# KAIZEN Step 3: "Root Cause Analysis"

KAIZEN Training of Trainers

2015

*KAIZEN Facilitators' Guide*
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# Objectives of the session

At the end of the session, trainees are able to:

1. Describe importance of identifying root causes of the contributing factor(s)
2. Describe how to practice root cause analysis by developing and utilizing Fishbone diagram
3. Demonstrate the process of root cause analysis at their working place

# KAIZEN Process

STEP 7 — Standardization

STEP 6 — Check effectiveness of countermeasure

STEP 5 — Implementation of countermeasure

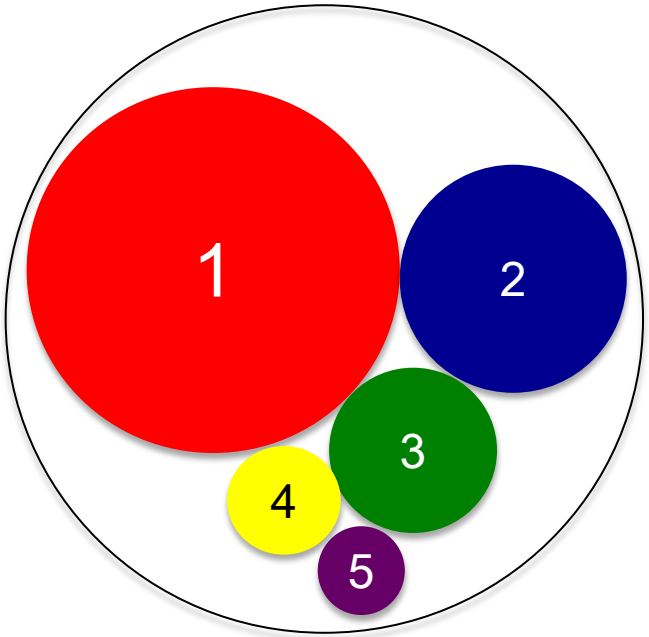
STEP 4 — Identification of countermeasure

