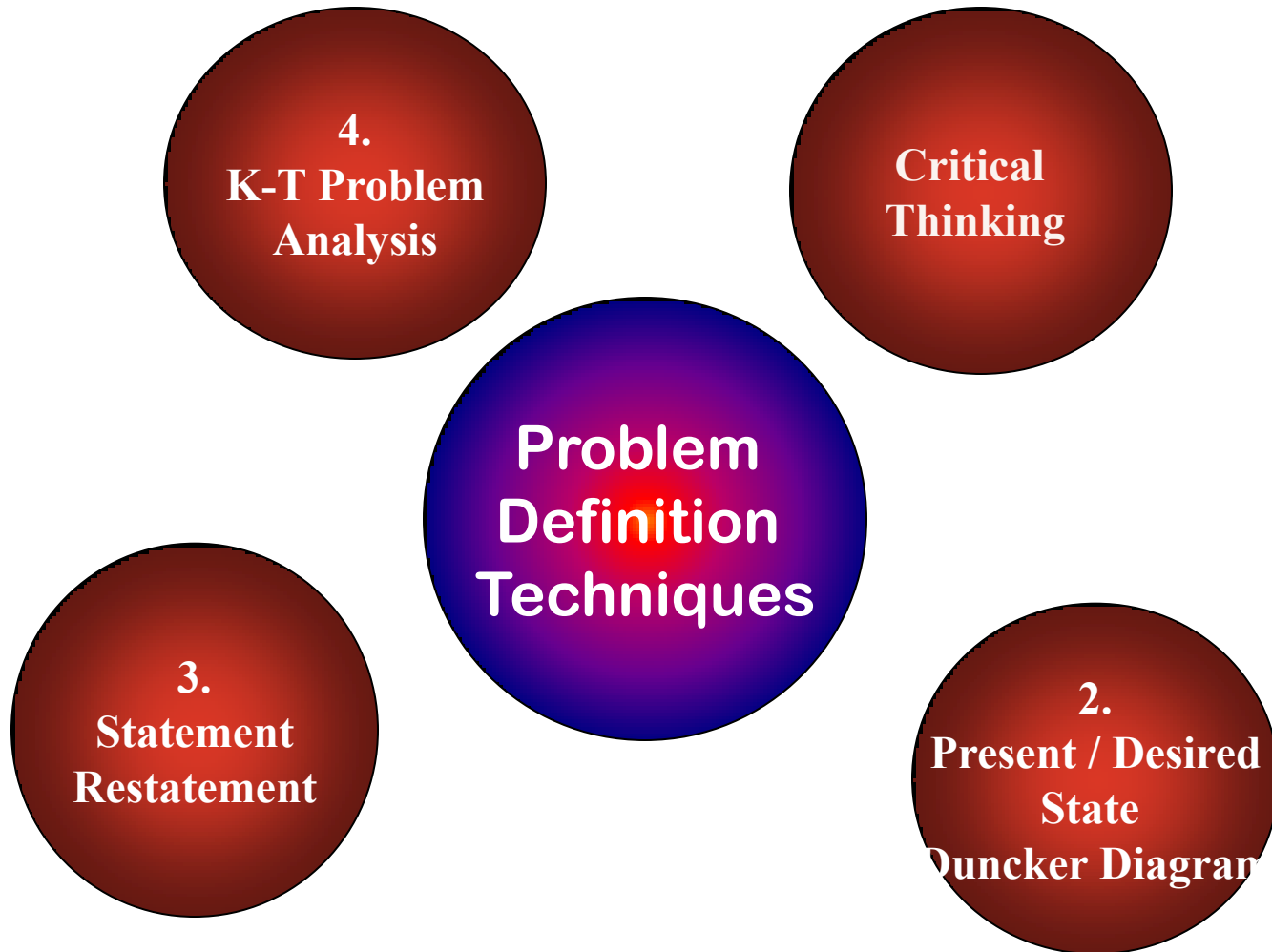


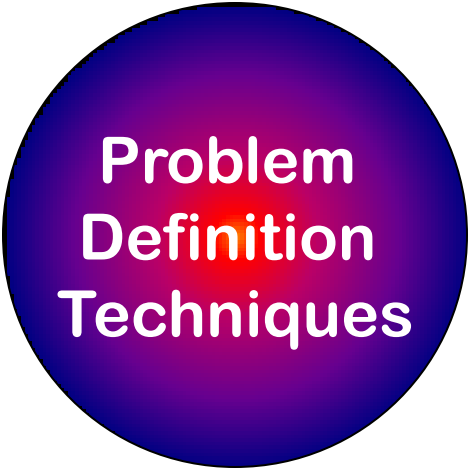
# Problem Definition Techniques

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# Problem Definition Techniques

