



# TRIZ Practice and Lessons Learned in Samsung

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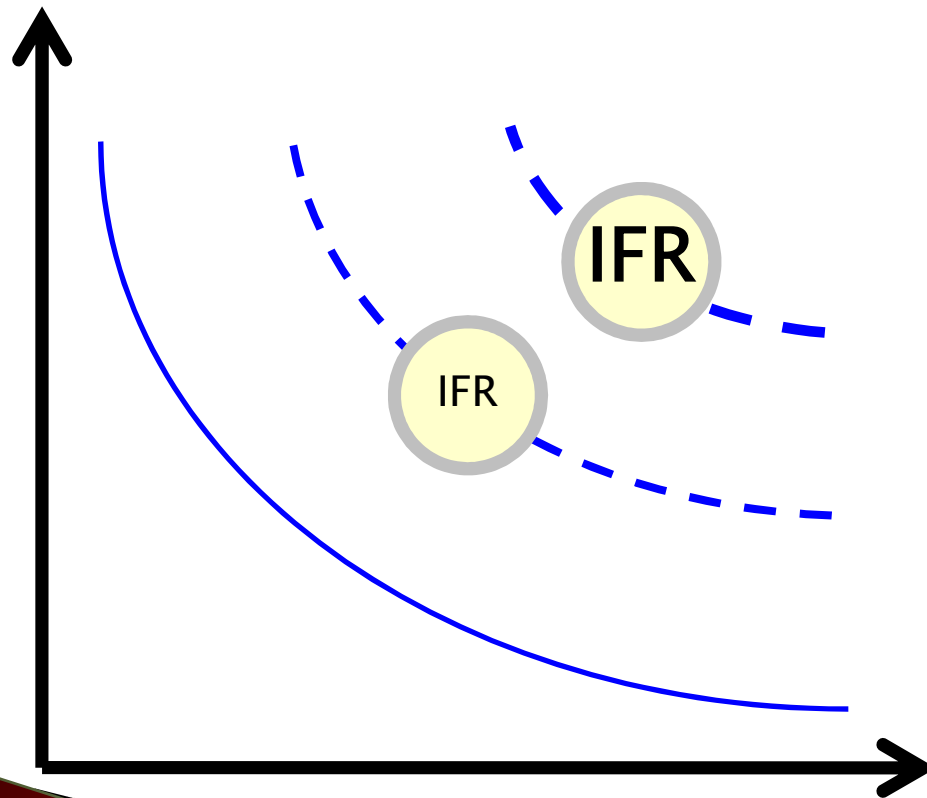
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# Lessons Learned # 1

- ▶ IFR before RCA, FA
- ▶ IFR shows us where to go, which tool we better apply



## < Direction #1 : Improvement >

maintain the current components  
to eliminate the existing problem  
find out root cause  
define contradiction and solve it  
partial trimming  
mainly, manufacturing problem