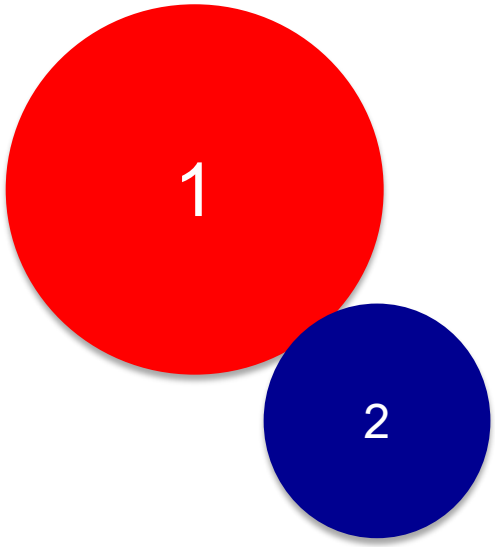
STEP 3 — Root Cause Analysis

STEP 2 — Situation Analysis

STEP 1 — Selection of KAIZEN theme

# KAIZEN Step 2 and Step 3




*Identify the contributing factors*

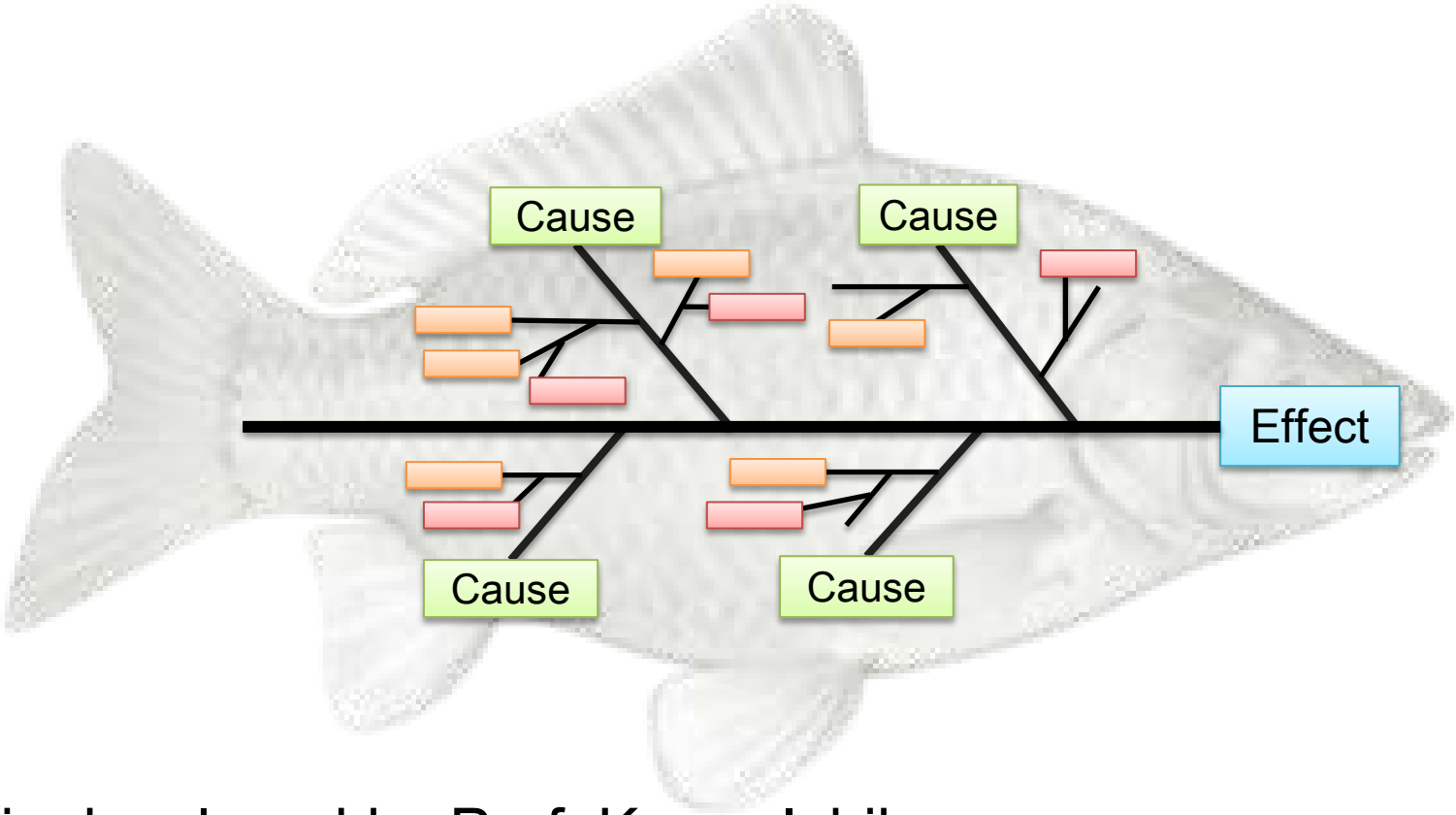
*Prioritize the contributing factor(s) to be solved*

*Find root causes of the contributing factor(s)*

KAIZEN Step 2

KAIZEN Step 3

# Cause-Effect diagram (Fish bone diagram)




- It is developed by Prof. Kaoru Ishikawa
- It connects “effect” and “cause(s)” systematically with line
- Clarification of relations between effect and cause(s)

# Two types of Fishbone diagram

1. **Fishbone diagram for Management**
   - It is aimed for prevention of possible problem not yet occurred.
   - It is also aimed to identify factor to be control. It does not need to ask why-because question