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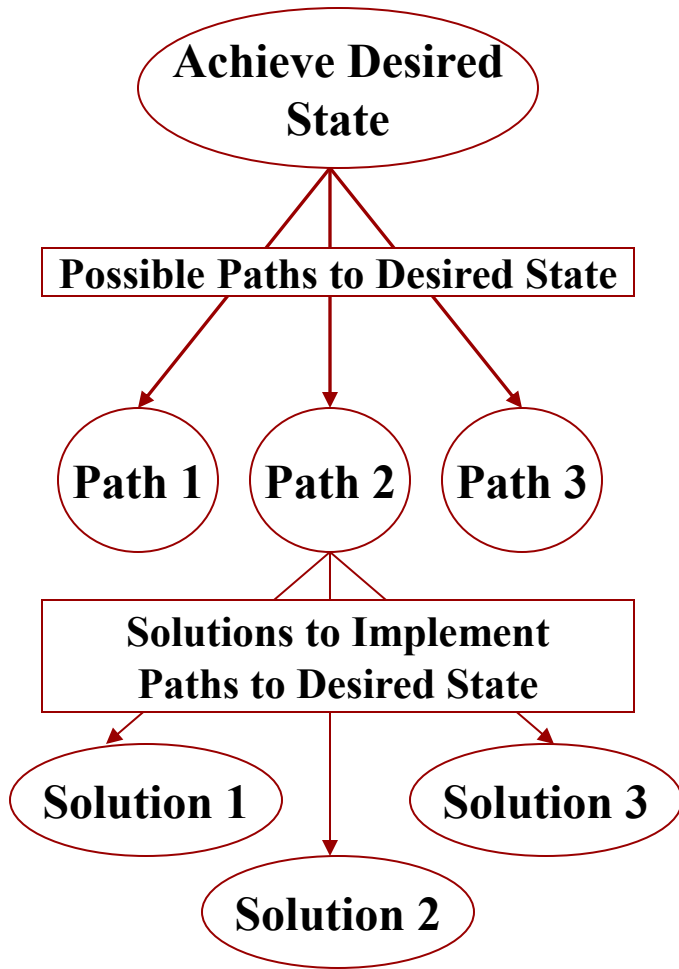


**Problem  
Definition  
Techniques**

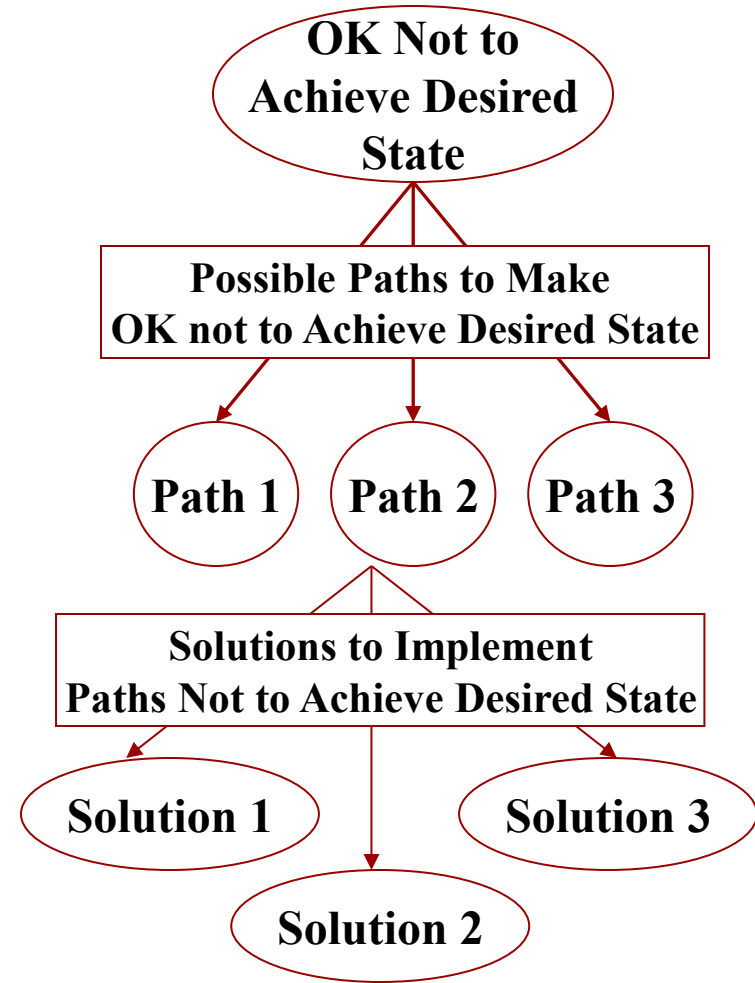
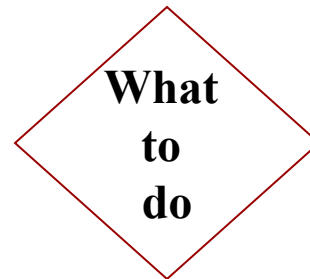


