

FISHBONE ANALYSIS



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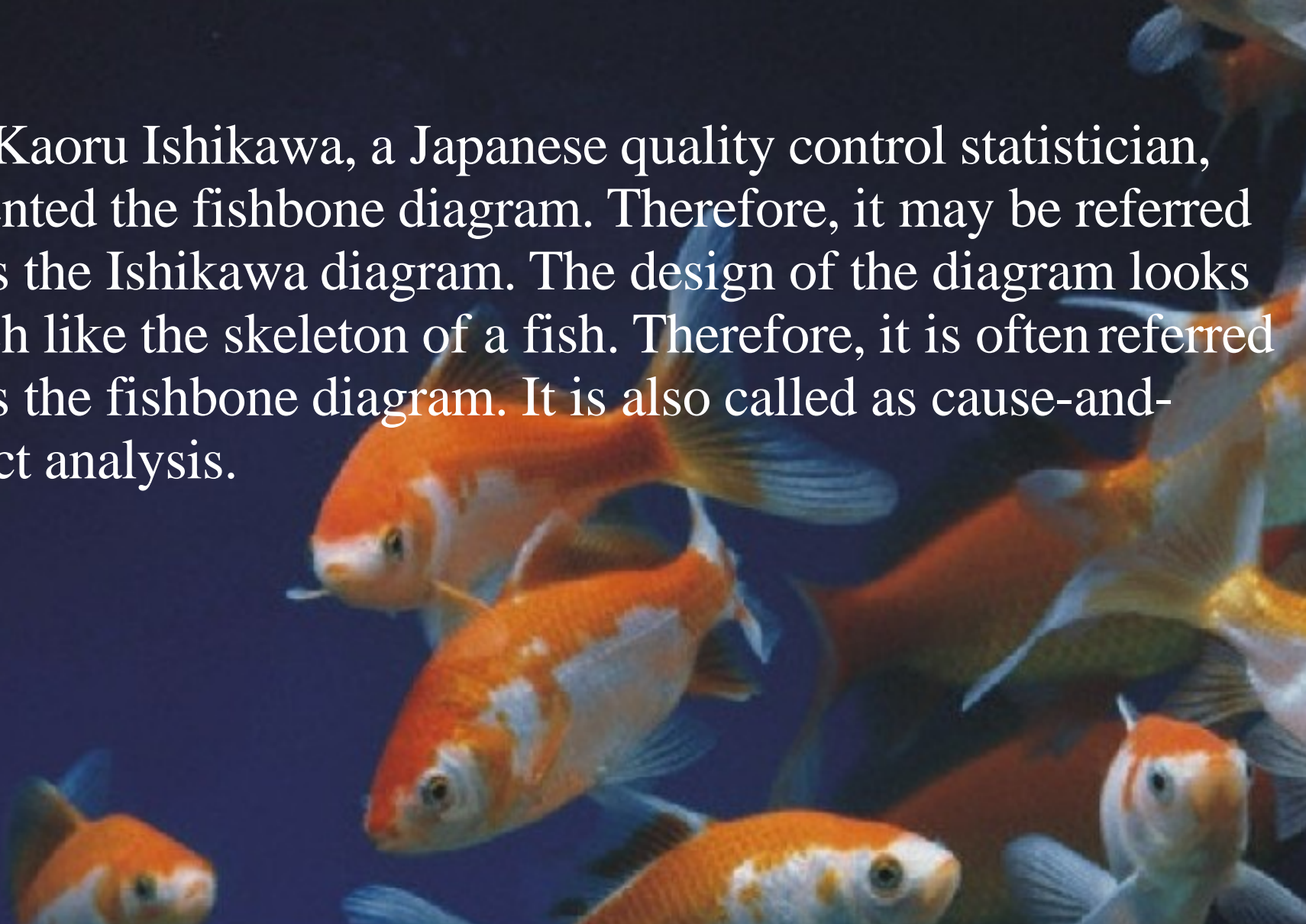
WHAT IS FISHBONE

Fishbone



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Dr. Kaoru Ishikawa, a Japanese quality control statistician, invented the fishbone diagram. Therefore, it may be referred to as the Ishikawa diagram. The design of the diagram looks much like the skeleton of a fish. Therefore, it is often referred to as the fishbone diagram. It is also called as cause-and-effect analysis.





