Exploring the problem
The case of the dead fish

- identify available information
- learn fundamentals
- missing information
- hypothesis
- more information
- define the real problem

De-bottlenecking a process

- There was a chemical factory making its product quickly, and they found a problem with the heat coolant, so the solution to the problem was that they were making a bigger chiller.

Hitting Em where they are not

Present state

- Many bullets projectiles penetrating aircraft .
- Many bullets projectiles penetrating aircraft in critical and noncritical areas.

Desired state

- Fewer planes being shot down .
- Fewer bullet holes .
- Fewer bullets projectiles penetrating critical area

Using the present state\desired state technique

- When writing the desired case form you should avoid some vague words such as:

- best

- minimum

- cheapest

- should be quantitative wherever possible such as :

- The children's playground must be completed by July 1, 1994 at a cost of less than $ 100,000" instead of "the playground must be completed in a reasonable time at the lowest cost.

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Exploring the problem

The case of the dead fish

1- identify available information : there is a toxic discharge from the plant .

2- learn fundamentals : the extremely low water levels lead to significantly warmer water temperatures , and water

3- missing information : that a fungus has been found in tow nearby lakes that could be responsible for the death of the fish.

4- hypothesis : the fish were dying all over the area as results of the fungus.

5- more information : it was discover that the fungus was indeed the cause of death .

6- define the real problem : identify ways to cure the infected fish and prevent healthy fish from being infected.

De-bottlenecking a process

A valuable product was being sold as quickly as it could be manufactured in a chemical plant. Management tried to increase production but was unable to do so. Analysis of each step in the production line showed that the box was a refrigeration unit. This unit was a simple heat exchanger in which a stream of hot liquid was cooled by passing it through a tube connected to a cold liquid stream. Heat flows from the hot stream through the wall of the tube into the cold stream.
Unfortunately, the refrigeration unit (i.e., the heat exchanger) was not cooling the hot liquid stream to a sufficiently low temperature for it to be effectively treated in the next treatment step. Instructions given to solve the perceived problem: "Design and install a larger refrigeration unit." Designing a larger cooling unit began.

Using the present state\desired state technique

The Present State / Desired Status method also helps us to know if the objectives of the solution (Desired Status) are in line with our needs (the present state). When writing the Desired Status Statement, avoid using vague and vague words or phrases such as “best”, “minimum”, “cheapest”, “within a reasonable time period,” “most effective”, etc. because these words mean different things to Different persons. Be quantitative wherever possible. For example, "The children's playground must be completed by July 1, 1994 at a cost of less than $ 100,000" instead of "the playground must be completed in a reasonable time at the lowest cost." It is important that the statement of current state matches the statement of desirable state. In order for the present situation to match the desirable state, every concern in the present state must be addressed in the desired state.

Hitting Em where they are not

During World War II, a number of aircraft were shot down while participating in bombing missions over Germany. Many of the aircraft returning to the base were riddled with bullet holes and shells. The affected areas were the same on every plane. Instructions given to solve the perceived problem: “Reinforce these damaged areas with thicker shield paint. Current desirable state Many bullets / projectiles penetrate aircraft. Fewer plans are dropped.desirable state Current state Desired state Many bullets / projectiles penetrate aircraft. Fewer bullet holes. Desired state More bullets / projectiles The aircraft penetrates fewer bullets / projectiles in critical and non-critical areas Penetration of critical areas