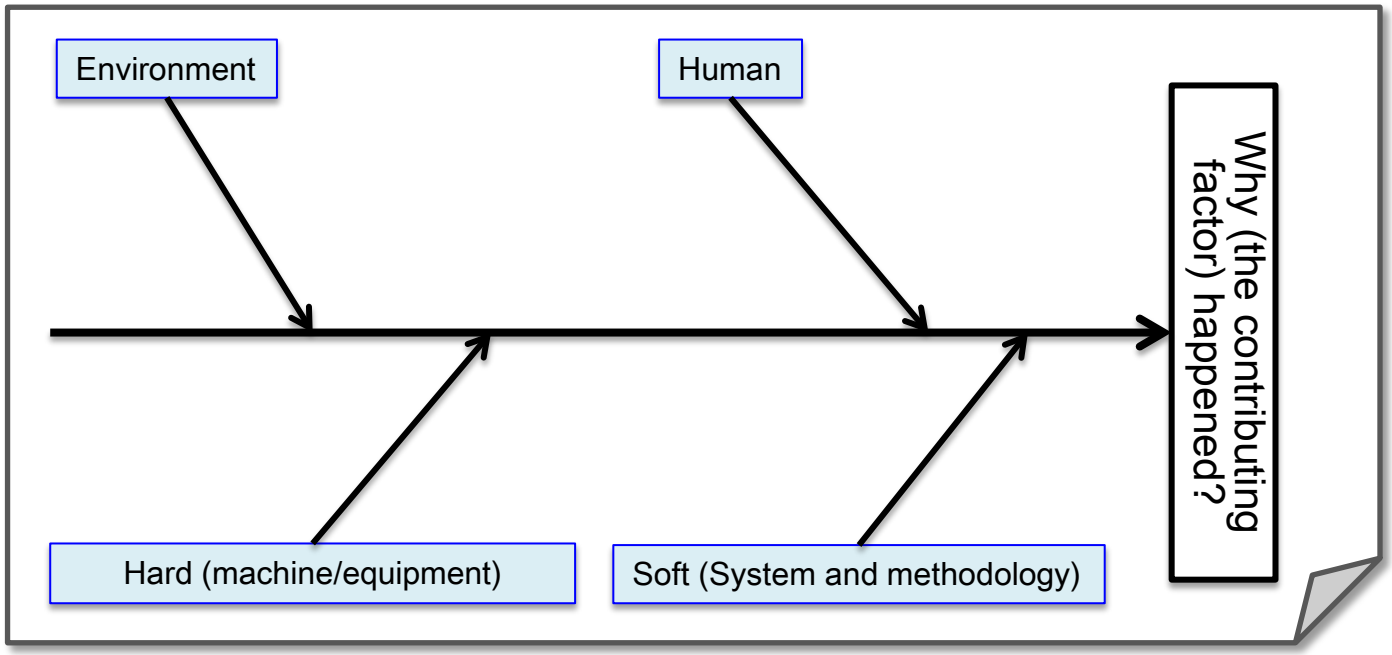
2. **Fishbone diagram for Problem Solving**
   - It is aimed to find root causes of problem already occurred
   - It is developed based on data and information obtained from Step 2
   - Find root causes that are affecting the major contributing factor(s)

# Steps of root cause analysis (1)

- Put effect (= the major contributing factor) in the step 2 as ”head of fish”; “*Why (the contributing factor) happened?”*
- Draw heavy line from left to the effect on the center; ”Backbone of fish”

# Steps of root cause analysis (2)

- Determine large category of cause according to your working environment
  - ***MSHEL group****; Management, Software, Hardware, Environment*
  - ***4M group****; Man, Machine, Material, Method*