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What is fishbone Analysis ?



What is Fishbone/Cause-and-Effect /Ishikawa Analysis ?

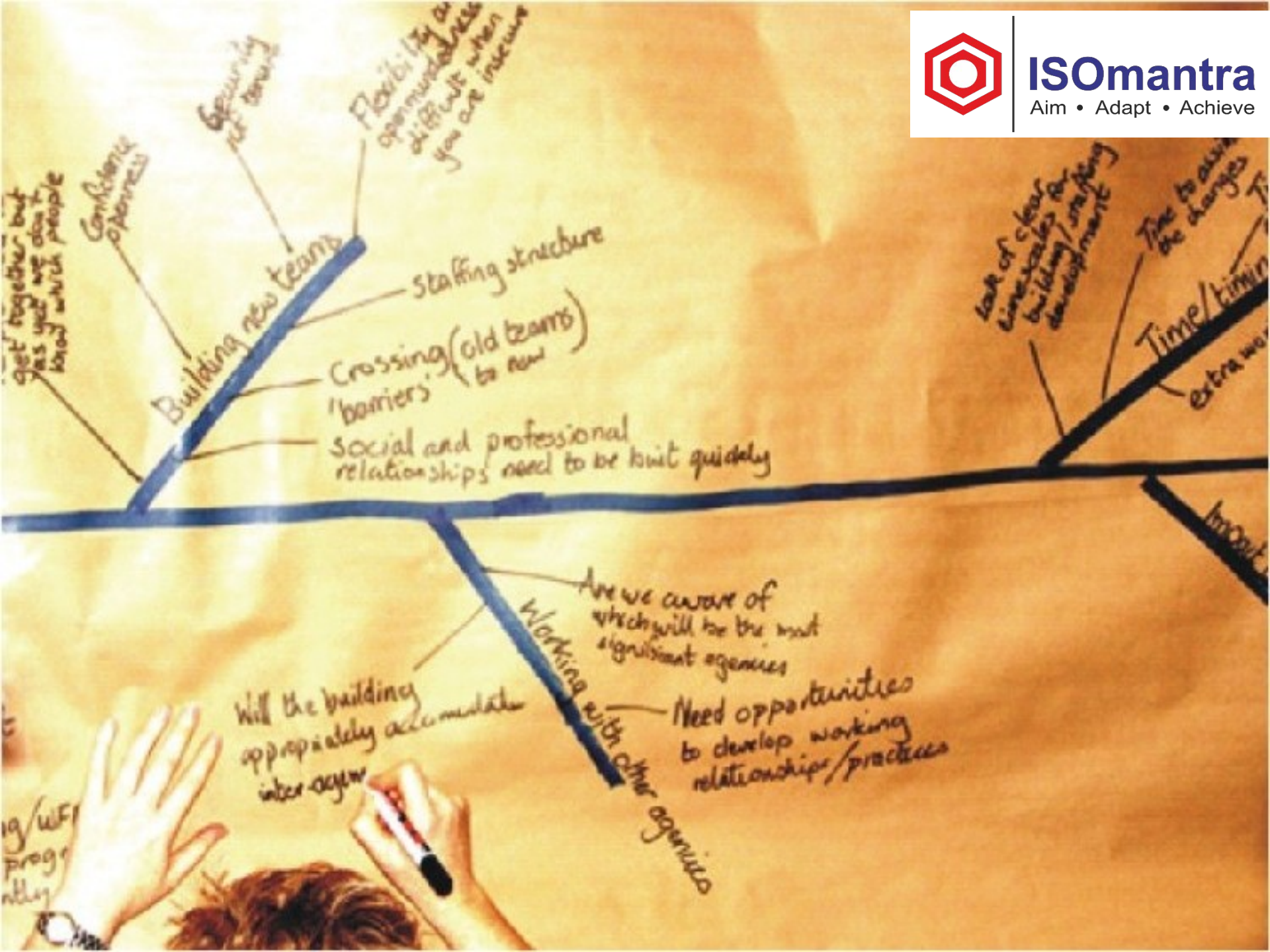
A cause-and-effect analysis generates and sorts hypotheses about possible causes of problems within a process by asking participants to list all of the possible causes and effects for the identified problem

