



# BECOMING AN INNOVATOR: UNCOVERING YOUR INNER PROBLEM-SOLVING POWER

POWERING THE “DYNAMICS OF INNOVATION” TO ENABLE SPECTRUM OF  
POSSIBILITIES - 4

PARTHA S. GHOSH

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author in structuring and solving strategic, tactical and operational issues

This document provides an outline of a presentation and is incomplete without the accompanying oral commentary and discussion.

Partha S Ghosh

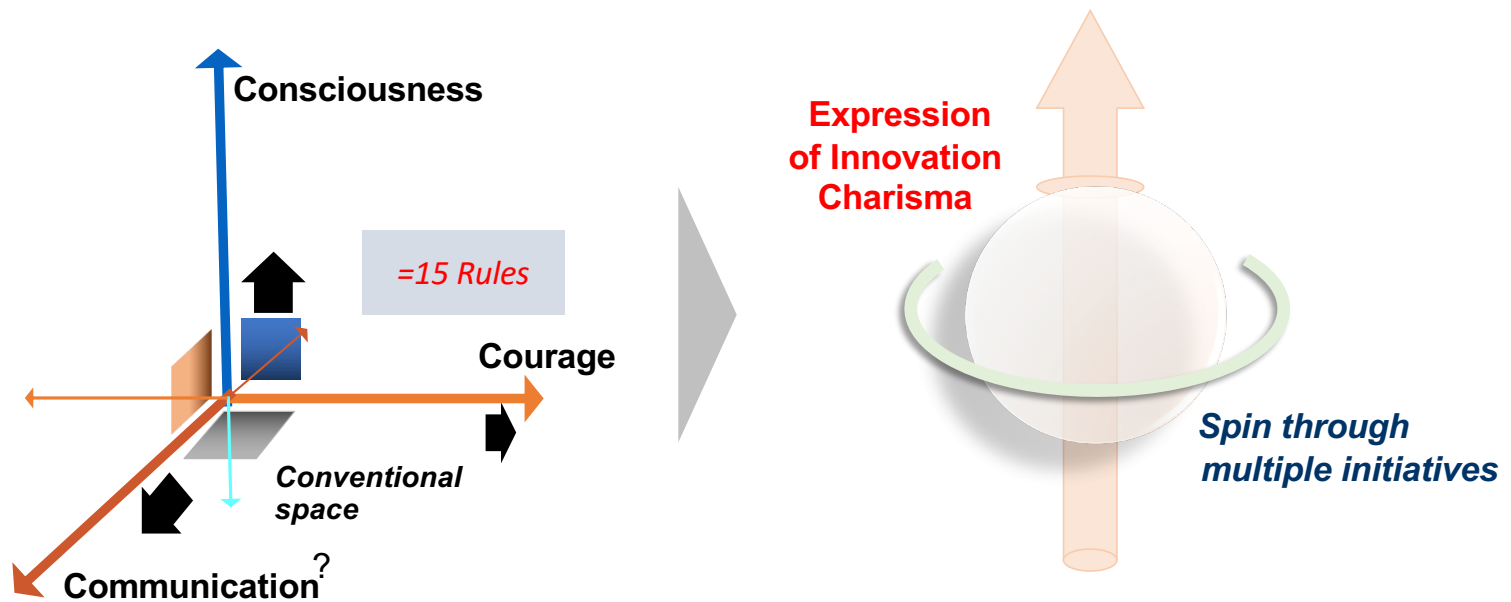
## Agenda for the 5 Days

### Becoming an Innovator

- 1 Putting Innovation in the context of the Modern Civilization
- 2 Demystifying Innovation: Unlocking the Power within you
- 3 Nurturing Genuine Problem-Solving Skills: The 3 Vectors?
- 4 **Becoming an Innovator: Opportunities abound?**
- 5 Practicing Innovation: Being in the flow as an active player

# The 3 Vectors and Innovation

## Expanding Strategic Space



.... Interoperability & Uncommon connections help to open up problem solving space





## Agenda Session 4

### **Becoming an Innovator: Opportunities abound?**

- 1. The dynamics of “*Problems = Opportunities*”**
- 1. Developing and Organizing ideas on Innovation Game board**
- 2. Adopting a few tools and techniques to uncover possibilities**

## Problem Solving?

Defining the problem right?

90%

Deeper insights on  
the domain

Solving the problem with rigor

10%

Sensing early signals and/or  
non-obvious patterns  
with open mind set\*

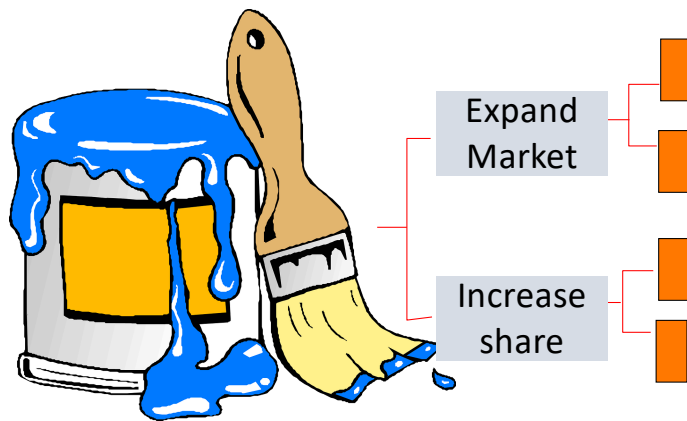
“If I had an hour to solve a problem I'd spend 55 minutes thinking about the problem  
and 5 minutes thinking about solutions.”

The formulation of the problem is often more essential than its solution, which may  
be merely a matter of mathematical or experimental skill.”

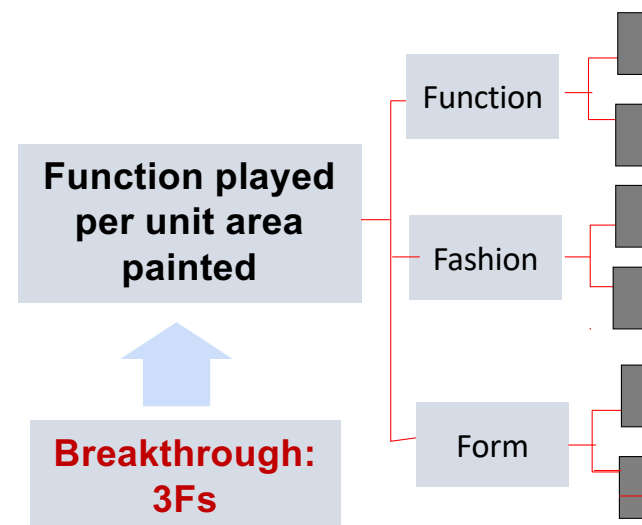
— **Albert Einstein**

## Paint case: Defining the problem with a different perspective

Value of Paint: \$/liter



Value of Paint: \$/unit area for function performed



## Opportunities in the Indian Environment need to identified by *triggering creative instincts*

### Problems

*No schools in your area*

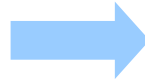
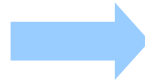
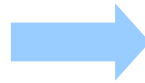
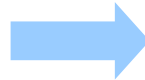
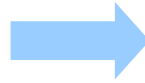
*Lack of low-cost hospitals*