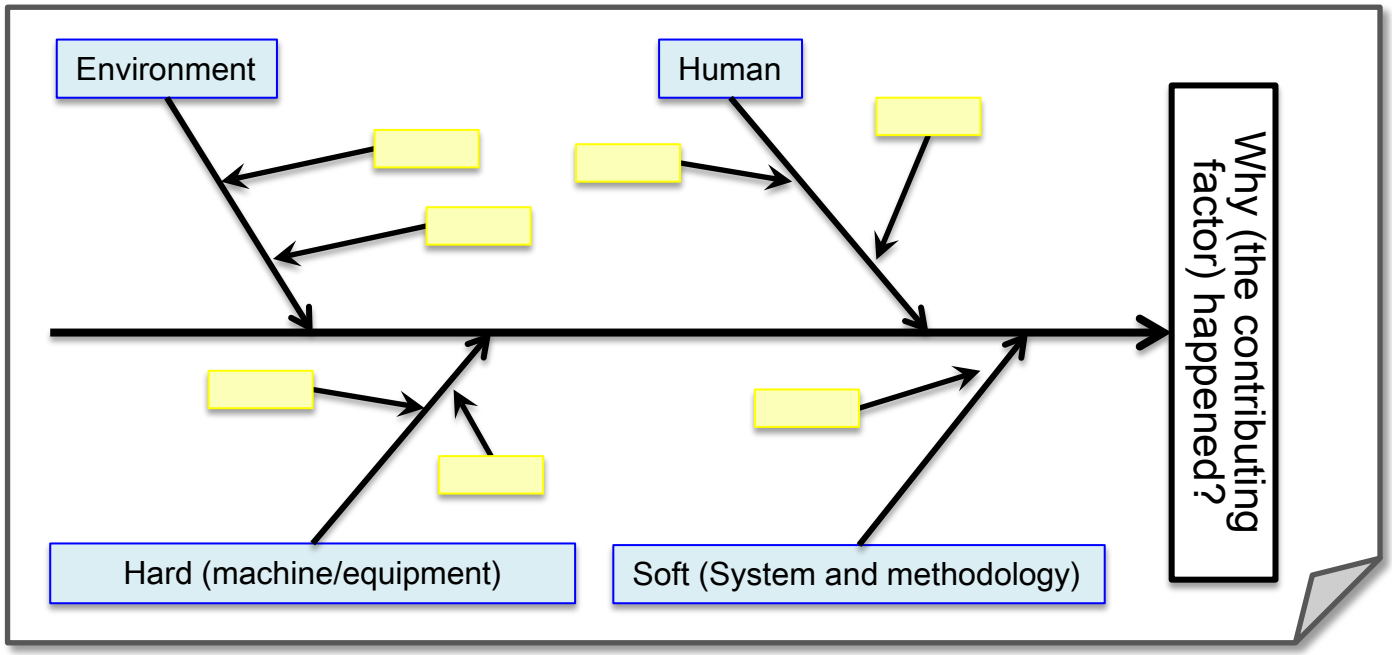


# Example of grouping of causes

- Human: knowledge, skills health conditions, physical conditions etc.
- Soft: system, methodologies, mechanism etc.
- Hard: material, equipment, furniture, tools etc.
- Environment: facility environment (water supply, electricity, smell, humidity etc.), working environment (work space, accessibility of materials, arrangement etc.)

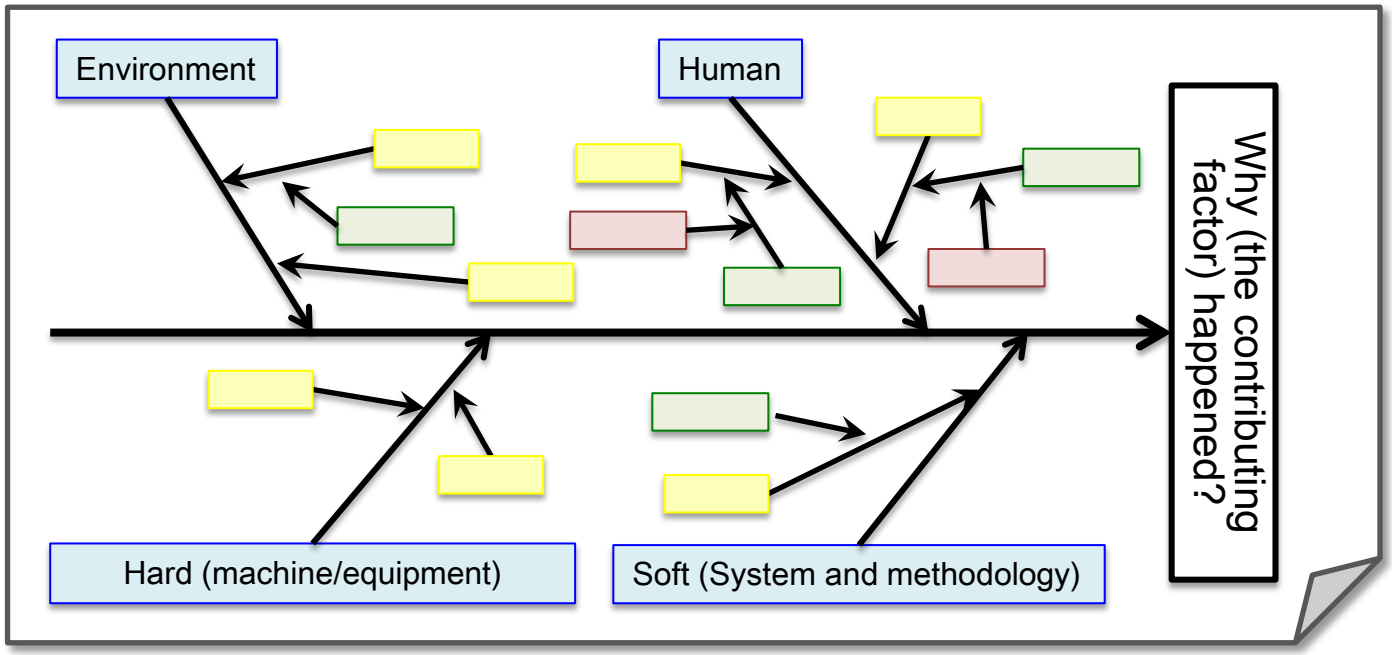
# Steps of root cause analysis (3)