Cause-and-effect diagrams can reflect either causes that block the way to the desired state or helpful factors needed to reach the desired state.



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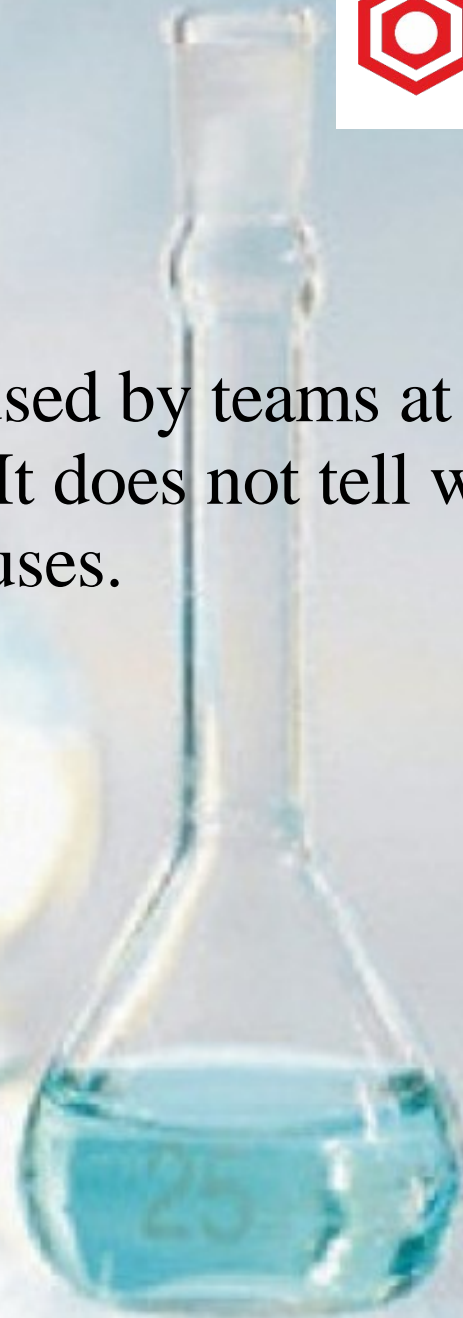
When should a fishbone diagram be used?

- Need to study a problem/issue to determine the root cause?
- Want to study all the possible reasons why a process is beginning to have difficulties, problems, or breakdowns?
- Need to identify areas for data collection?
- Want to study why a process is not performing properly or producing the desired results?



Why Fishbone :

The fishbone analysis is mostly used by teams at the deepen stage of the remodeling process. It does not tell which is the root cause, but rather possible causes.