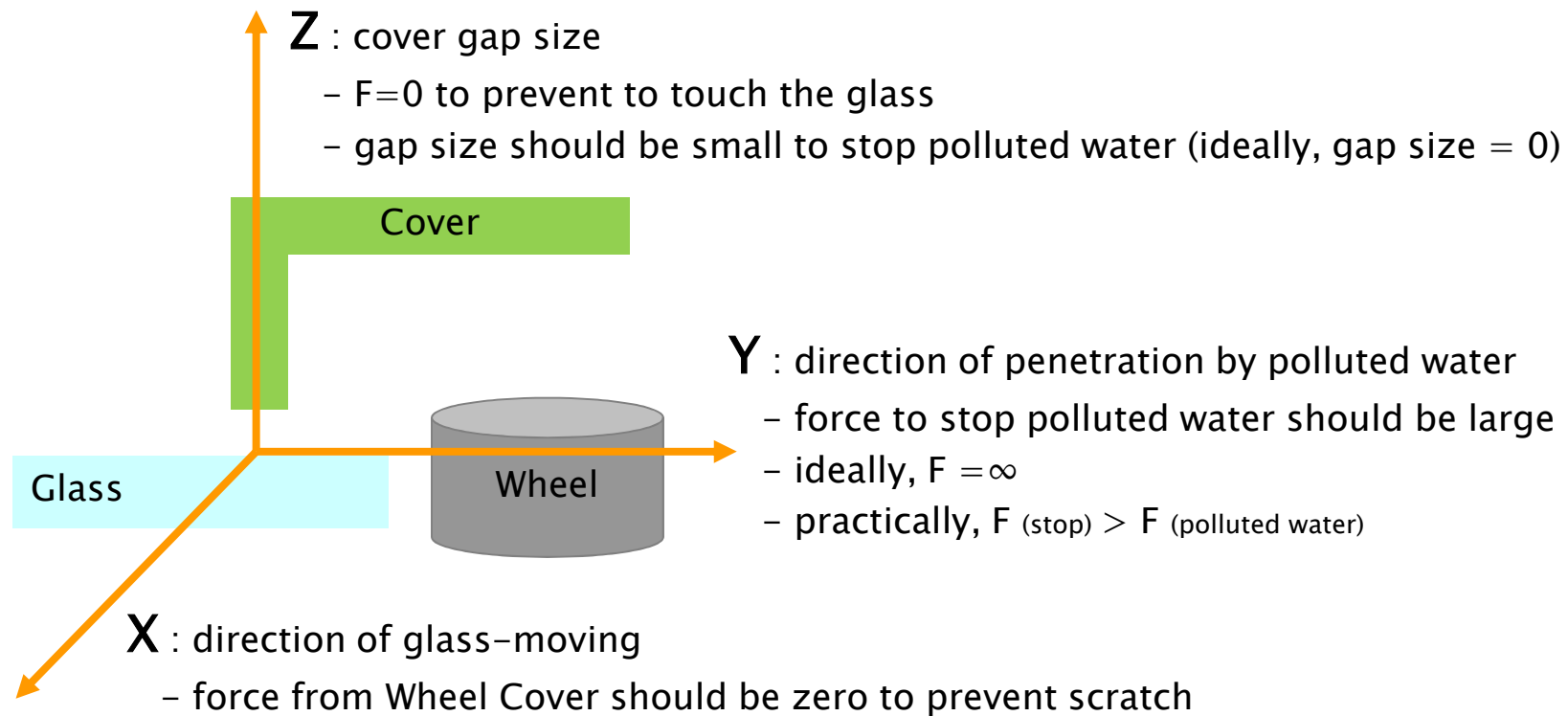
## < Direction #2 : Innovation >

regardless of current components  
focus on the function we need  
find out the way to realize the function  
trends of engineering system evolution  
radical Trimming  
new technology by using FOS  
new operating principle from scientific effects

## Lessons Learned # 2

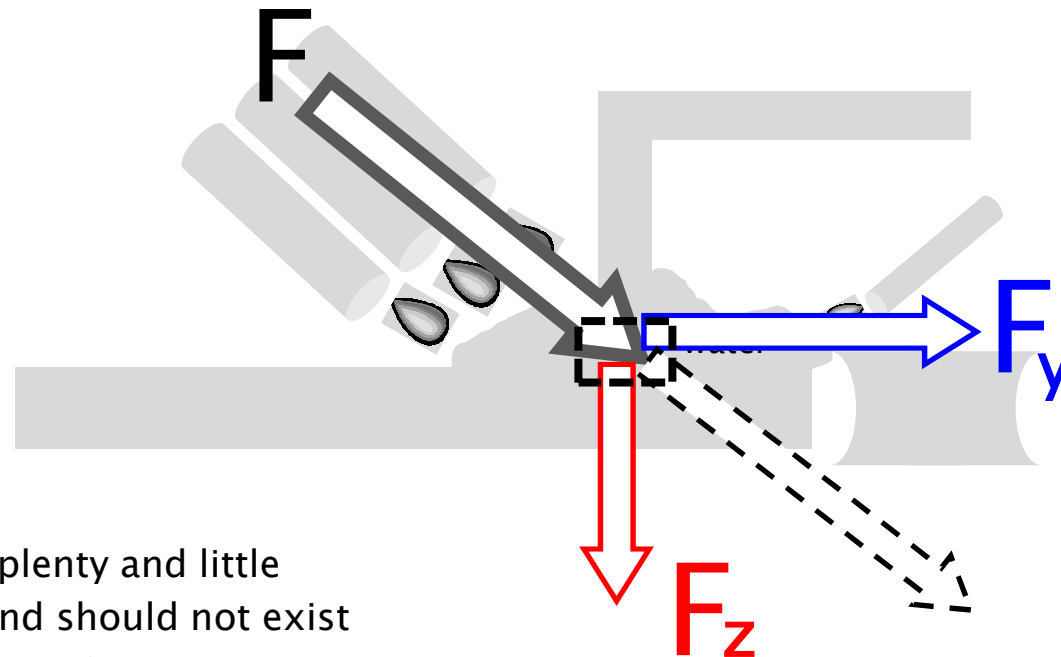
### ► Operating Direction

- analyzed functional requirements in each direction X, Y, Z
- required parameters and values was different even in same OZ