- Seek possible causes for the effect (the primary cause)
- Categorize the primary cause into category
- Avoid to mention to things in terms of “recourse shortage”



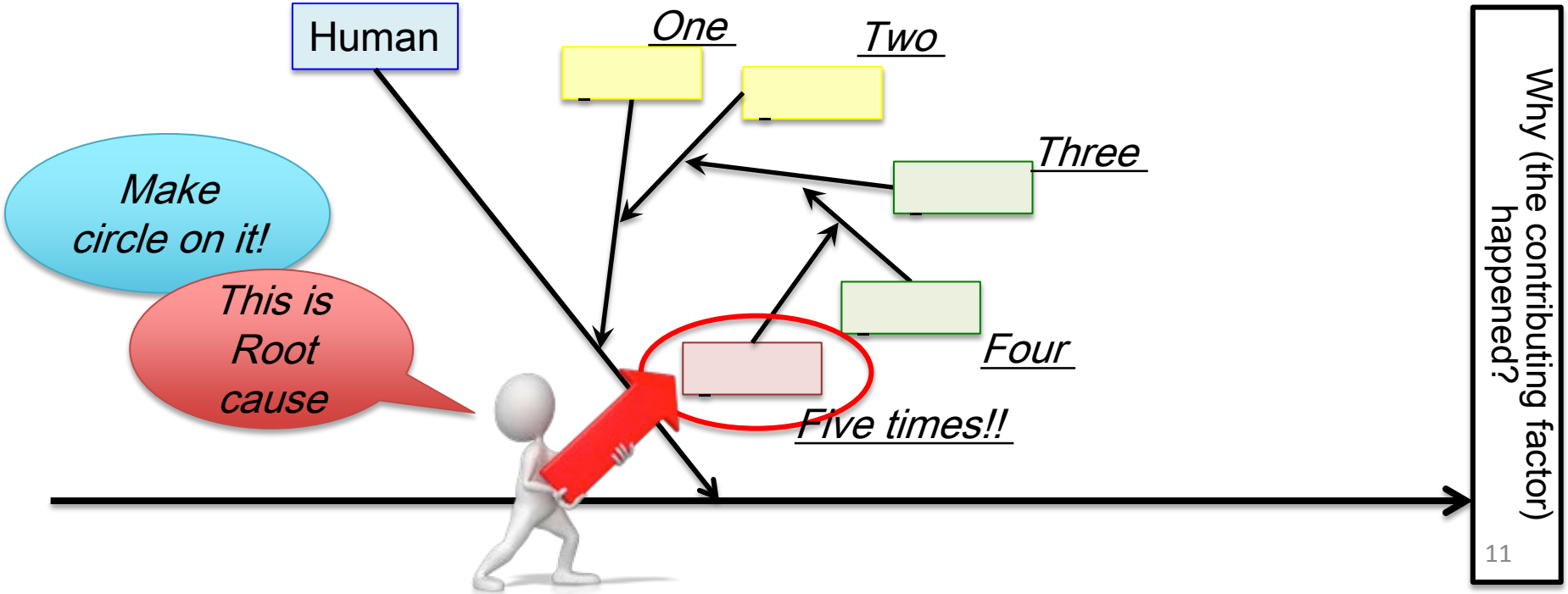
# Steps of root cause analysis (4)