**2.  
Present / Desired  
State  
Duncker Diagram**

# Duncker Diagrams



**Desired State**



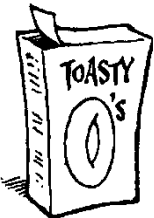
**New Problem Statement**



# To Market, To Market

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**The Situation:** Toasty O's was one of the hottest selling cereals when it first came on the market. However, after several months, sales dropped. The consumer survey department was able to identify that customer dissatisfaction, as expressed in terms of taste, was related to the age of the cereal. Consequently, management determined that they must streamline the production process to get the cereal on the store shelves faster, thus ensuring a fresher product. Engineering had quite a time with this problem - there wasn't much slack time that could be removed from the process to accomplish the goal. Of the steps required to get the product on the shelves (production, packaging, storage, and shipping) production was one of the fastest. However, plans for building plants closer to the major markets were considered as was trying to add more trucks to get the cereal to market faster.



# To Market, To Market

Sales of Toasty O's are dropping. Consumer surveys have indicated a dissatisfaction with a stale taste.

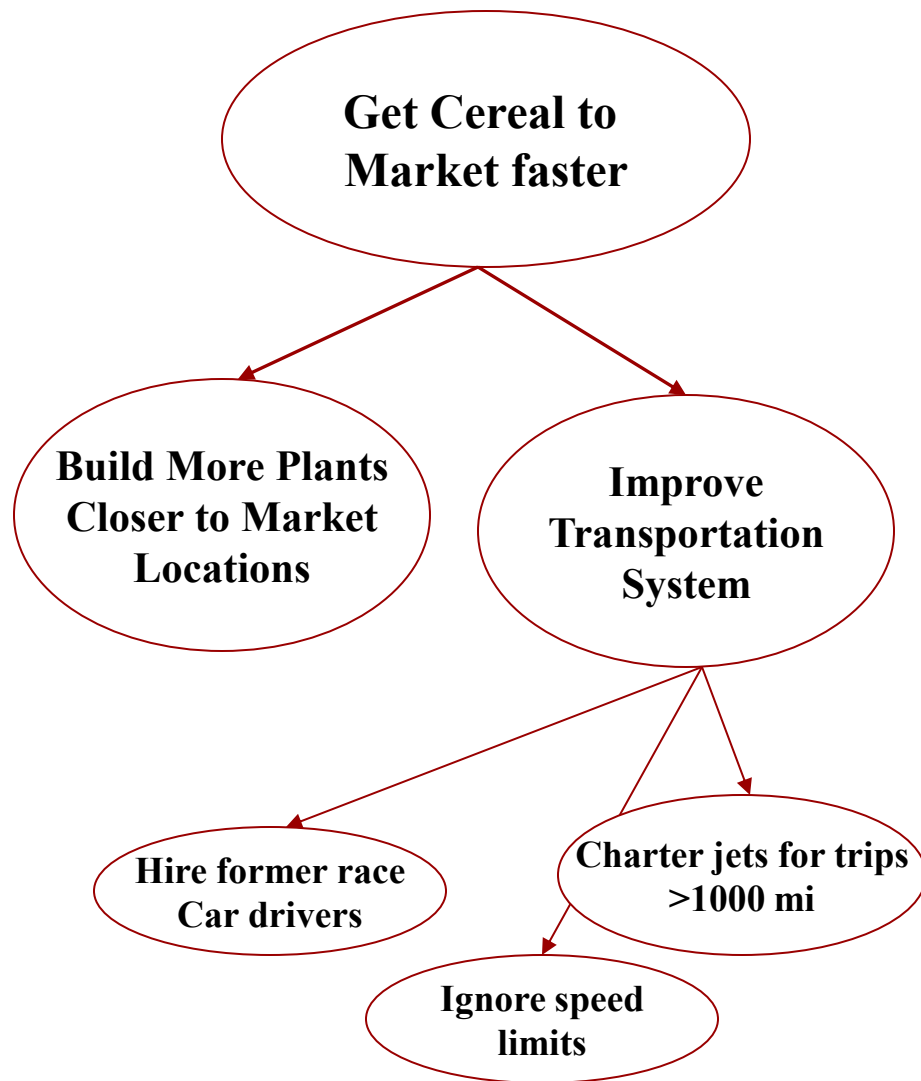
## Perceived Problem:

*“Streamline the production process to get the cereal on the store shelves faster, thus ensuring a fresher product.”*

However, production was one of the fastest steps in getting the product to market.

## Second Perceived Problem:

Get the Cereal to Market Faster





# To Market, To Market

Sales of Toasty O's are dropping. Consumer surveys have indicated a dissatisfaction with a stale taste.

## Perceived Problem:

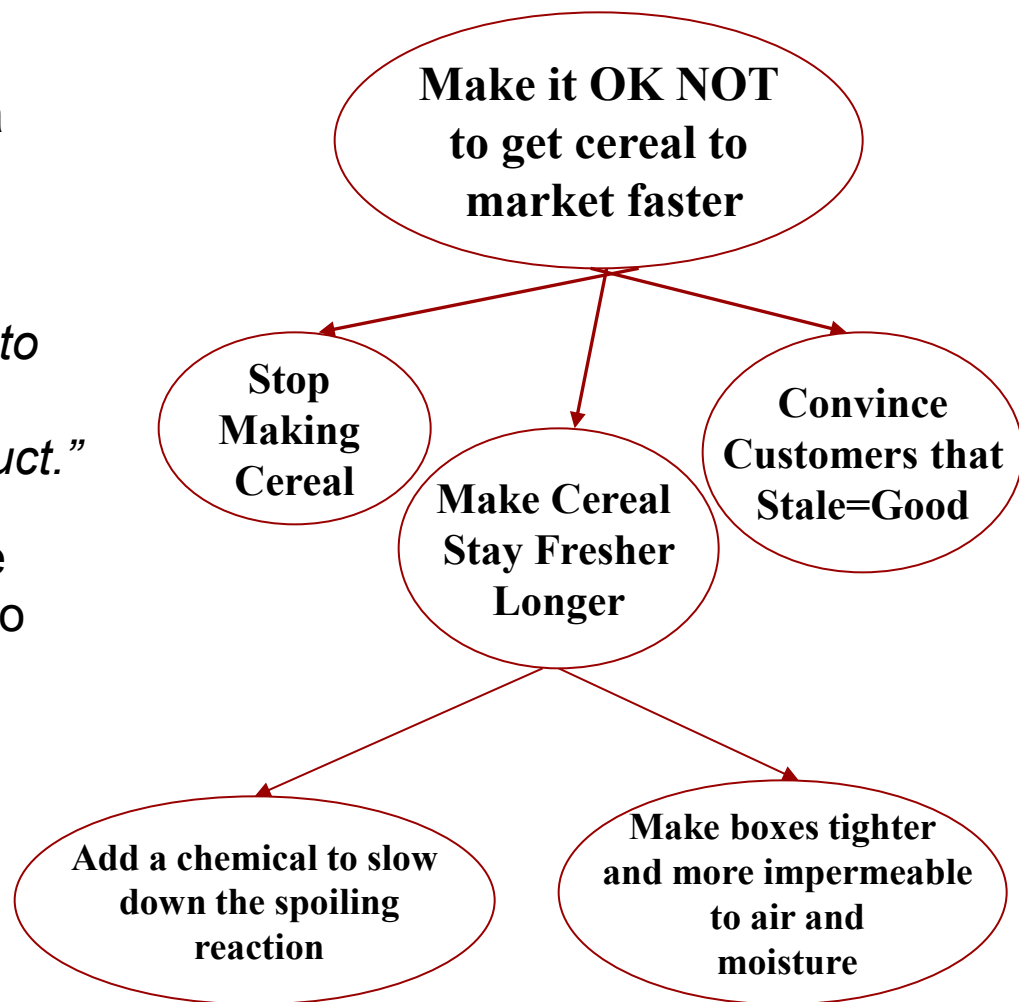
*“Streamline the production process to get the cereal on the store shelves faster, thus ensuring a fresher product.”*

However, production was one of the fastest steps in getting the product to market.