## Lessons Learned # 2

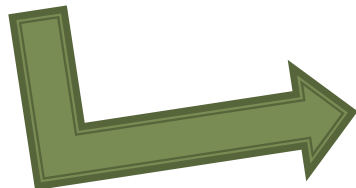
- ▶ Operating Direction
  - Ambiguous contradiction became specific



### < Initial Contradiction >

Water from 'Nozzle' should be plenty and little  
in general, Something should and should not exist

→ How to resolve the contradiction ?



### < after analyzing Operating Direction >

**F<sub>y</sub>** (useful function) should be large

**F<sub>z</sub>** (harmful function) should be small or zero

→ How to change the direction of substance flow ?

# Lessons Learned # 3

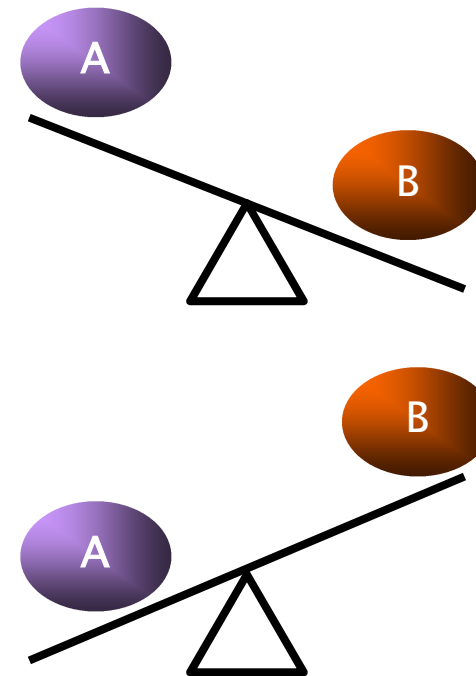
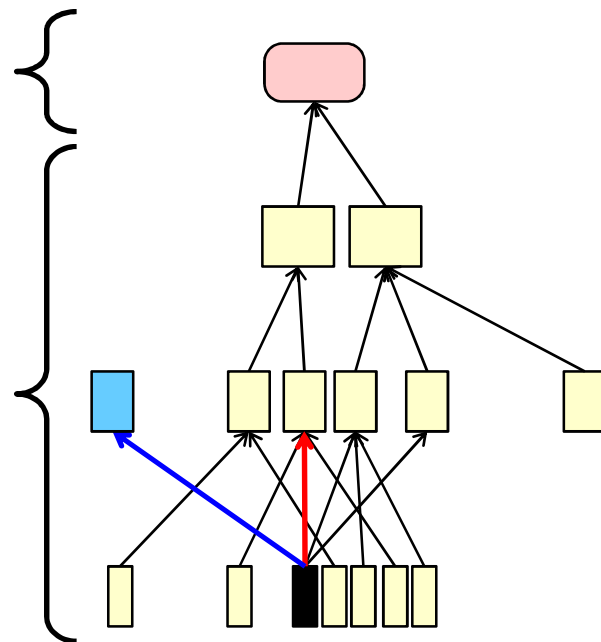
## ► Expansion of initial RCA