- Narrow down cause(s) of each primary cause (the secondary cause)
- Avoid to mention to things in terms of “resource shortage”

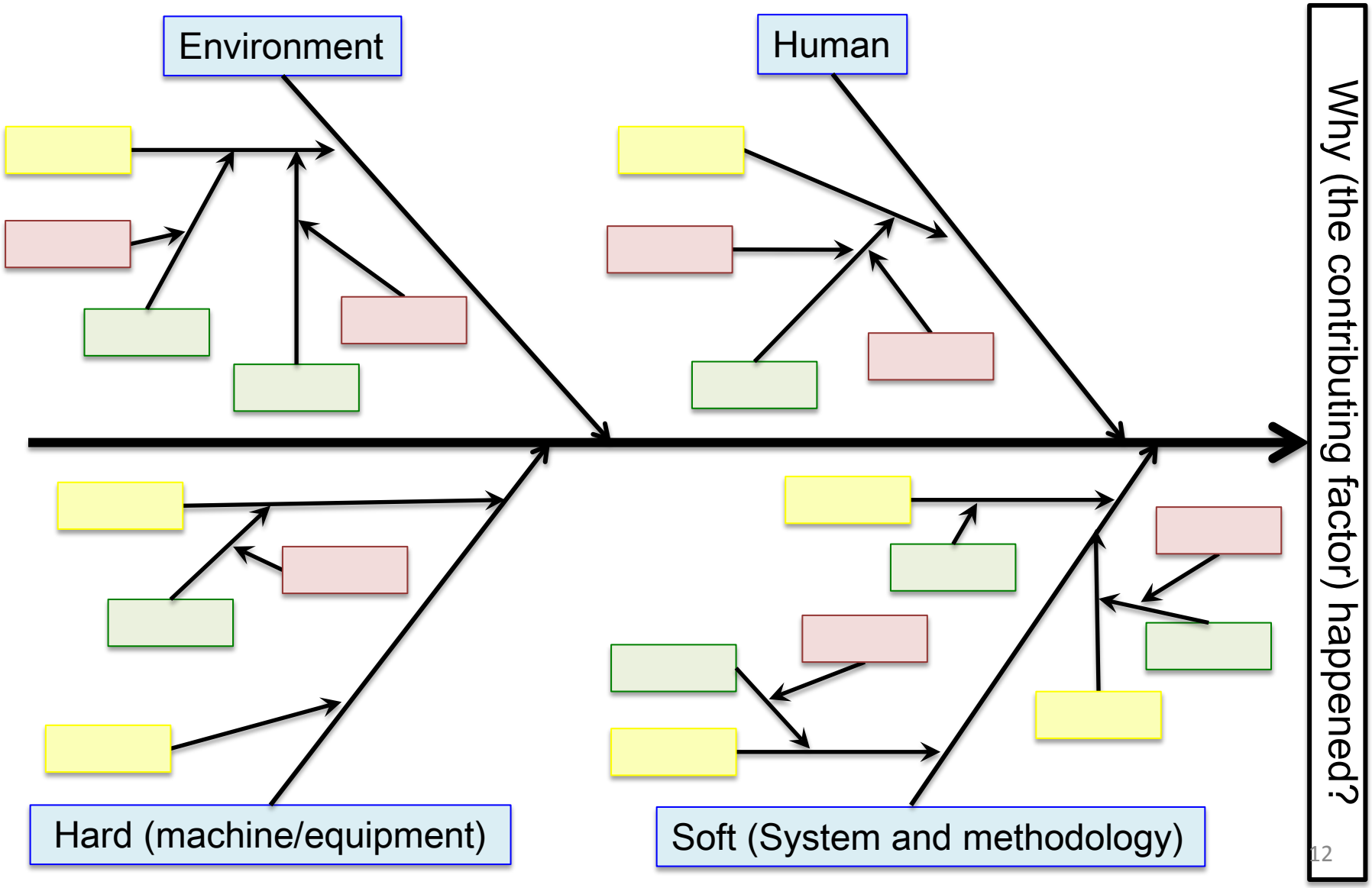


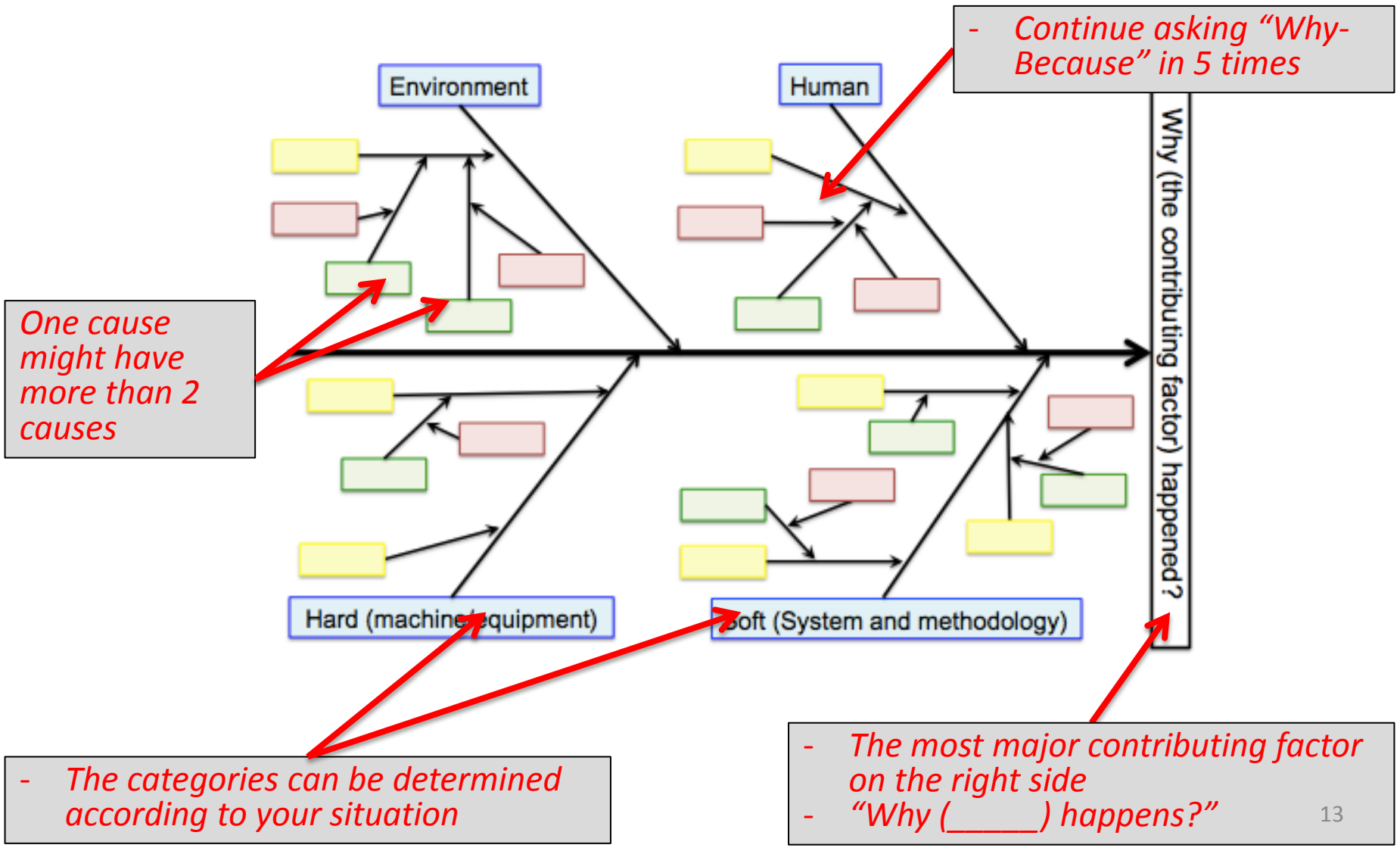
# Steps of root cause analysis (5)

- Find out "root causes" by asking "*Why it is happening?"* in enough time (recommended 5 times) for each possible causes listed on primary branch, and branch them into secondary, tertiary.