*Doctors difficult to reach*

*Lack of playing fields*

*Poor service quality of various trades*

*Old people living alone*



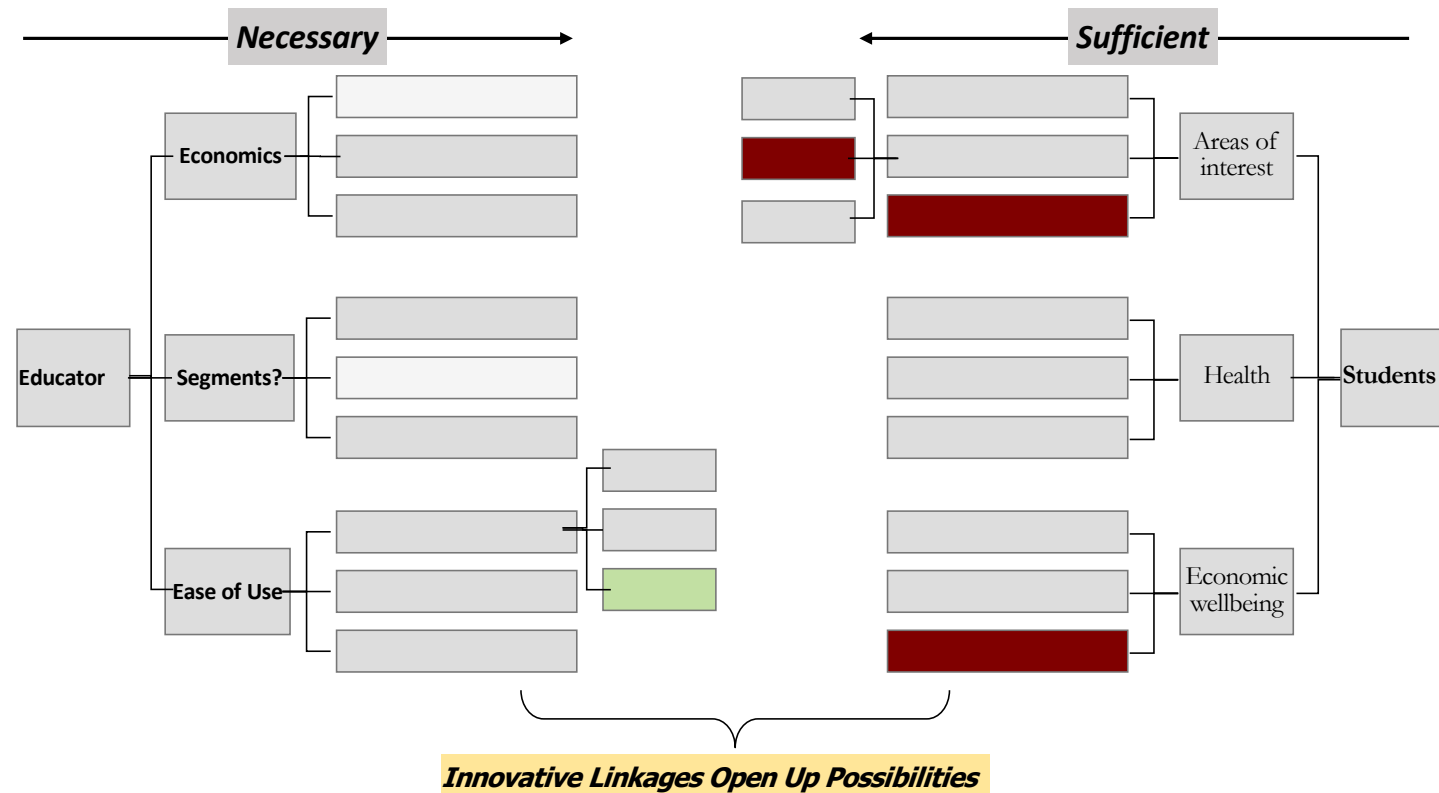
### Opportunities

*Use facilities in the night*

*Improve productivity of doctors by volunteering your time*

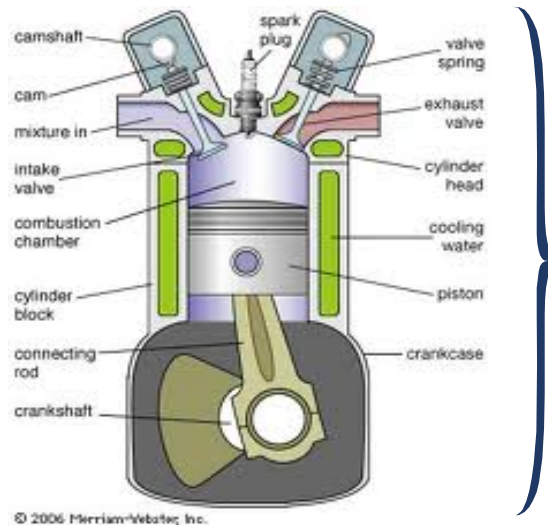


**In evolving innovative solutions ...ensuring comprehensiveness, depth in details from multiple perspectives are the critical points**



# The arts and science of Internal combustion engine

• Automotive Engine



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**Chemistry of the Process:** This maximum efficiency is defined to be:

$$\eta = (T_2 - T_1) / T_2$$

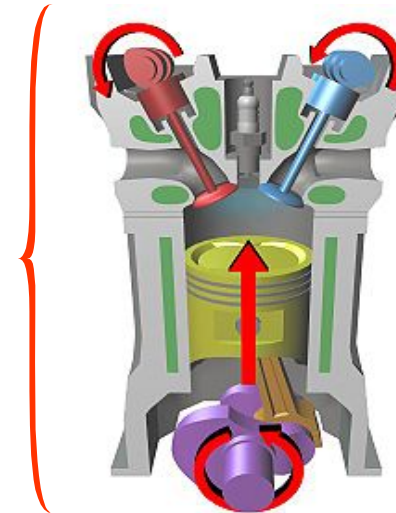
$\eta$  = Efficiency

$T_2$  = Absolute Temperature

$T_1$  = Absolute Temperature

**Physics and the mechanics of the process:**

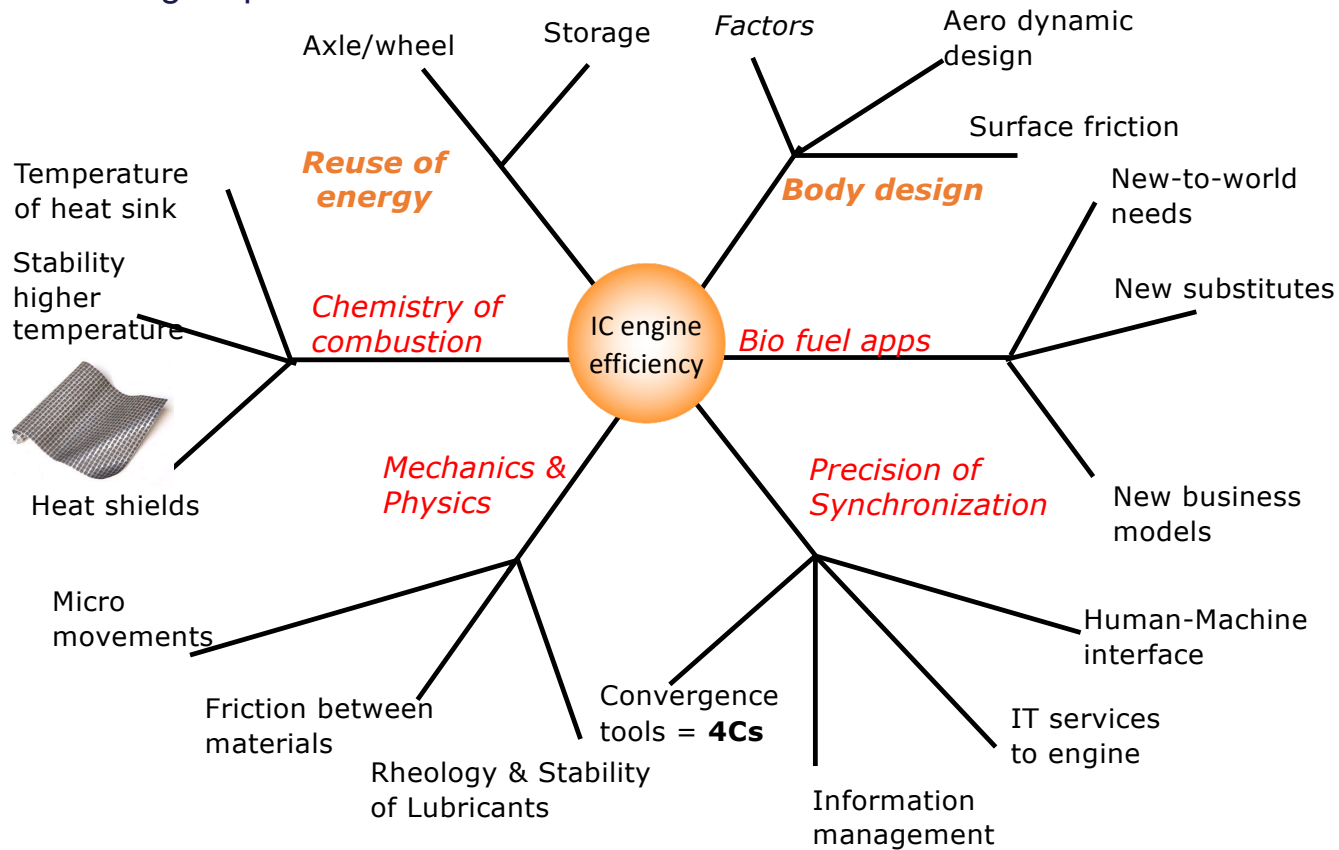
- Degree of atomization
- Synchronization of the moving parts (e.g. the valves)
- Friction between pistons and cylinders ( Function of materials: e.g. Use of Ceramics)



# Story of Innovation in IC Engine

- Automotive Engine

Systems thinking helps.....



## Opportunities in the Indian Environment need to be identified by *triggering creative instincts*

Problems		Opportunities
No schools in your area	→	Use facilities in the night
Lack of low-cost hospitals	→	Improve productivity of doctors by volunteering your time
Doctors difficult to reach	→	Create a service by networking doctors
Lack of playing fields	→	Work with local government to manage and allocate fields
Poor service quality of various trades	→	Better tools for craftsmen like plumbers, electricians, ...
Old people living alone	→	Create services for old people