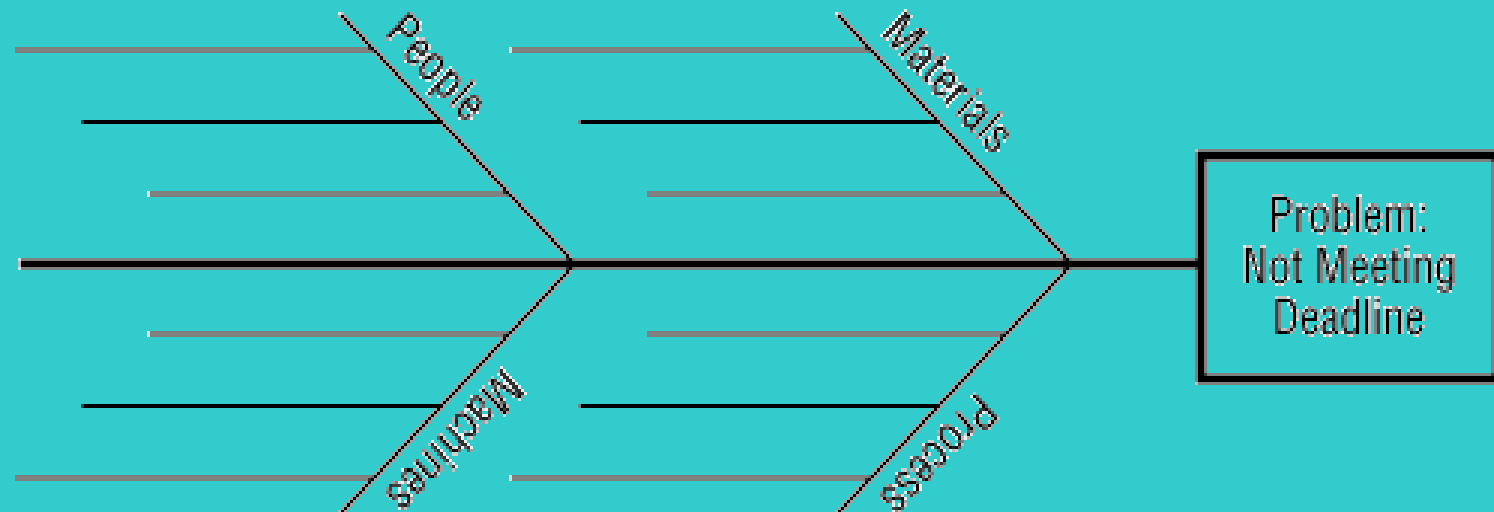