Thus, the following options were considered:

- Build plants closer to market
- Add more trucks

These options require a major capital investment.





# To Market, To Market

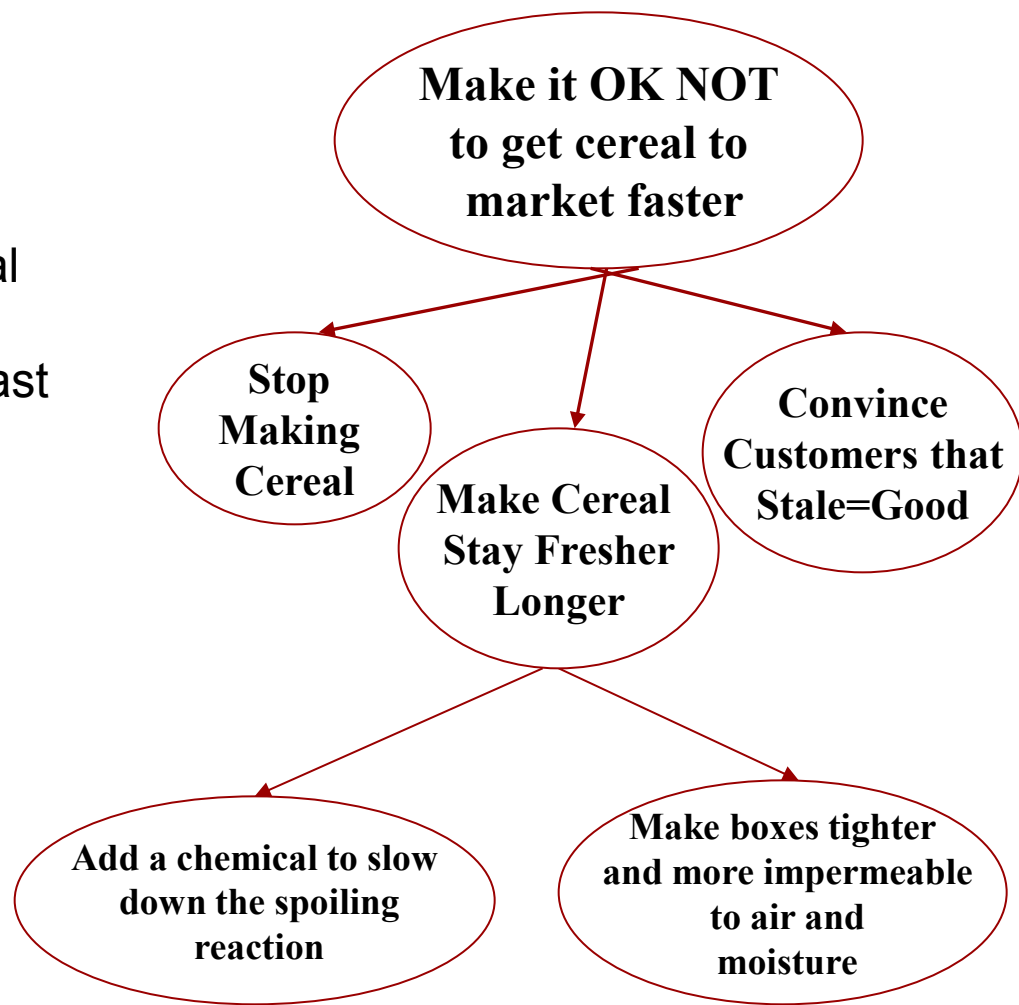
## Original Statement

How to get cereal to market faster.

The *real problem* was that the cereal was not staying fresh long enough, not that it wasn't getting to market fast enough.