### Undesirable Event

Ultimate goal  
Purpose of problem solving

### Causes

target of elimination  
one of ways to achieve the goal  
object of selection

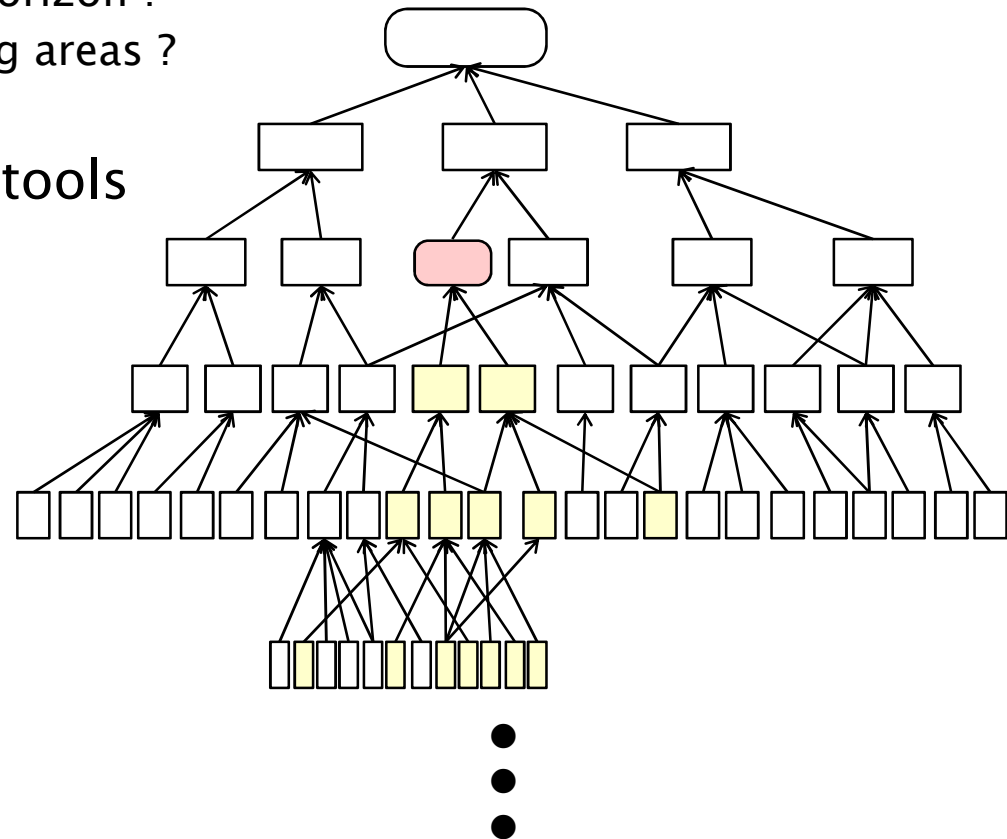


Focus on Contradiction

Is it enough?  
Am I missing something?

# Lessons Learned # 3

- ▶ If the truth is ...
- ▶ We must know
  - how to expand our thinking horizon ?
  - how to deploy into the missing areas ?
- ▶ We already have powerful tools
  - concept of IFR
  - Multi-Screen Thinking



# Lessons Learned # 3

## ▶ Guidelines and Self-questions

### < Leftward > before the problem

- . Why and how was the conditions of problem set
- . Where is the substance come from
- . Why is the substances generated
- . Why is the temperature increased/decreased
- . Why is there a field

### < Upward > ultimate goal

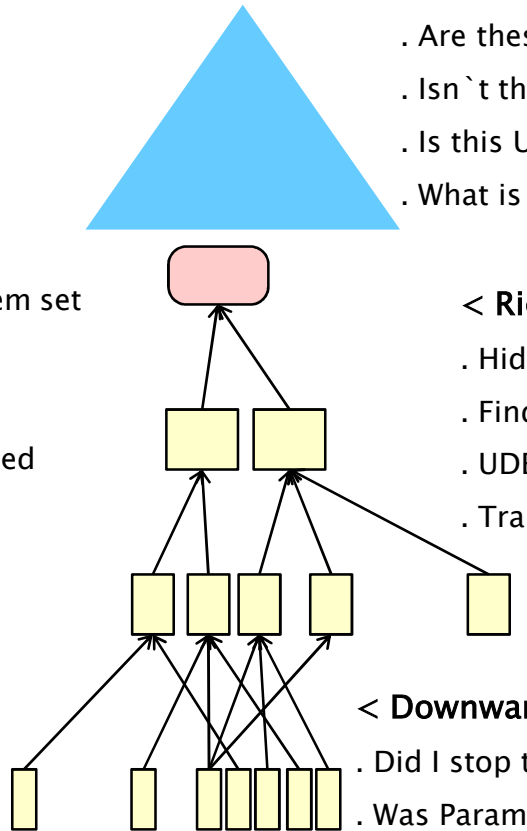
- . Why do you want to eliminate this UDE
- . Which result do you expect by removing this UDE
- . Are these only ways to get that result
- . Isn't there any method to get that result
- . Is this UDE also one of causes
- . What is the influence of UDE to Super-System

### < Rightward > after the problem

- . Hide the UDE from customers, clients
- . Find a way to complement the UDE
- . UDE happened, but it doesn't destroy anything
- . Transfer the UDE from critical to non-critical area