## Agenda Session 4

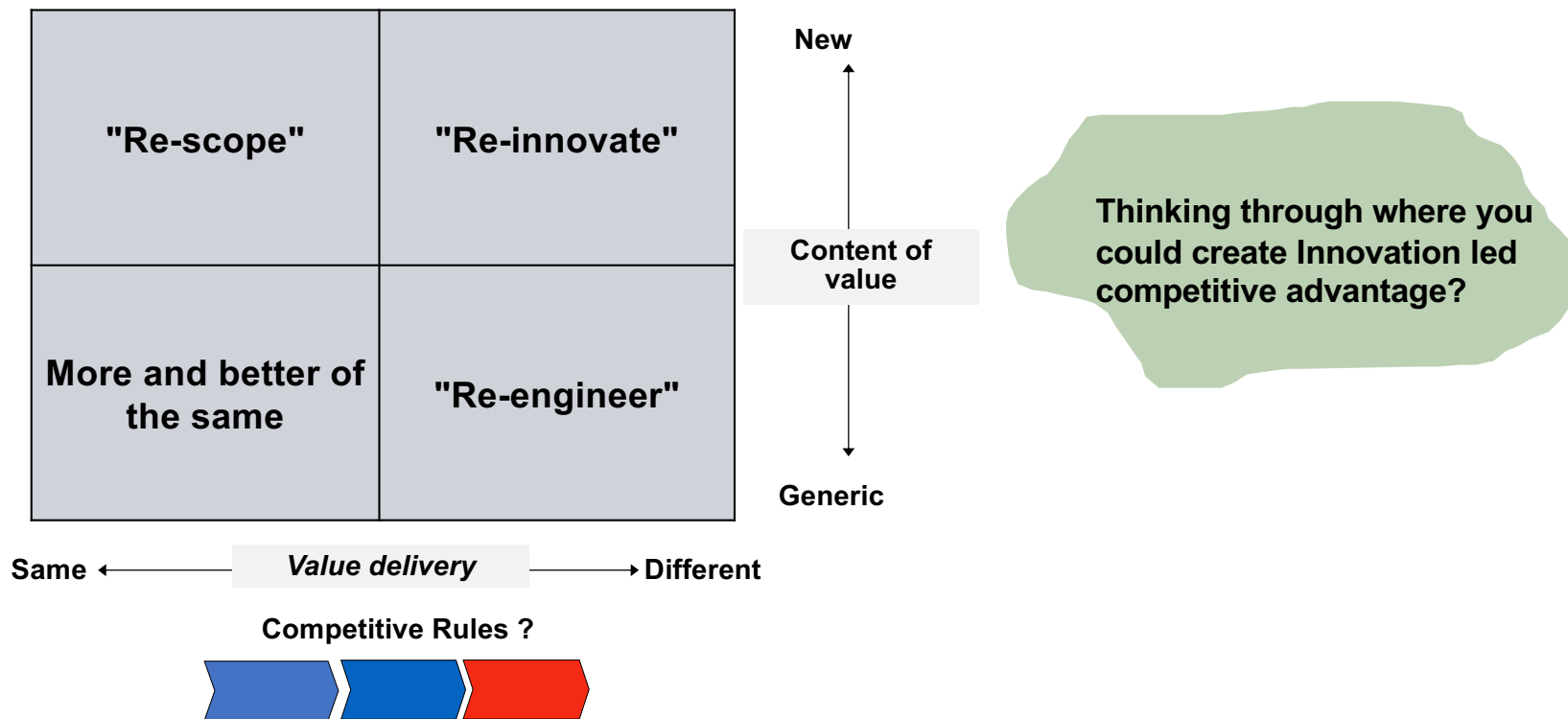
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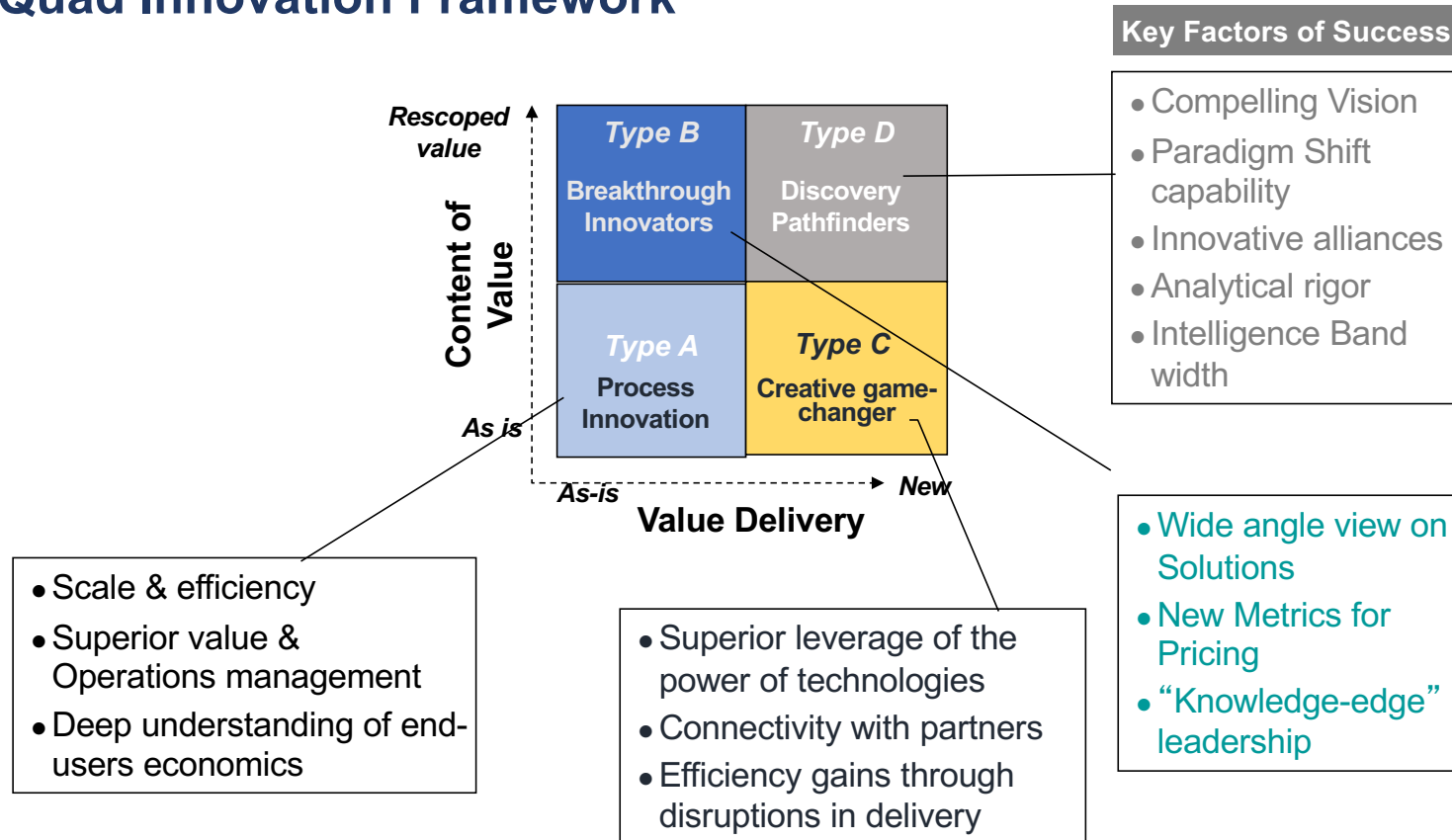
# Innovating Strategic Plays