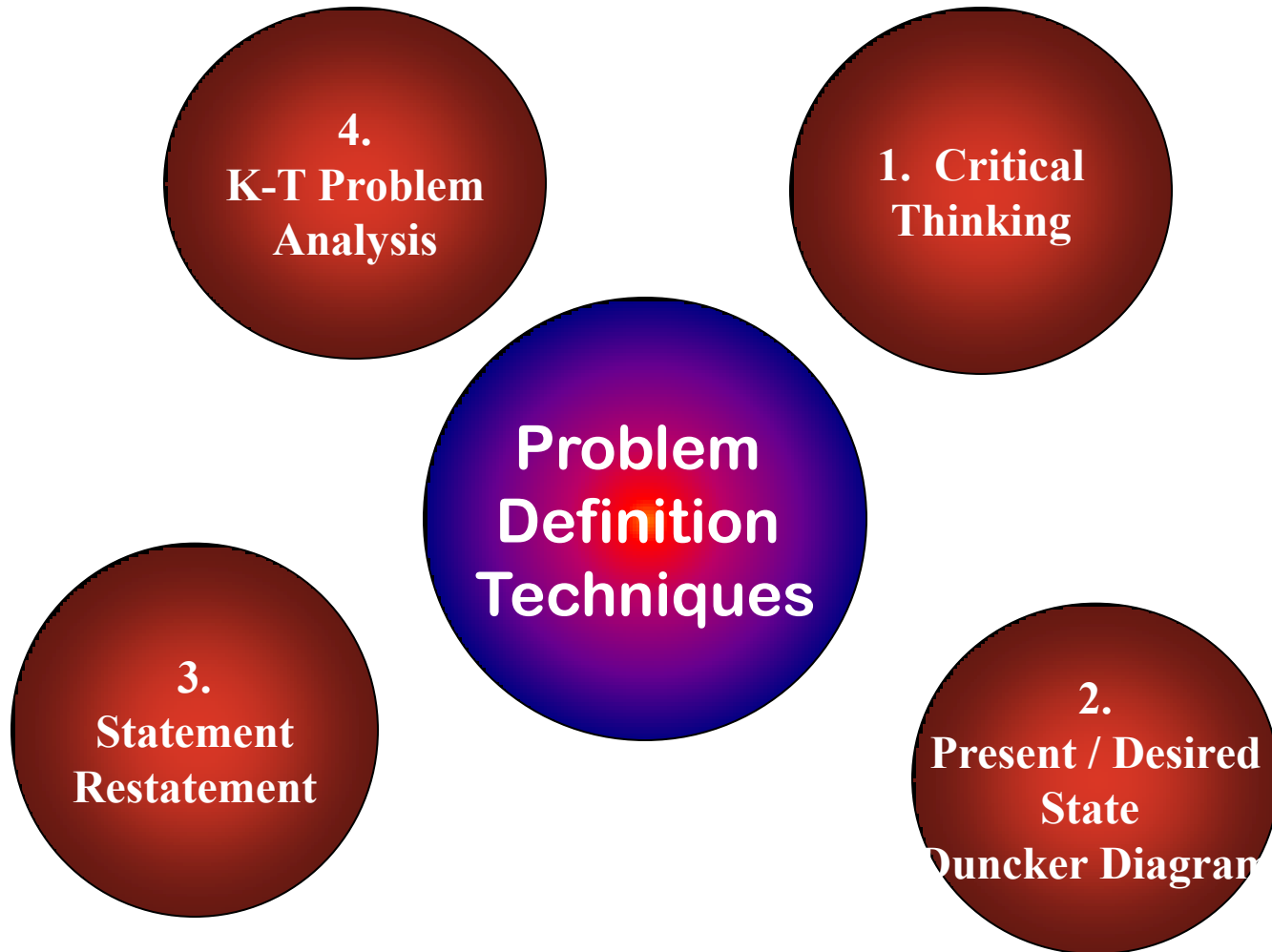
## New Problem Statement

How to make boxes tighter and to determine appropriate additive to slow down the spoiling reaction



