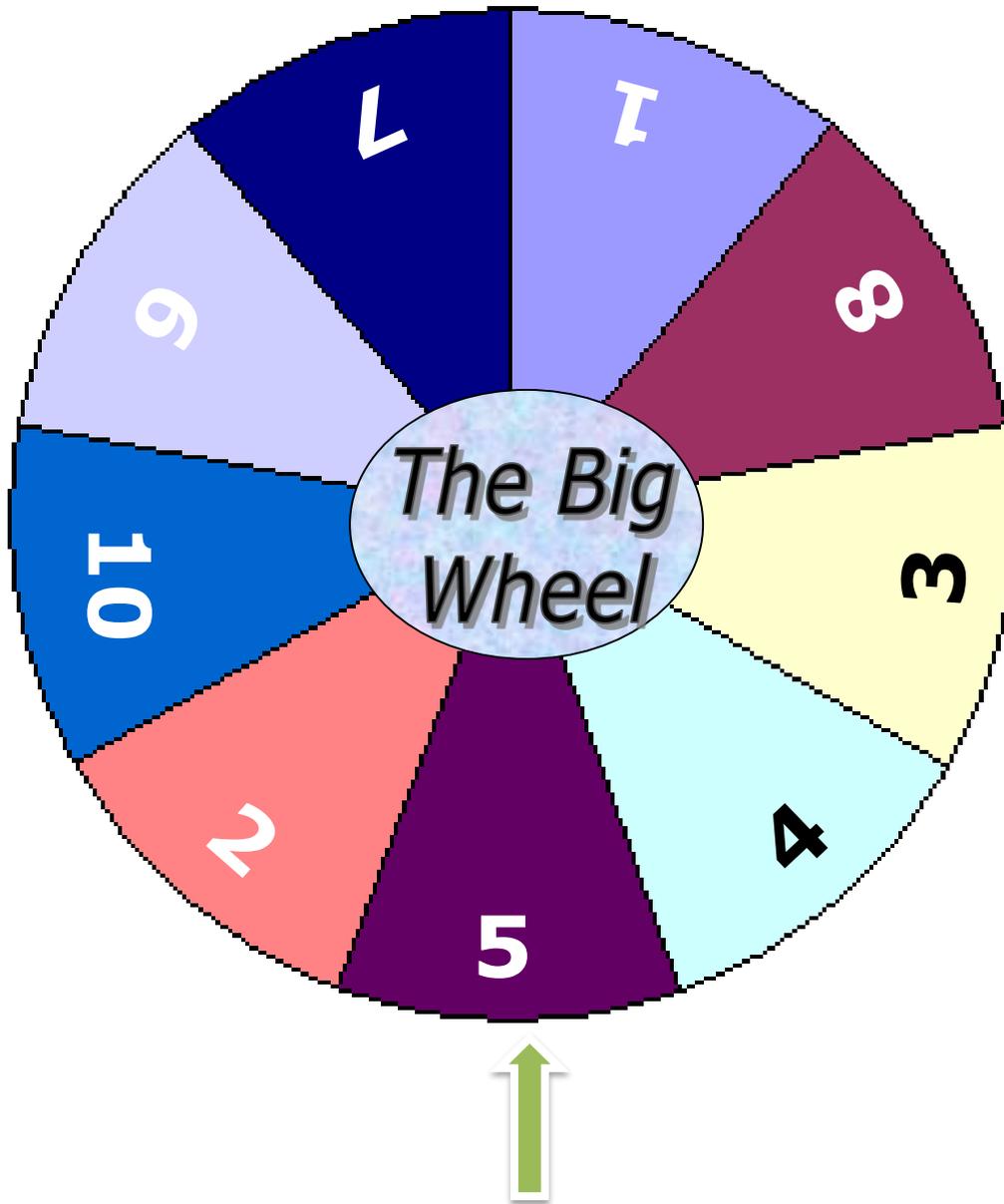
- Have a better understanding of the Customer's Needs
- Understand Maslow's Hierarchy
- Understand Root Cause Analysis and 5 Whys
- Create a Fishbone Diagram

QUESTIONS?

Fishbone Diagram: Activity

- Practice Fishbone Diagram by taking a simple problem and identifying as many potential causes as you can





1. Too many complaints
2. Too many errors
3. Wrong form selected
4. Missed calls
5. Abandoned calls
6. Mis-transferred calls
7. Errors on forms received
8. Lost documents
9. Mis-filed documents
10. Printer jams



Fishbone Diagram: What Potentially could be the issue