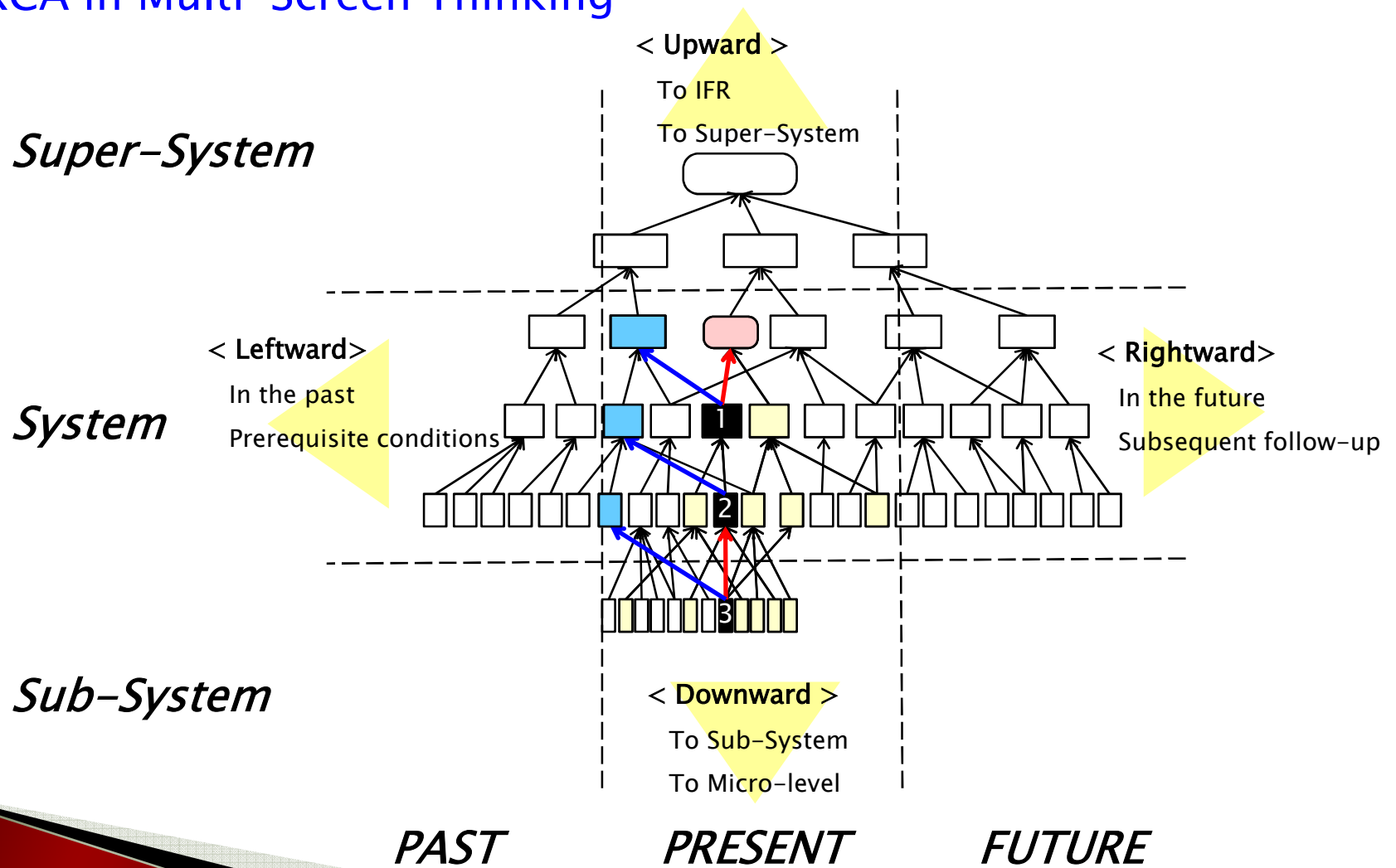
### < Downward > where to study deep

- . Did I stop too early, Isn't it too simple
- . Was Parameter described clearly
- . Concept of OZ/OT + Operating Direction(3D, 2D, 1D, 0D)
- . Components and features of sub-systems
- . How to intentionally make this happen
- . Materials, Microstructures



# Lessons Learned # 3

## RCA in Multi-Screen Thinking





*Thank you*