# Problem Definition Techniques

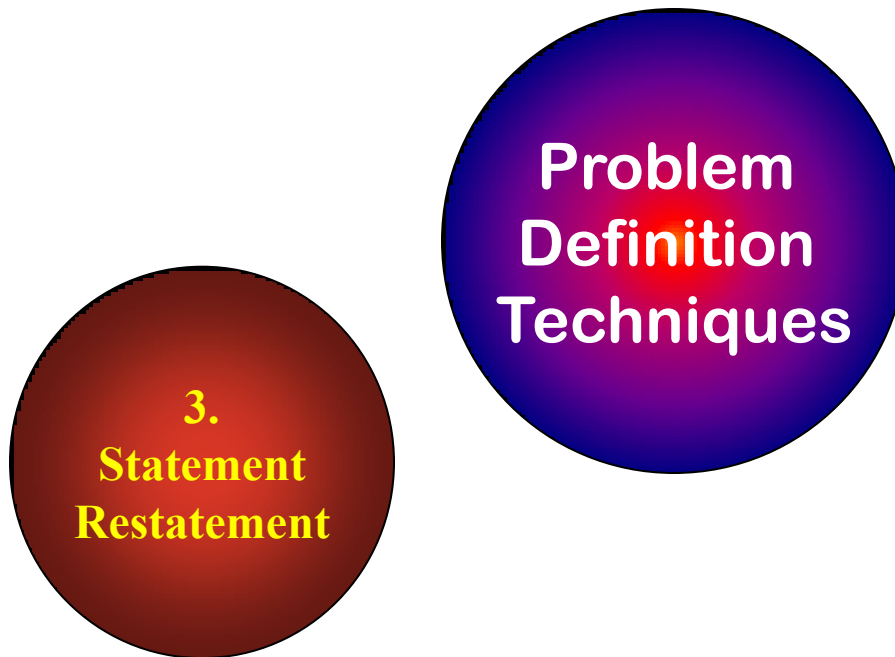
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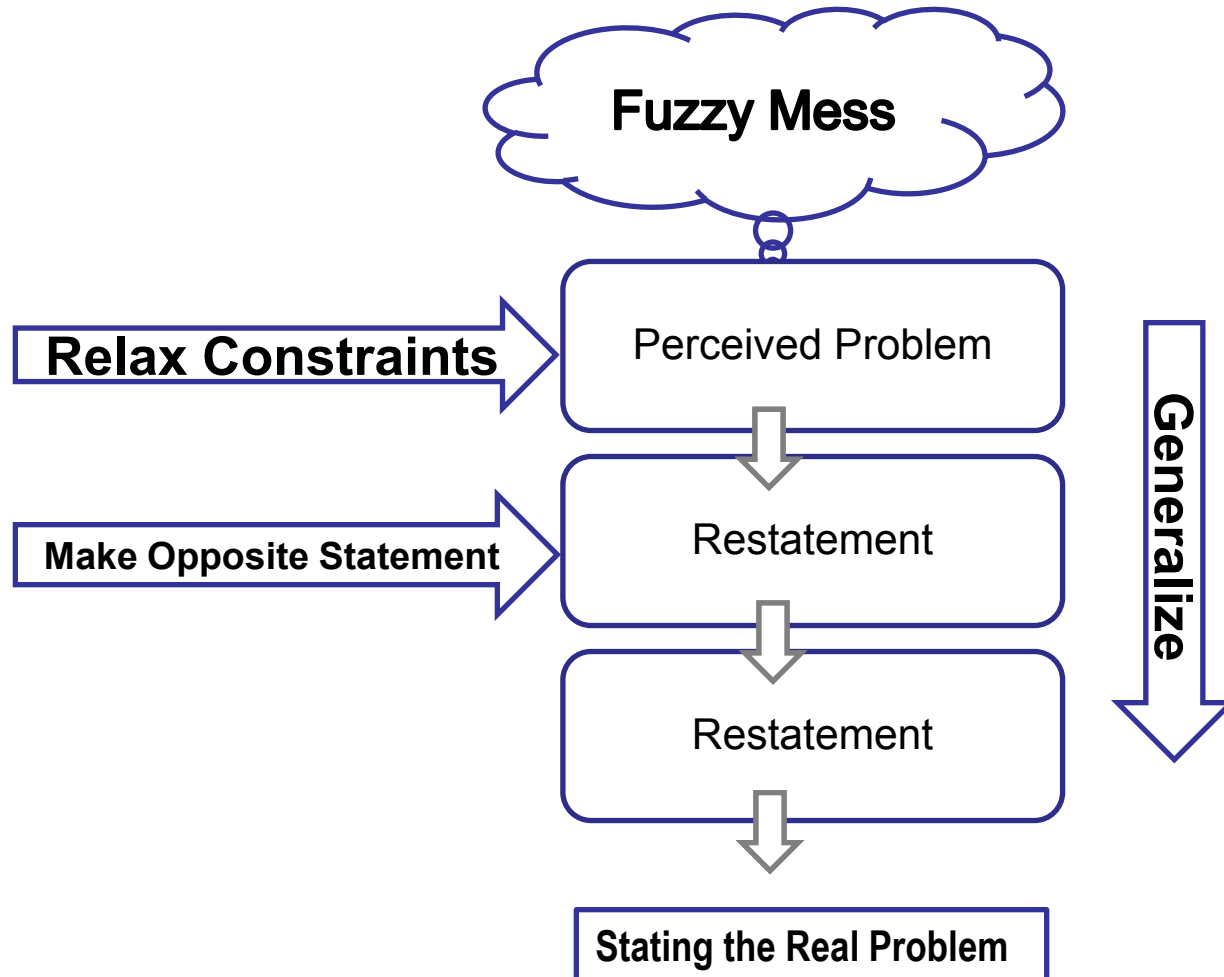


# Problem Definition Techniques

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# Statement Restatement Technique



# Problem Statement Triggers

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1. **Vary the stress pattern**—try placing emphasis on different words and phrases.
2. **Choose a term** that is defined **explicitly** and substitute the explicit definition in each place that the term appears.
3. **Make an opposite statement**, change positives to negatives, and vice versa.