# Example of Fishbone diagram




- Continue asking "Why-Because" in 5 times
Environment
Human
Why (the contributing factor) happened?
One cause might have more than 2 causes
Hard (machine/equipment)
Soft (System and methodology)
- The categories can be determined according to your situation
- The most major contributing factor on the right side
- "Why (_____) happens?"

# Remarks on development of Fishbone diagram

- Effect = Major Contributing factor, which was identified in Step 2, and Effect is not equals to “KAIZEN Theme”, identified in Step 1
- If two contributing factors account for 80% (Pareto rule) in the step 2, it is necessary to develop two fishbone diagrams

# Cont.

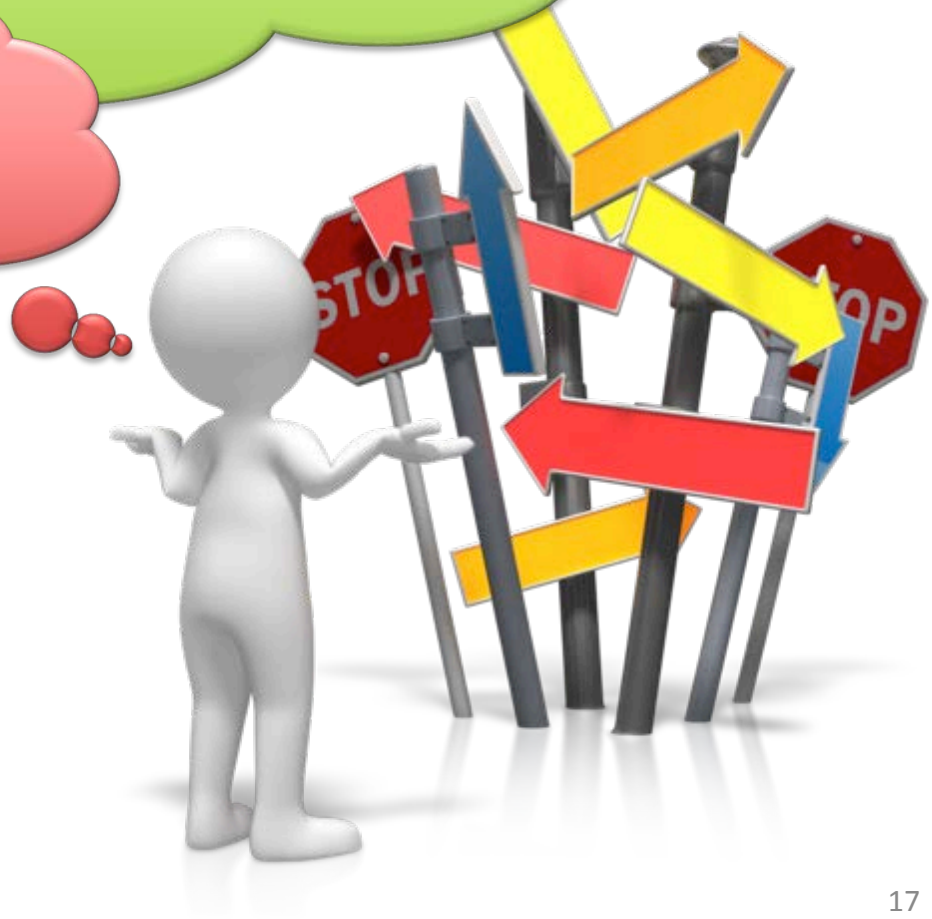
- When repeat "*Why~? – Because~*" in 5 times, situation of own workplace need to be thought before searching a cause of others
- While analyzing root causes, it is necessary to avoid blaming other sections; KAIZEN is for own

# Cont.

- Avoiding mentioning “shortage of resources”; “No money”, “No human resource”, “No material” etc.
- Finding root causes should not be done with your instincts and senses. Your experiences, knowledge, and information should be used

*If root cause(s) are not identified properly, any countermeasures could not be come up with…*

***The problem will never be solved!!***



*Let us try to develop*
*Fishbone diagram*