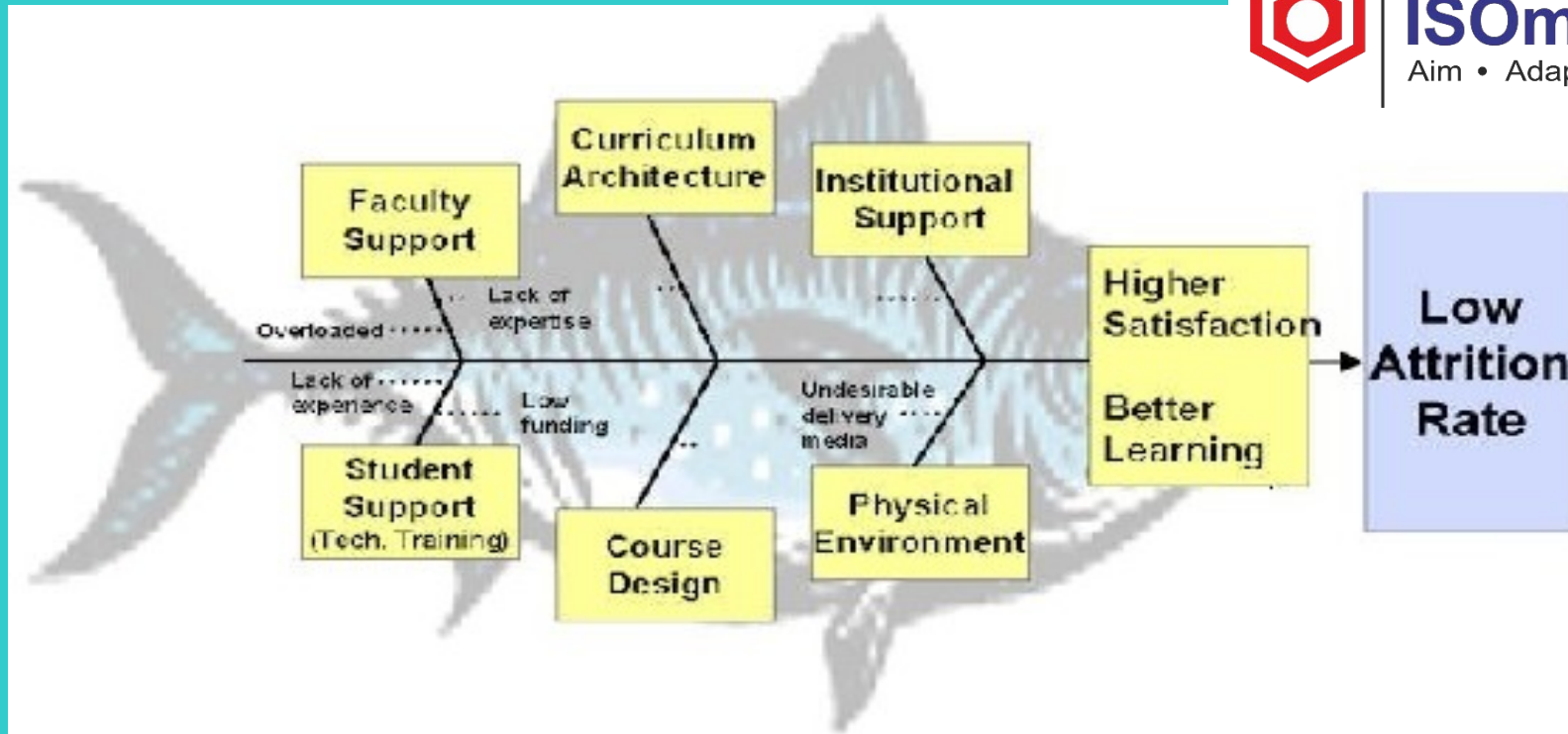
How to Use Cause-and-Effect Analysis