# Problem Statement Triggers

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4. **Change** “every” to “some,” “always” to “sometimes,” “sometimes” to “never,” and vice versa.
5. **Replace “persuasive words”** in the problem statement such as “obviously,” “clearly,” and “certainly” with the argument it is supposed to be replacing.
6. **Express** words in the form of an equation or picture, and vice versa.

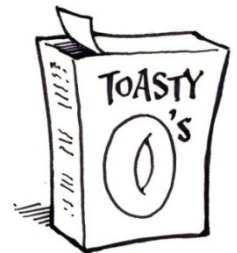
# Using the Triggers

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***Original Problem Statement: Cereal not getting to market fast enough to maintain freshness***

## Trigger 1: Very Stress Pattern

- **Cereal** not getting to market fast enough to maintain freshness .  
(Do other products we have get there faster?)
- Cereal not **getting** to market fast enough to maintain freshness.  
(Can we make the distance/time shorter?)
- Cereal not getting to market fast enough to maintain **freshness**.  
(How can we keep cereal fresher, longer?)



# Using the Triggers

---

*Original Problem Statement: Cereal not getting to market fast enough to maintain freshness*

## Trigger 3: Make an Opposite Statement

- How can we find a way to get the cereal to market so slowly that it will never be fresh?

(Makes us think about how long we have to maintain freshness and what controls it?)



# Using the Triggers

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*Original Problem Statement: Cereal not getting to market fast enough to maintain freshness*

## Trigger 4: Change “every” to “some”

- Cereal is not getting to market fast enough to always maintain freshness.

(This change opens new avenues of thought. Why isn't our cereal always fresh?)



# Using the Triggers

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***Original Problem Statement: Cereal not getting to market fast enough to maintain freshness***

## Trigger 5: Replace “persuasive” words

The problem statement implies that we **obviously** want to get the cereal to market faster to maintain freshness.

Thus, if we could speed up delivery freshness would be maintained.

**Maybe not!** Maybe the store holds it too long. Maybe it's stale before it gets to the store.

(This trigger helps us challenge implicit assumptions made in the problem statement.)





# Using the Triggers

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**Original Problem Statement: Cereal not getting to market fast enough to maintain freshness**

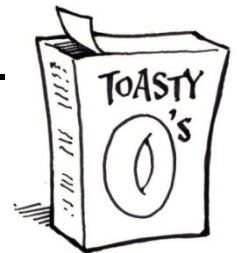
**Trigger 6: Express the words in the form of an equation**

- Freshness is inversely proportional to the time since the cereal was baked, i.e.

$$(\textit{Freshness}) = \frac{k}{(\text{Time Since Cereal Baked})}$$

- What does the proportionality constant, ***k***, depend upon?

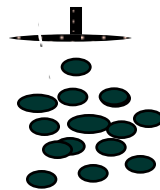
storage conditions, packaging, type of cereal, additives, etc.



# Asprin Coating

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***The Situation:*** To many people, taking aspirin tablets is a foul tasting experience. A few years ago, a number of companies making aspirin decided to do something about it. The instructions given by the manager to his staff to solve the perceived problem were: ***“Find a way to put a pleasant tasting coating on aspirin tablets.”*** Spraying the coating on the tablets had been tried, with very little success. The resulting coating was very non-uniform and this led to an unacceptable product. Let's apply the triggers to this problem.



# Asprin Coating

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The instructions given by the manager to his staff to solve the perceived problem were:

*“Find a way to put a pleasant-tasting coating on aspirin tablets.”*

# “Trigger” Statements

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*“Find a way to **put** a pleasant tasting coating **on** aspirin tablets.”*

Trigger 1      Emphasize different parts of the statement

1. **Put** coating **on** tablet.

Trigger 3      Make an opposite statement

2. **Take** coating **off** tablet.

# Making an Opposite Statement

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This led to one of the newer techniques for coating pills.

The pills are immersed in a liquid which is passed onto a spinning disk. The centrifugal force on the fluid and the pills causes the two to separate, leaving a nice thin coating around the pill.