- Fundamental dimensions to explore & define strategic plays

The Two Vectors :Innovation Game Board

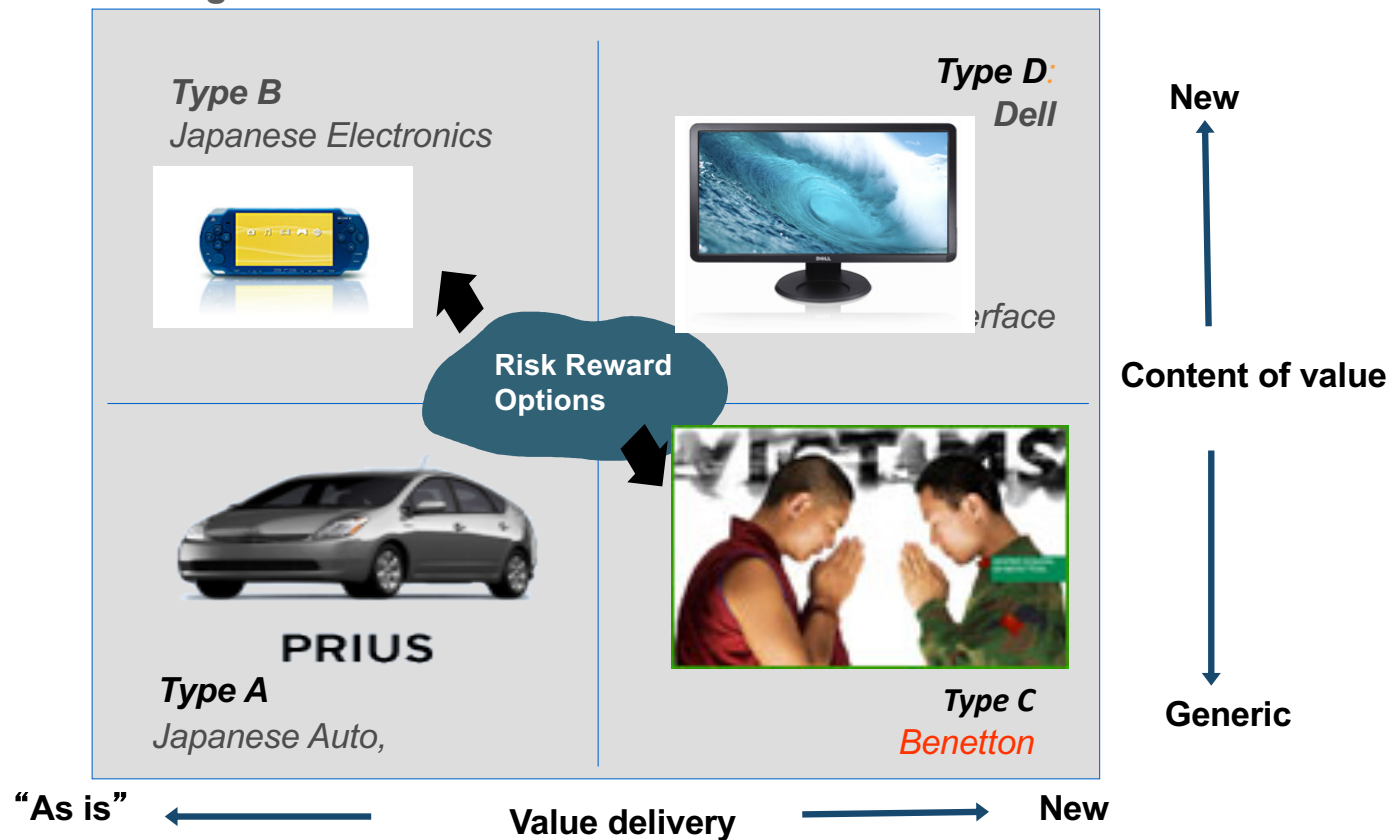


## Four Quad Innovation Framework

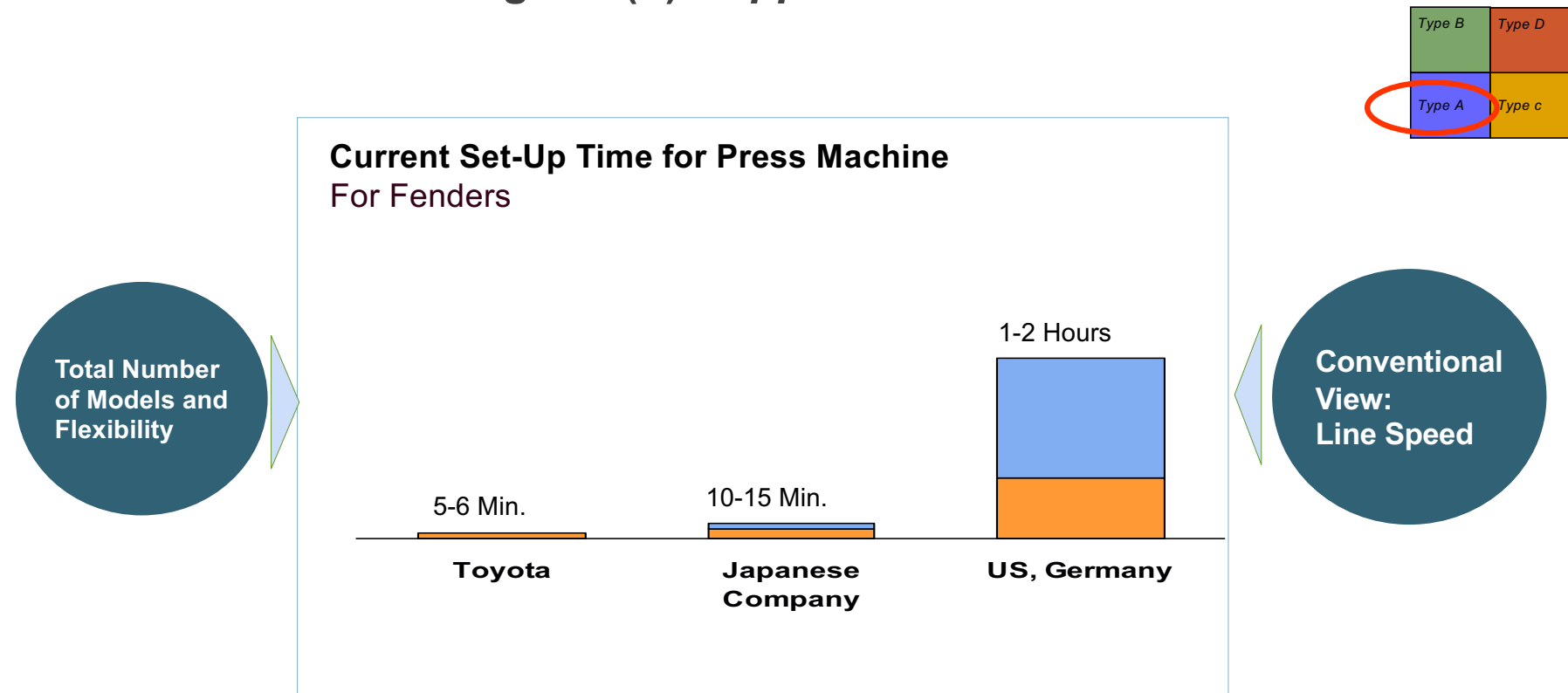


# Innovation Framework: Global Cases

Strategic Game board:

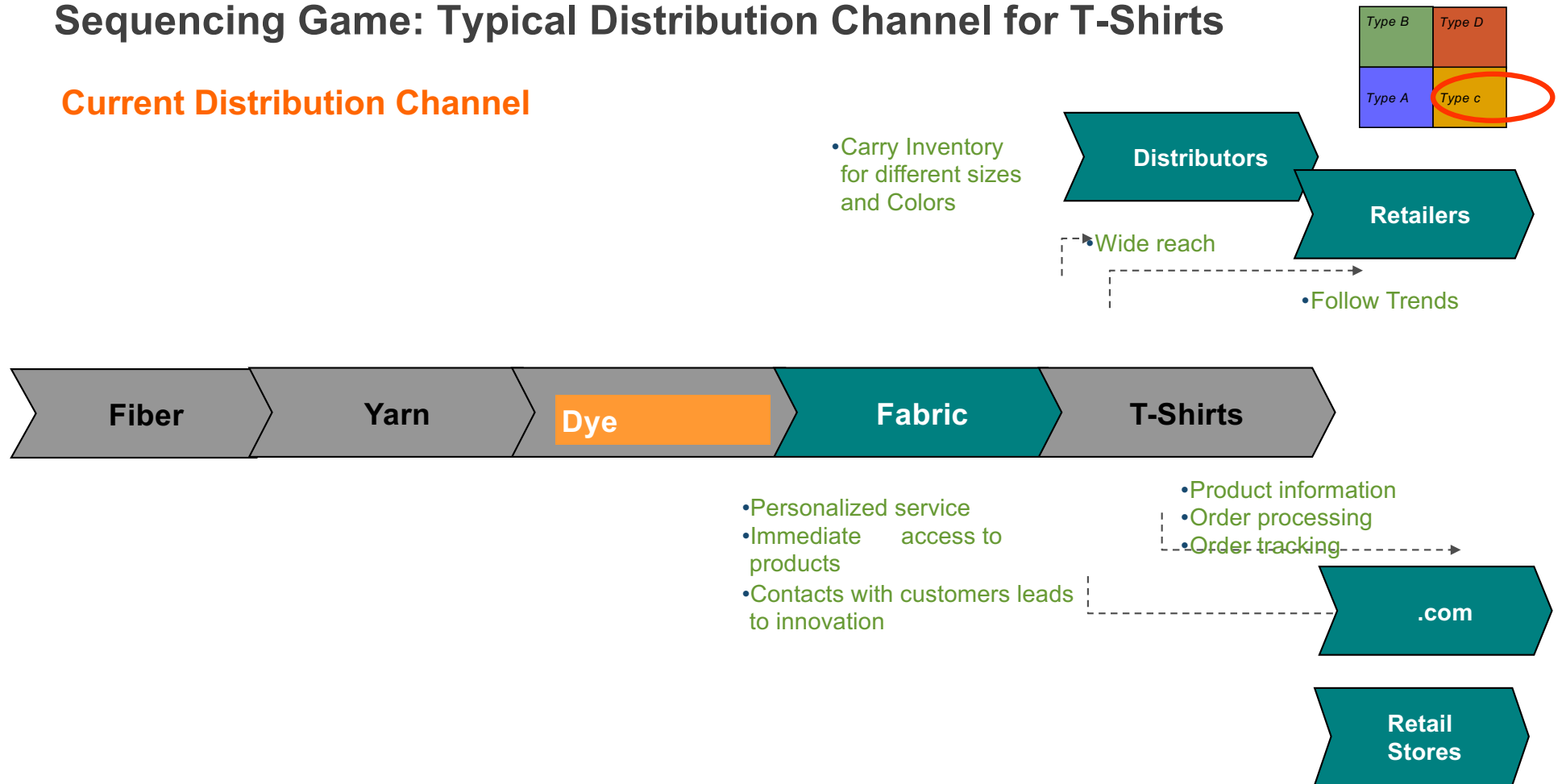


## When Conditions Change ... (?).. *Opportunities are created..*



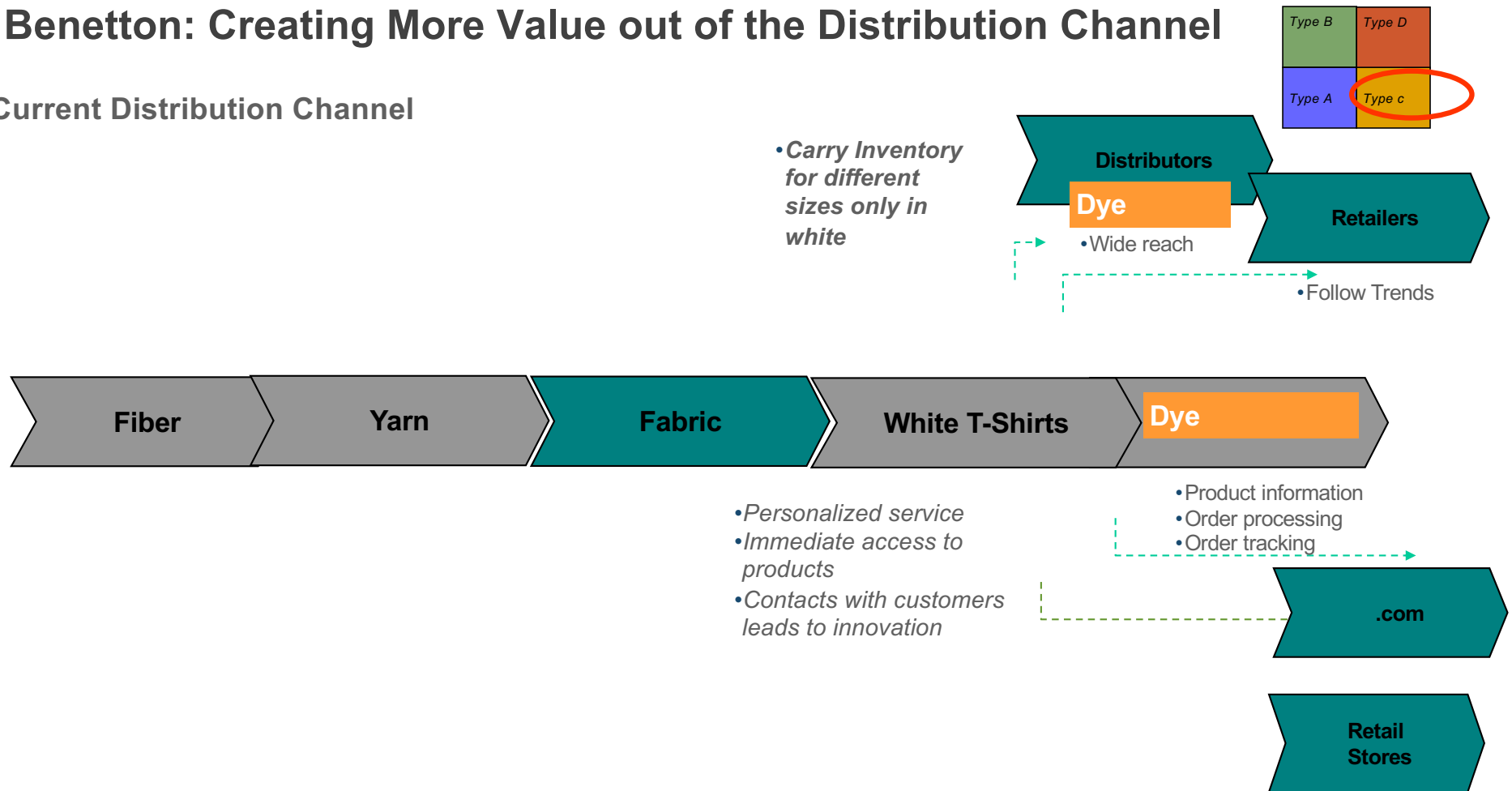
# Sequencing Game: Typical Distribution Channel for T-Shirts

