

# Innovation and Entrepreneurship

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**Tough Time Never Last....! But tough People Do!** -Robert Schooler

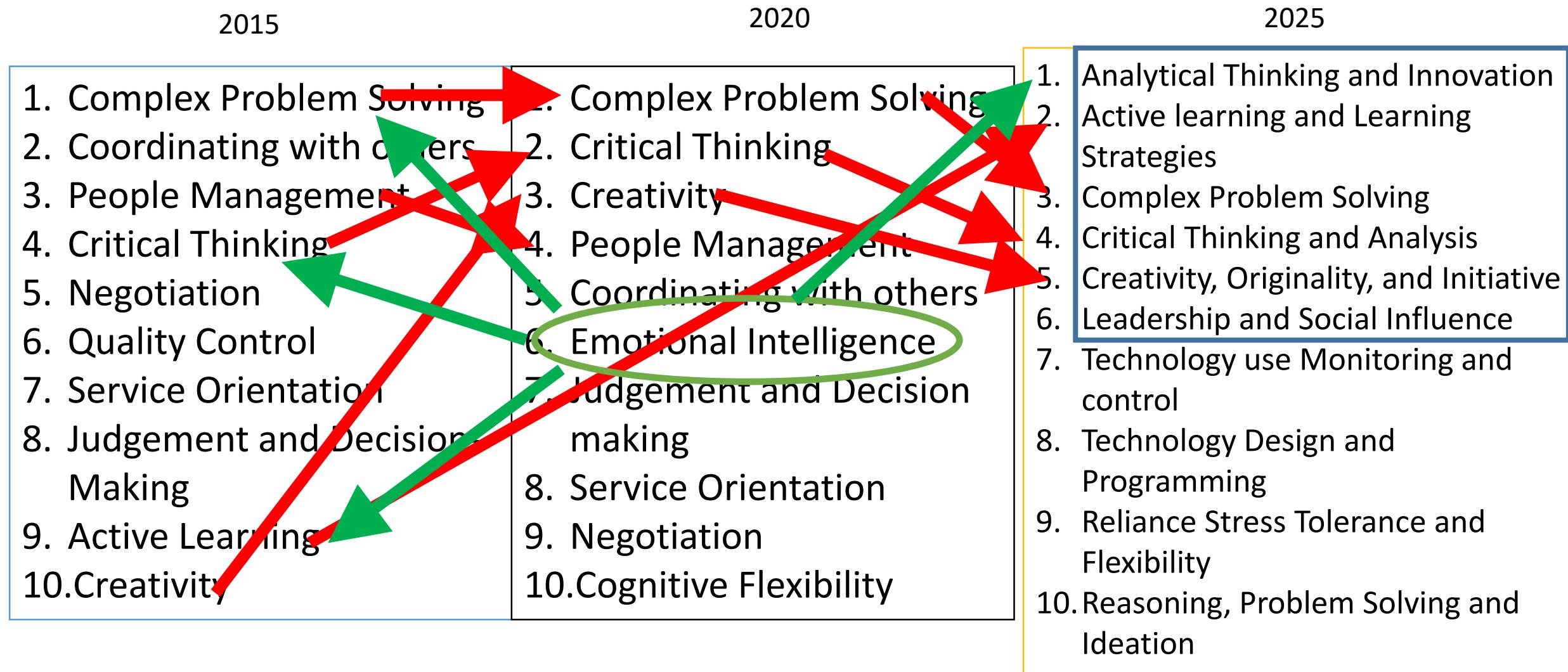
# Prerequisite

## Competencies

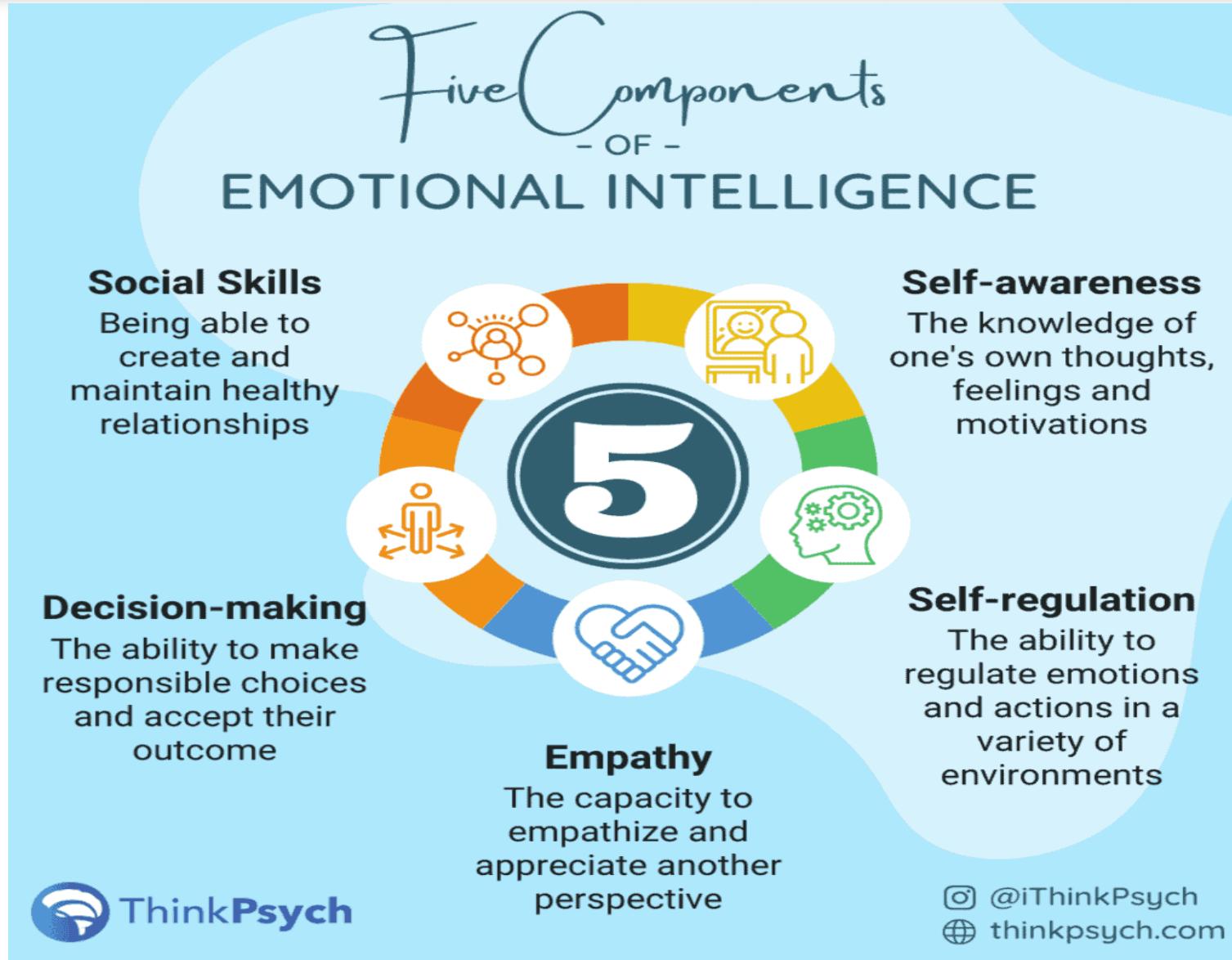
**Knowledge + Skills + Attitude**

**E.g. Communication Skills, Financial basis**

# Evolution of Industry Top 10 Skills



# Emotional Intelligence



# Extended-Prerequisite

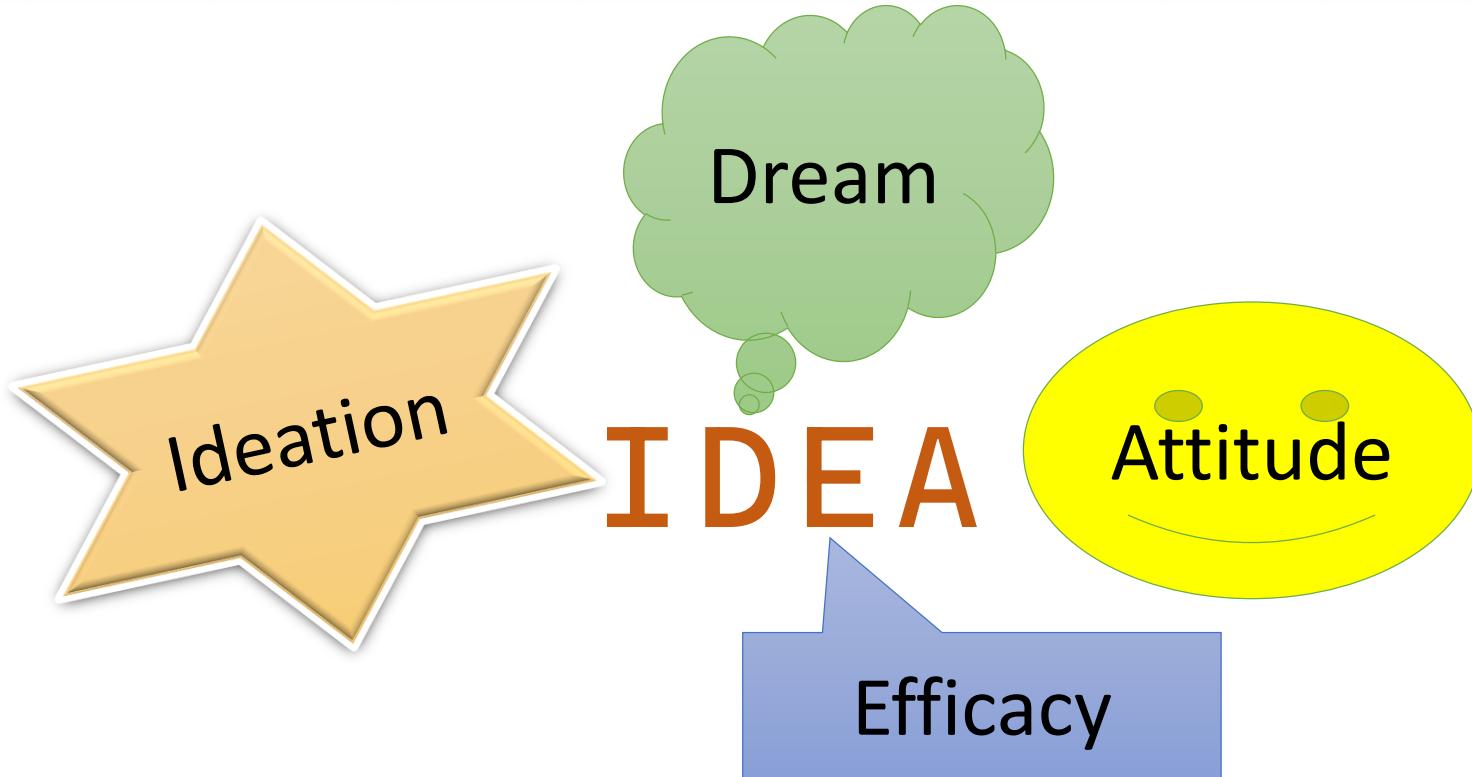
Inquisitive  
Inspiration

I<sup>Will-power</sup>DEA  
Focus

Persistent efforts

Ready to accept others Ideas!

# Define an Idea!



# An **IDEA**: Can it Change your life?



I: Ideation  
the c  
E .

A blue-bordered box containing an illustration of a person in a teal tank top and dark pants standing next to a large green rocket. The person is holding a magnifying glass over the rocket's window. To the left is a chalkboard with a drawing of a rocket and the word "Prototype" written above it. Various tools like scissors, a wrench, and a screwdriver are scattered at the bottom.

**PROTOTYPE**

*"The first example of something, such as a machine or other industrial product, from which all later forms are developed."*

*(Cambridge Dictionary)*

} new ideas  
ping

# An **IDEA**: Can it Change your life?

Dream

## Vision

D: Dreams:

serve  
business  
effort

You have a clear vision as to what you want to achieve, how you can accomplish your objectives, and whom you need on your side to reach your goals.