Steps

5. Draw a horizontal line (central spine) near the centre of a page. Label one end with the problem or goal.
8. Collect information from the participants on aspects of the situation. For the main aspects, draw lines off the central spine. Aspects related to a particular main spine are then drawn off that spine.



3. Set priorities. Select the most important main spine then rank the items drawn off that spine. Continue this process with the other main spines.
4. If the top priority spine has no branches, use this aspect of the situation for the next step in problem solving.





Tips / Comments

- It can show much of a situation's structure.
- It can however become messy for complicated situations.
- Moreover, positive and negative aspects of the situation are not being distinguished.



Fishbone Diagram Example 1

This fishbone diagram was drawn by a manufacturing team to try to understand the source of periodic iron contamination. The team used the six generic headings to prompt ideas. Layers of branches show thorough thinking about the causes of the problem.

Method:



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- Agree on a problem statement (effect). Write it at the center right of the flipchart or whiteboard. Brainstorm the major categories of causes of the problem.
- Generic headings: Methods, Machines (equipment), People (manpower), Materials, Measurement and Environment.
- Write the categories of causes as branches from the main arrow.



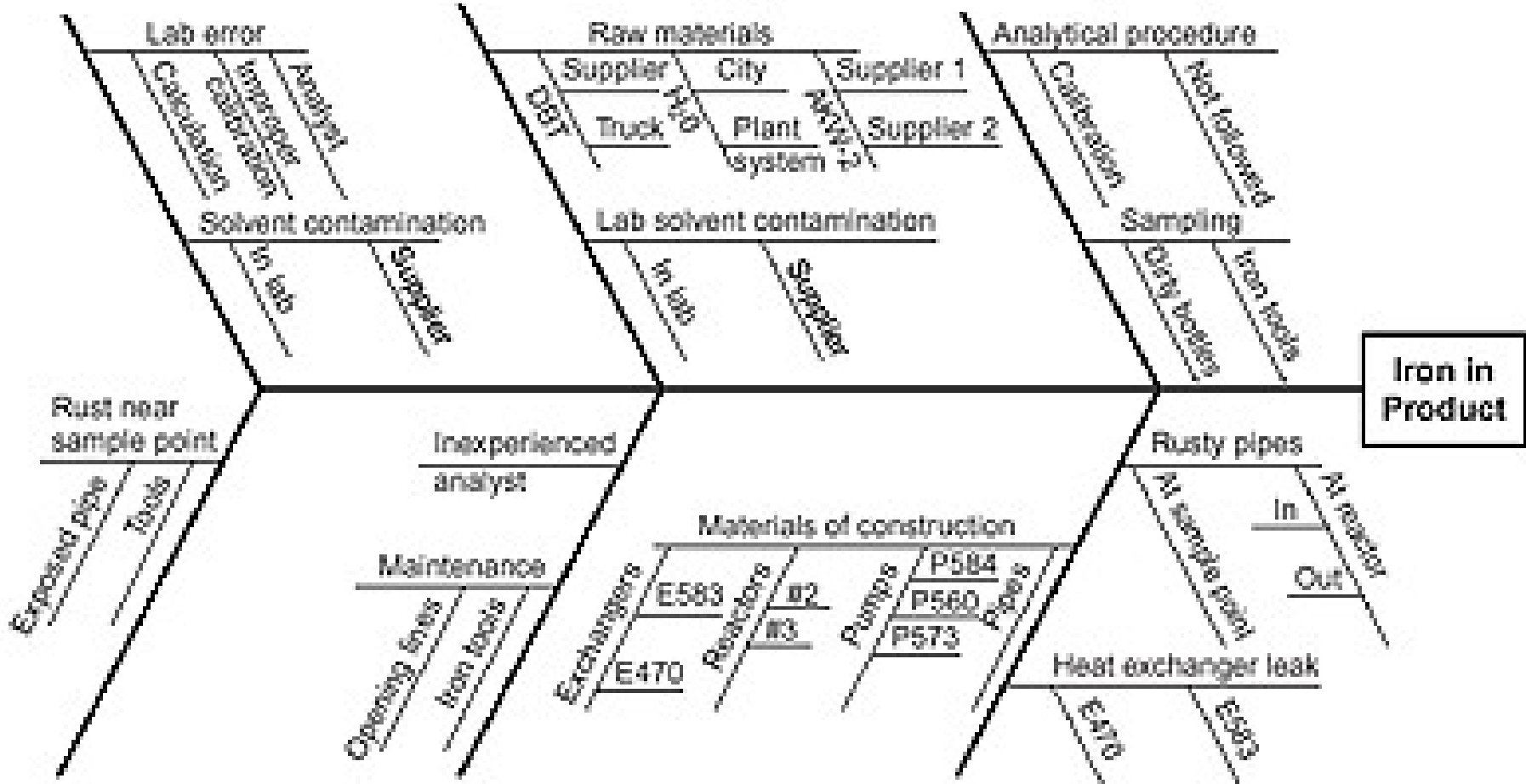
- Brainstorm all the possible causes of the problem.
- Ask: “Why does this happen?” As each idea is given, the facilitator writes it as a branch from the appropriate category. Causes can be written in several places if they relate to several categories.
- Again ask “why does this happen?” about each cause.
- Write sub-causes branching off the causes. Continue to ask “Why?” and generate deeper levels of causes.
- When the group runs out of ideas, focus attention to places on the chart where ideas are few.