## Current Distribution Channel

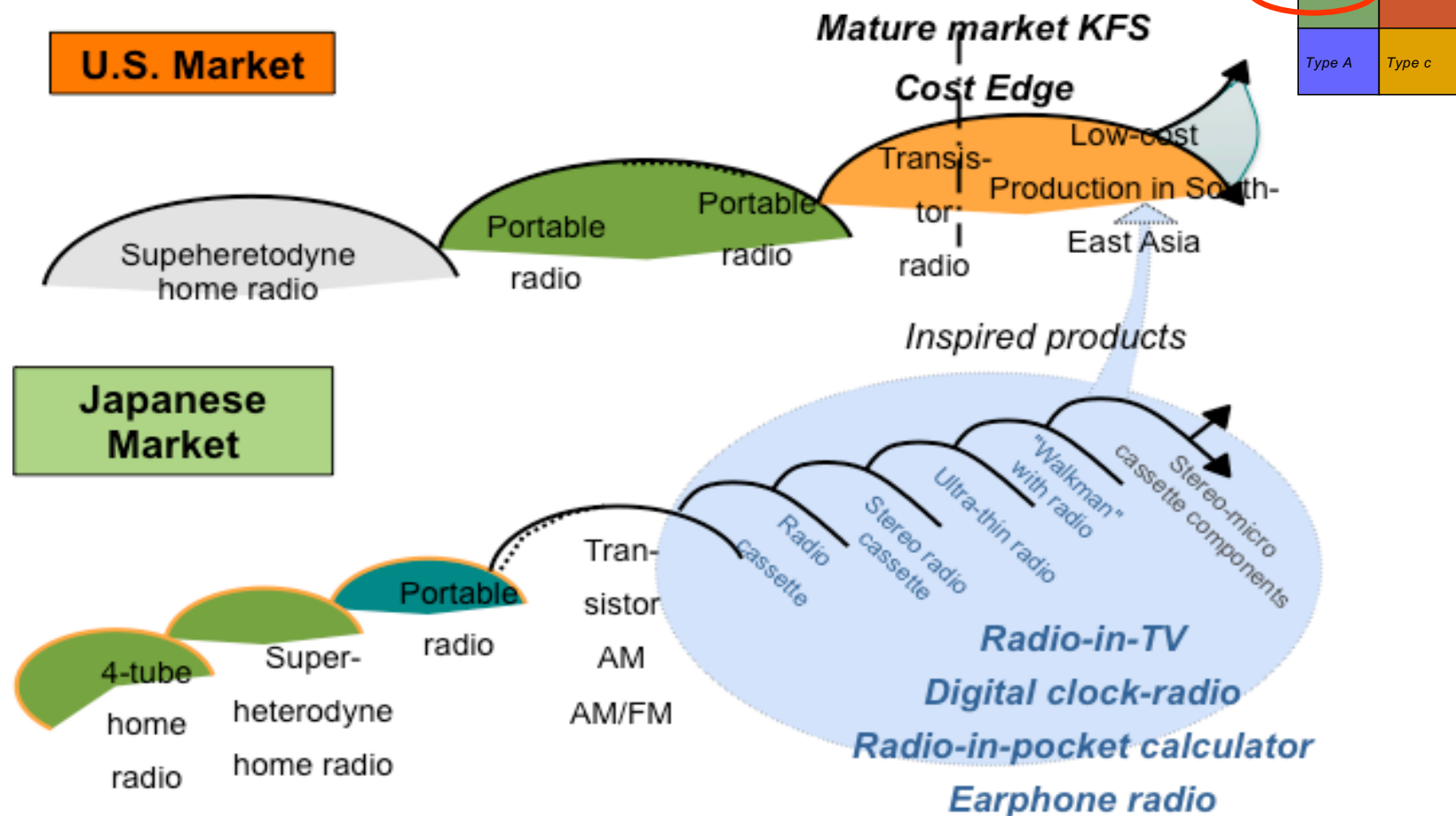


# Benetton: Creating More Value out of the Distribution Channel

## Current Distribution Channel



## Product-Development History of Radio: *US versus Japan*





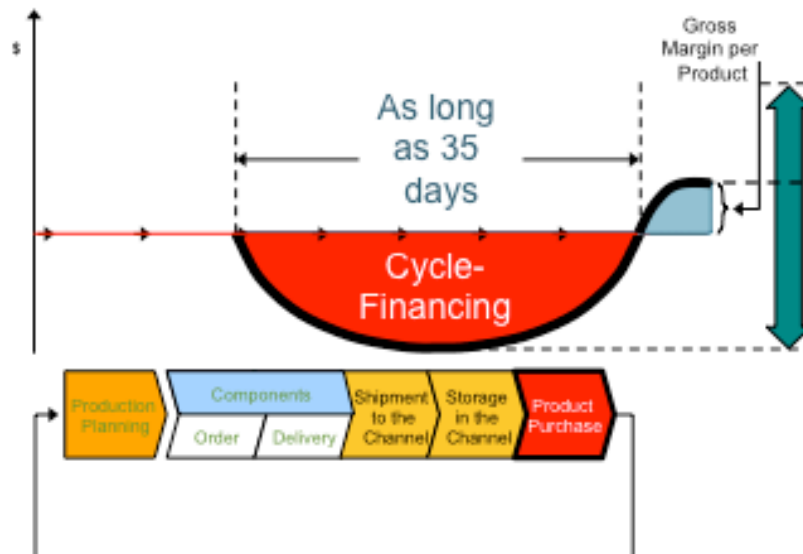
## Network Manufacturing: Dells *Capital Efficiency Advantage*

The "new model" essentially accelerates physical flow of products while creating significant advantage in capital efficiency by moving from conventional "seller funded" to "buyer funded" working capital.

**Illustrative**

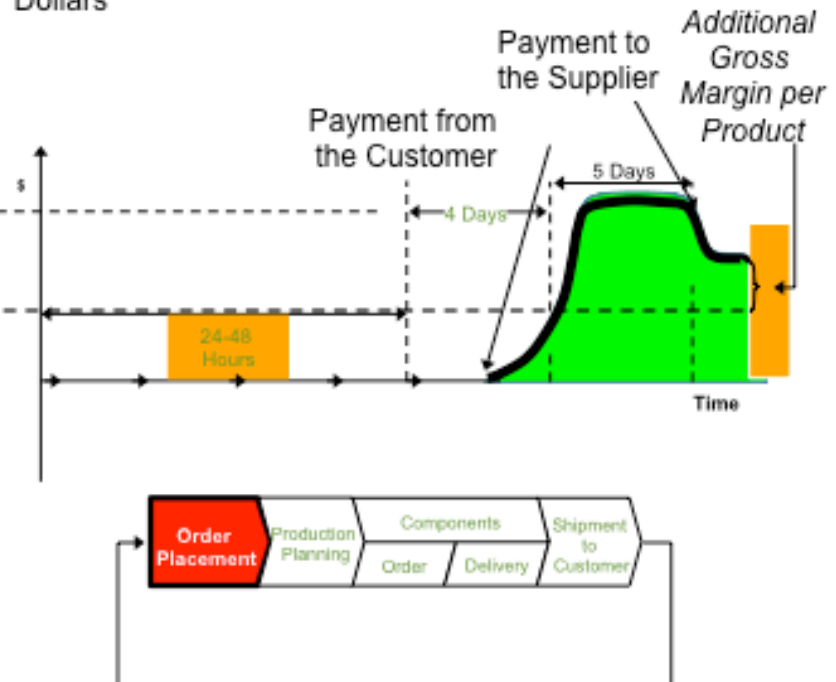
### Conventional Model

Financial Flow/Production Cycle  
Dollars



### Direct/Internet Model

Financial Flow/Production Cycle  
Dollars



## Agenda Session 4

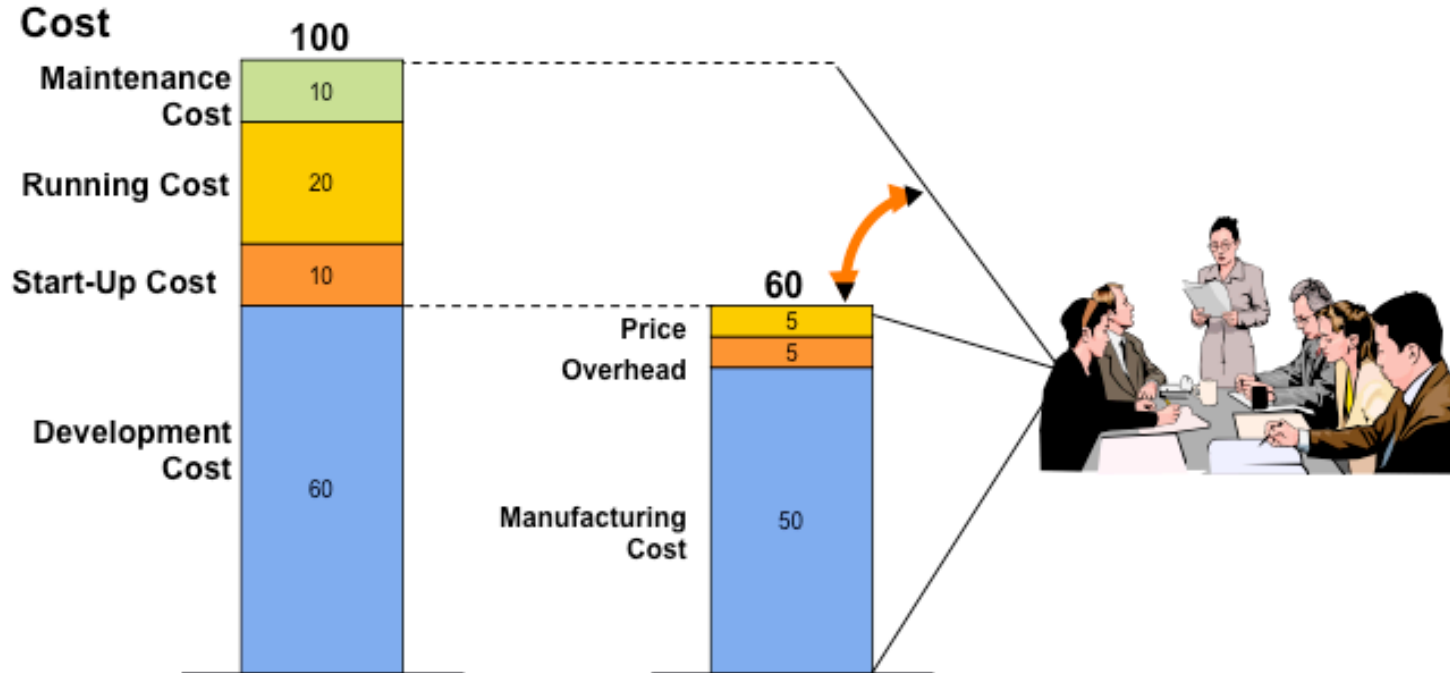
### Becoming an Innovator: Opportunities abound?

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## Understanding the economics of the customer

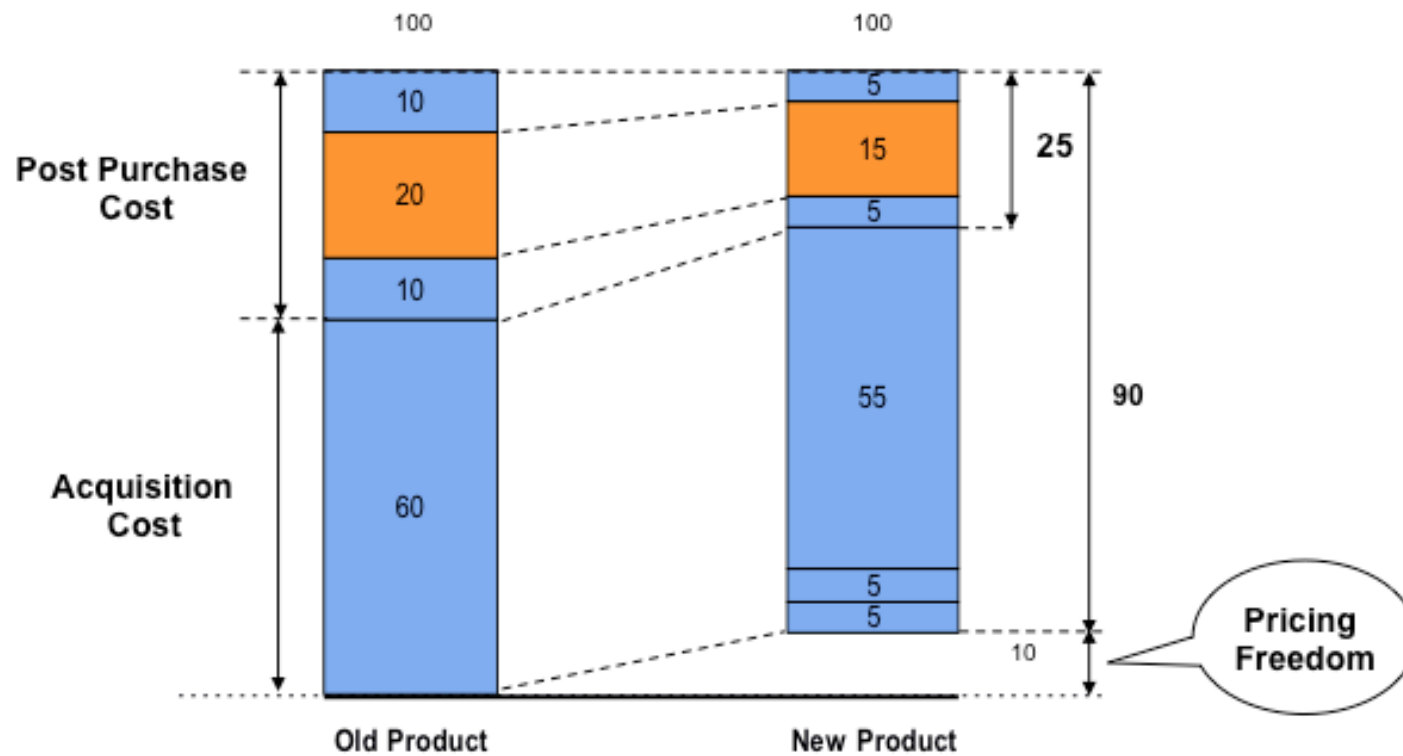
### 1 **EVC** = Economic Value to the Customer

#### Clients /Users' Economics Life-Cycle



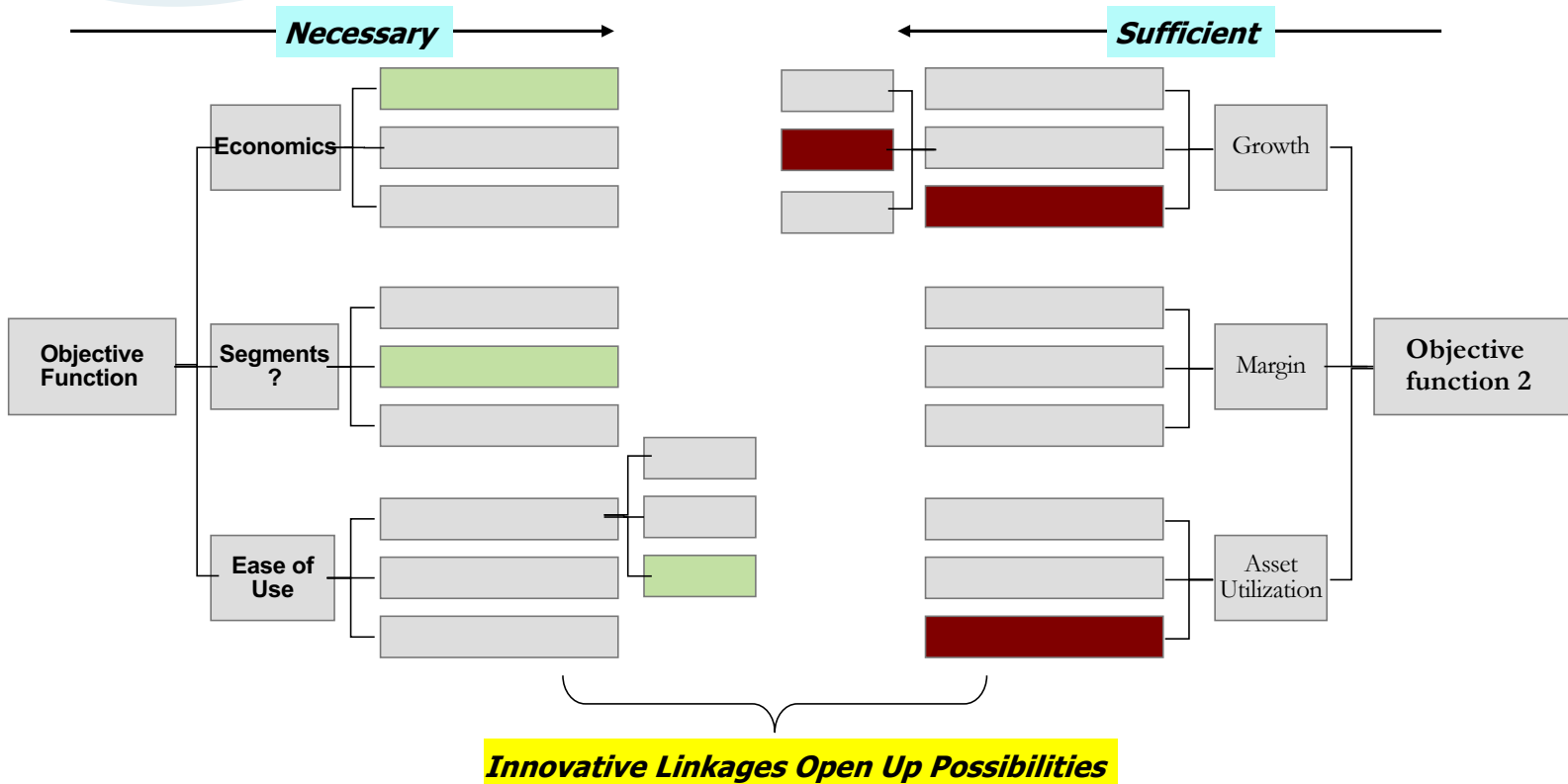
## Impact on Customer's Life-cycle Economics