Measurement

Materials

Methods



Iron in Product

Environment

Manpower

Machines



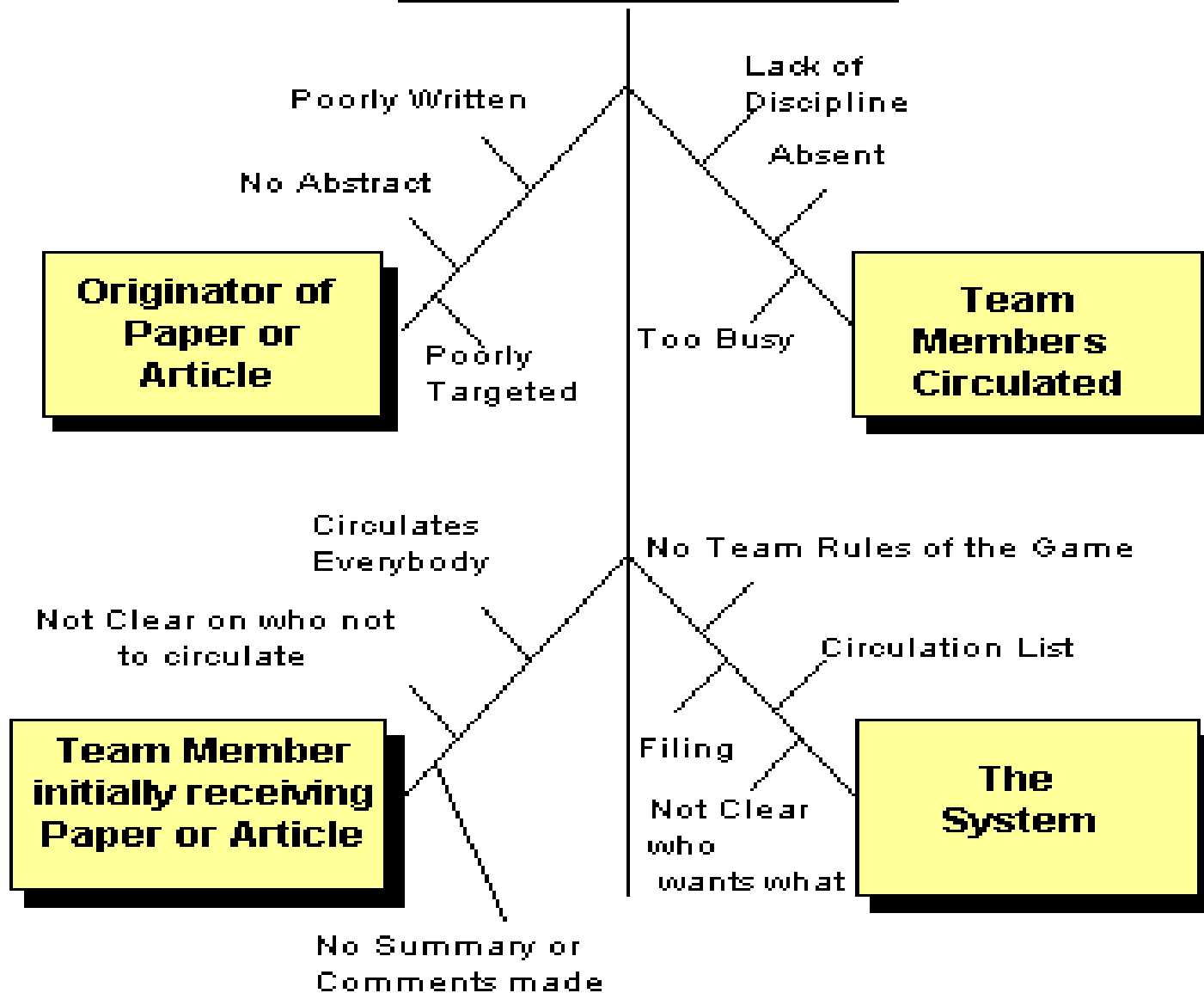
Fishbone Example 2

A local office in a government department found that papers and articles (scientific ones) took months to circulate to all the people on the circulation list. In a one hour session, an action team brainstormed possible reasons and causes and created the following fishbone. A voting exercise highlighted three items as being the main causes and they then went on to tackle and resolve them.

Papers and Articles Circulate Too Slowly



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Types of Cause-and-Effect Analyses

- Fishbone diagram
- Tree diagram

Fishbone diagram, organized around categories of cause, will help to broaden their thinking. A tree diagram, however, will encourage team members to explore the chain of events or causes.



The fishbone diagram helps teams to brainstorm about possible causes of a problem, accumulate existing knowledge about the causal system surrounding that problem, and group causes into general categories.

Fishbone Diagram Structure



THANK-YOU



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