### Customer's Economics



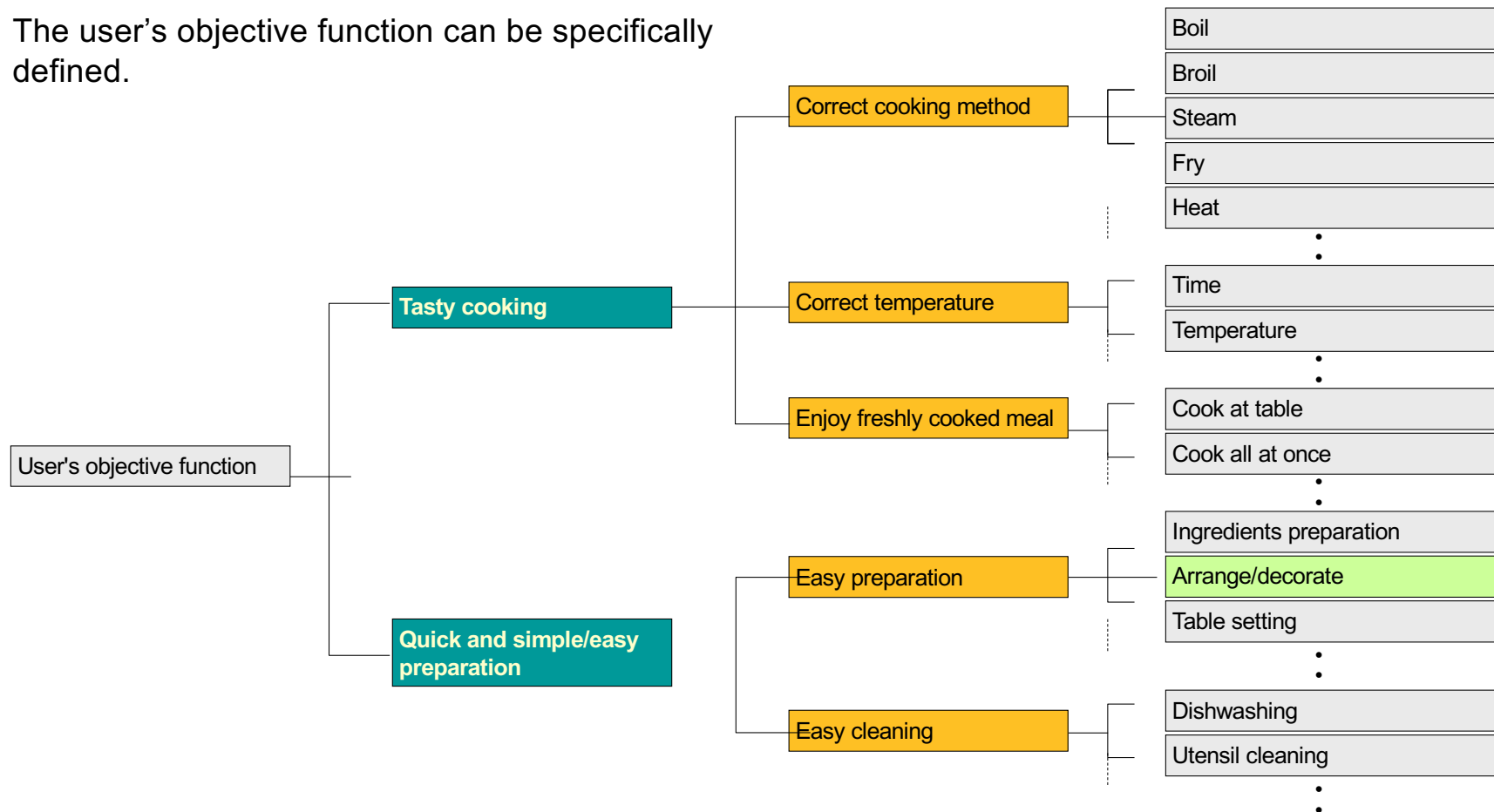
## Ensuring comprehensiveness, depth and the critical points

**2** Degrees of freedom = Customer & Company's objective function



## Expanding and deepening understanding of customers

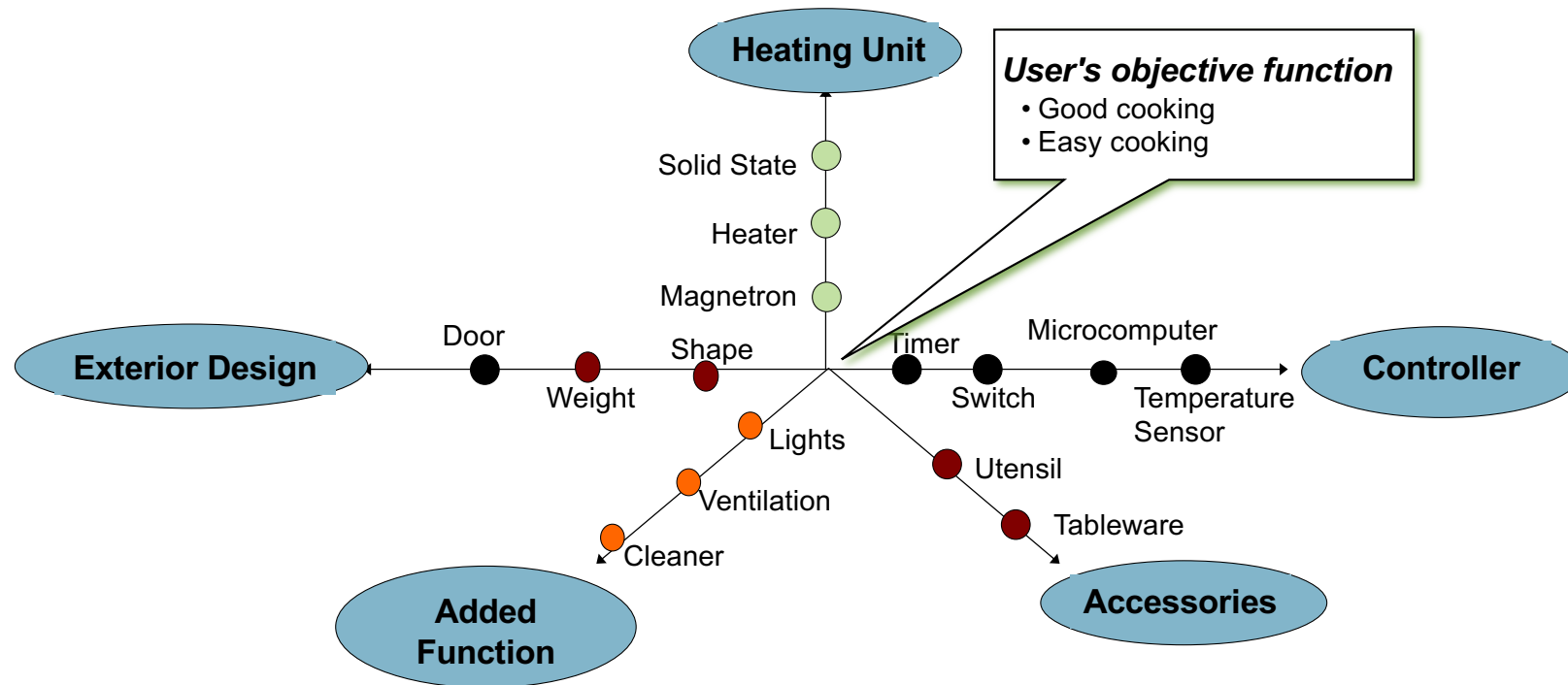
The user's objective function can be specifically defined.



## Stretching Mind to meet Necessary & Sufficient Conditions

*In maximizing the user's objective function, a manufacturer can exercise options along several dimensions, which we call "strategic degrees of freedom"*

### Strategic Degrees of Freedom on Microwave Oven

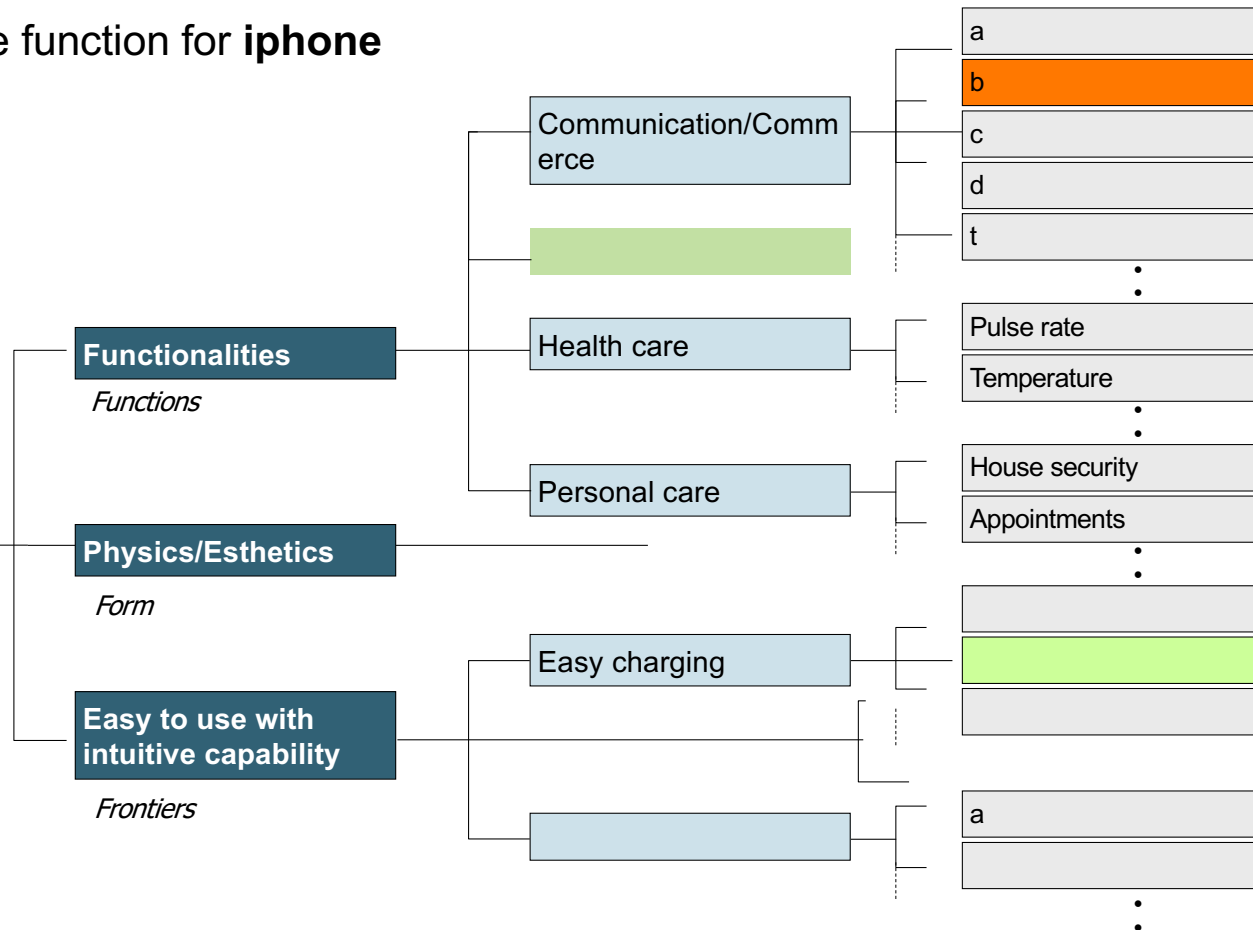


# Expanding and deepening understanding of customers

The user's objective function for **iphone**



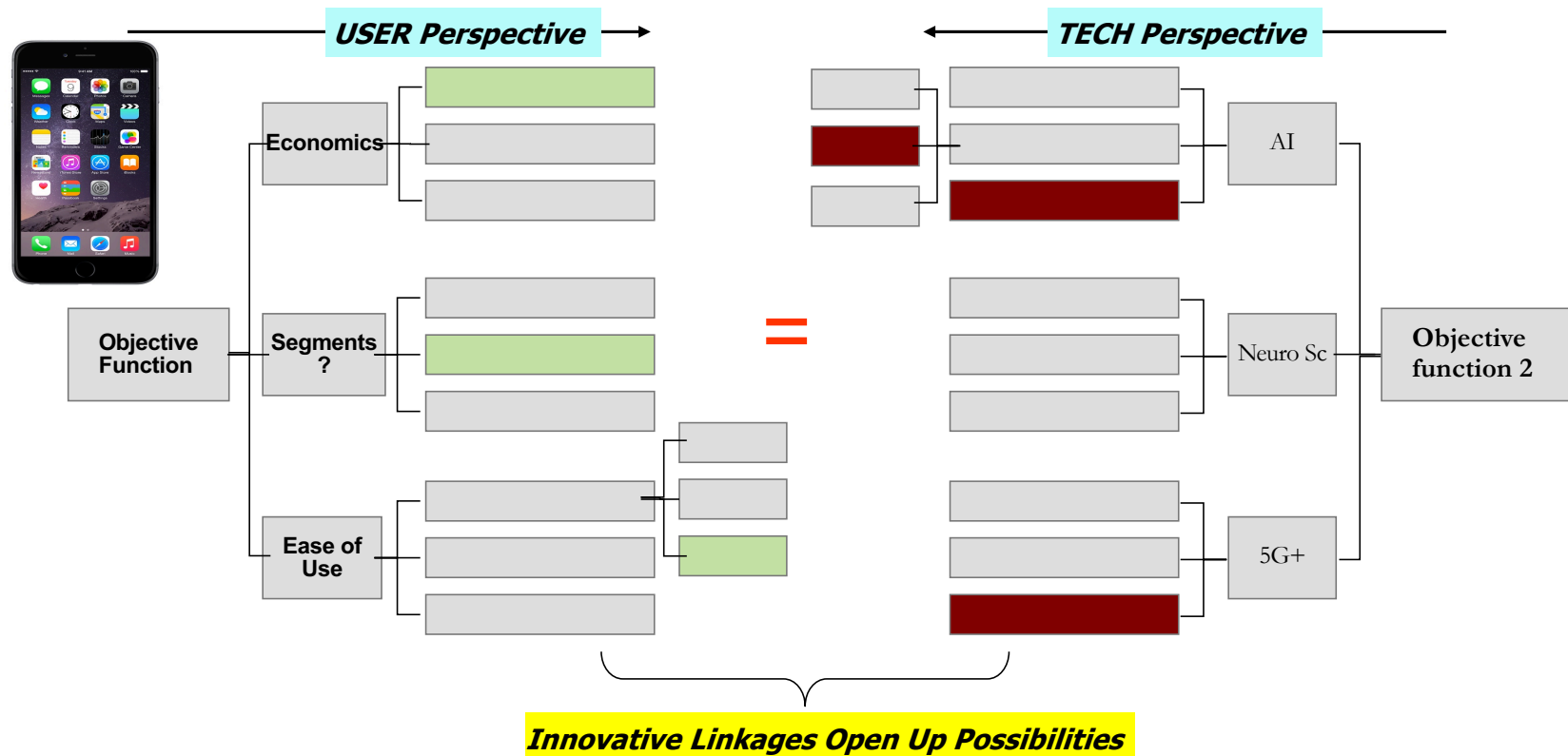
User's objective function





## Ensuring comprehensiveness, depth and the critical points

### User & Technology's objective function

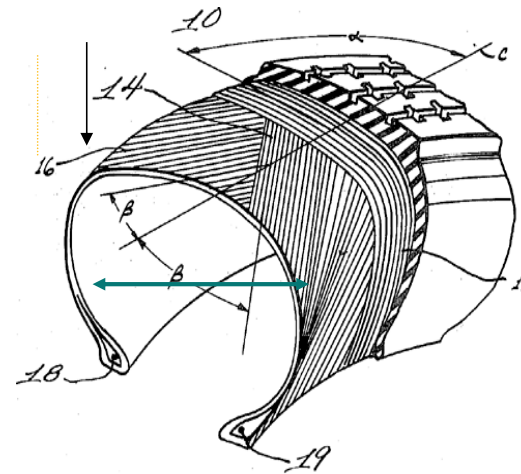


## The story of Tire Performance

### 3 S Curves = Economics of Discontinuities

- Tire cord

#### Innovation in “Tire Cord”



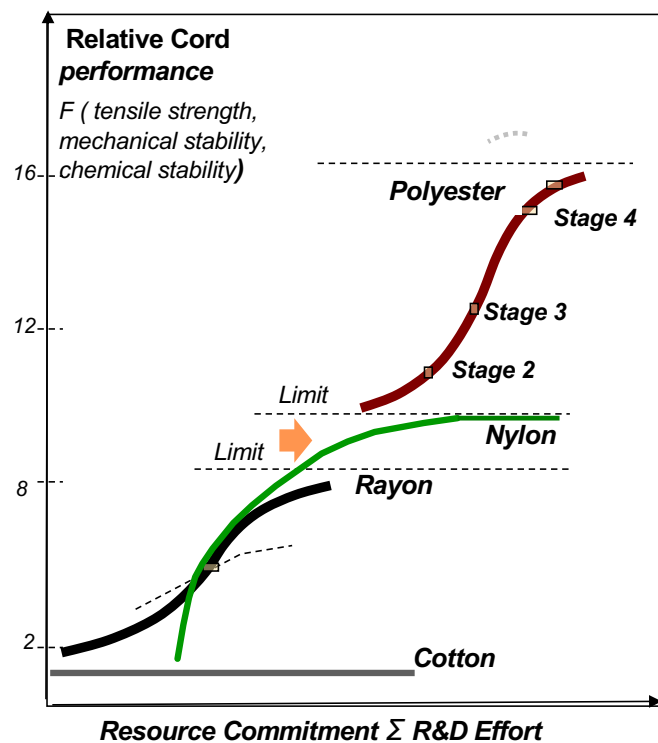
#### Key technical issues:

Stability of vehicle  
Fuel efficiency  
Grip  
Noise

## Understanding the dynamics of Technological Limits

### Limits of Tire Cord Technology

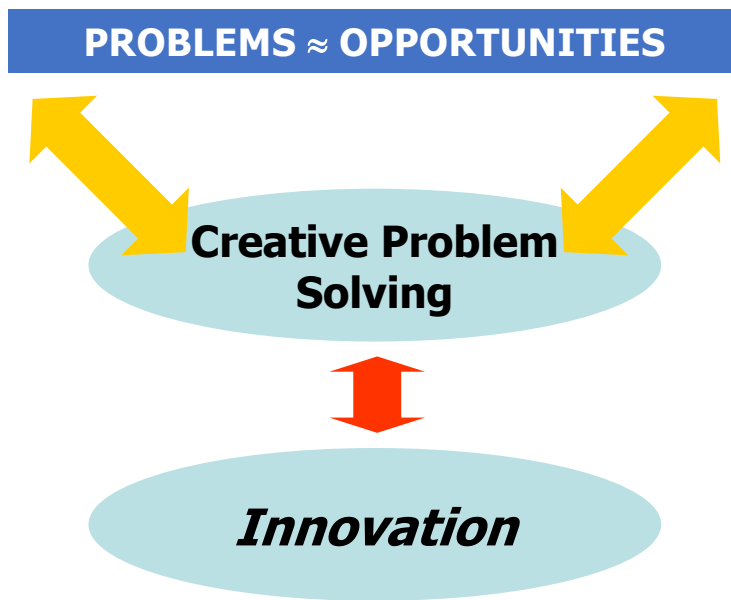
- Tire cord



*Understanding and timing of change over?*

*How do You Structure the choices ?*

**Homework 3** : Please pick significant problems in your neighborhood; then please choose one and examine how you might solve the problems keeping in mind the basic theory below?



#### Example

##### Problems

Efficiency of fuels

##### Opportunities

Additives for improved atomization

#### Key questions:

*Identify a few significant problems in your neighborhood that you connect with? Please list them and discuss which you wish to solve, why and how?*

Examine alternative solutions?

Analyze how it could be commercialized ?

## Ensuring comprehensiveness, depth and the critical points