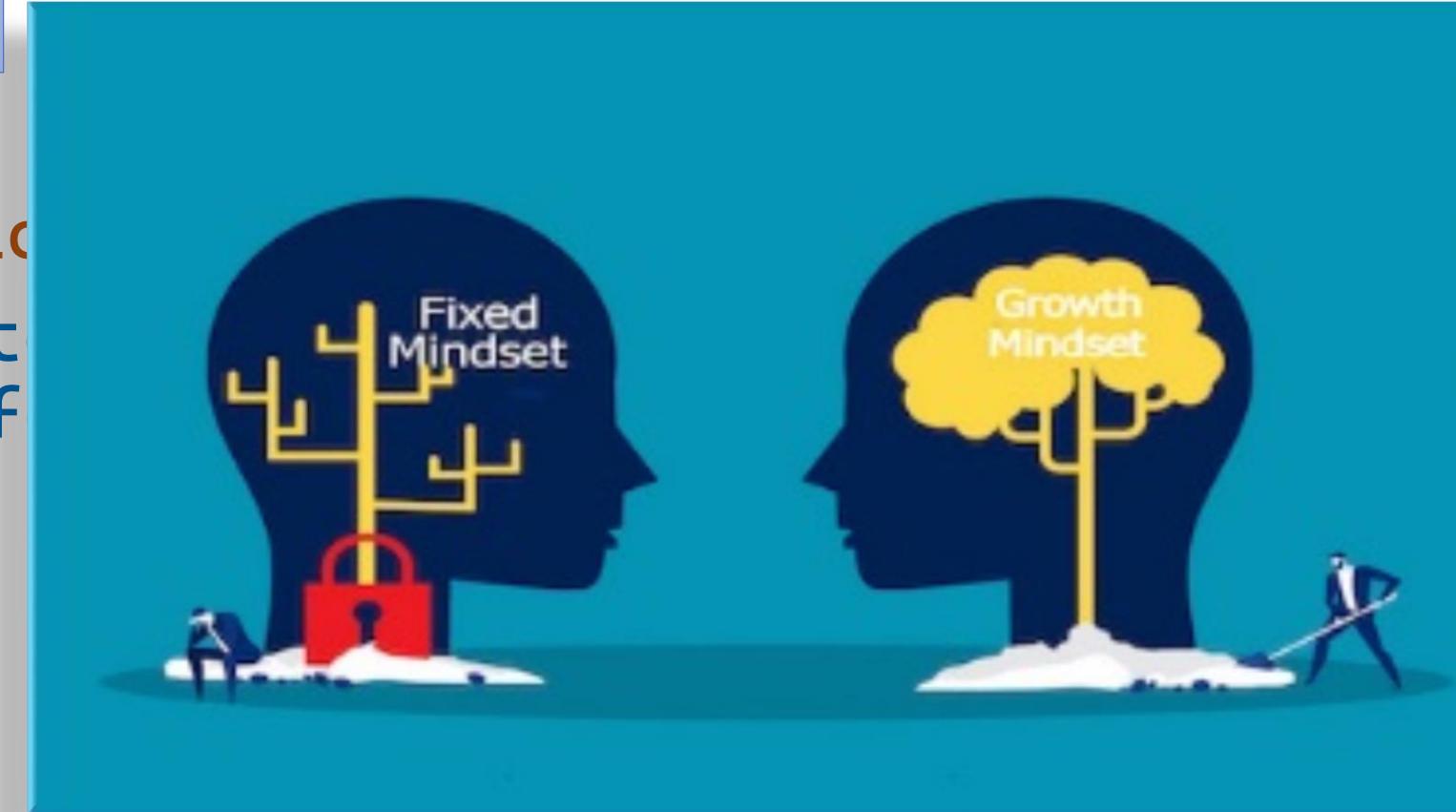


for your  
put more

# An IDEA: Can it Change your life?

Efficacy

E: Efficacy  
det  
eff



...ls, the  
sistence

# An **IDEA**: Can it Change your life?

Attitude

A: Attitude:  
consist  
in lin  
busines

# Integrity

is choosing your thoughts and  
actions based on values rather  
than personal gain.

, which are  
running a

# Wanna be an Entrepreneur??

## What You Need to Become an Entrepreneur



Qualities like passion, tenacity, vision, and self-confidence



A great idea that people will pay money for



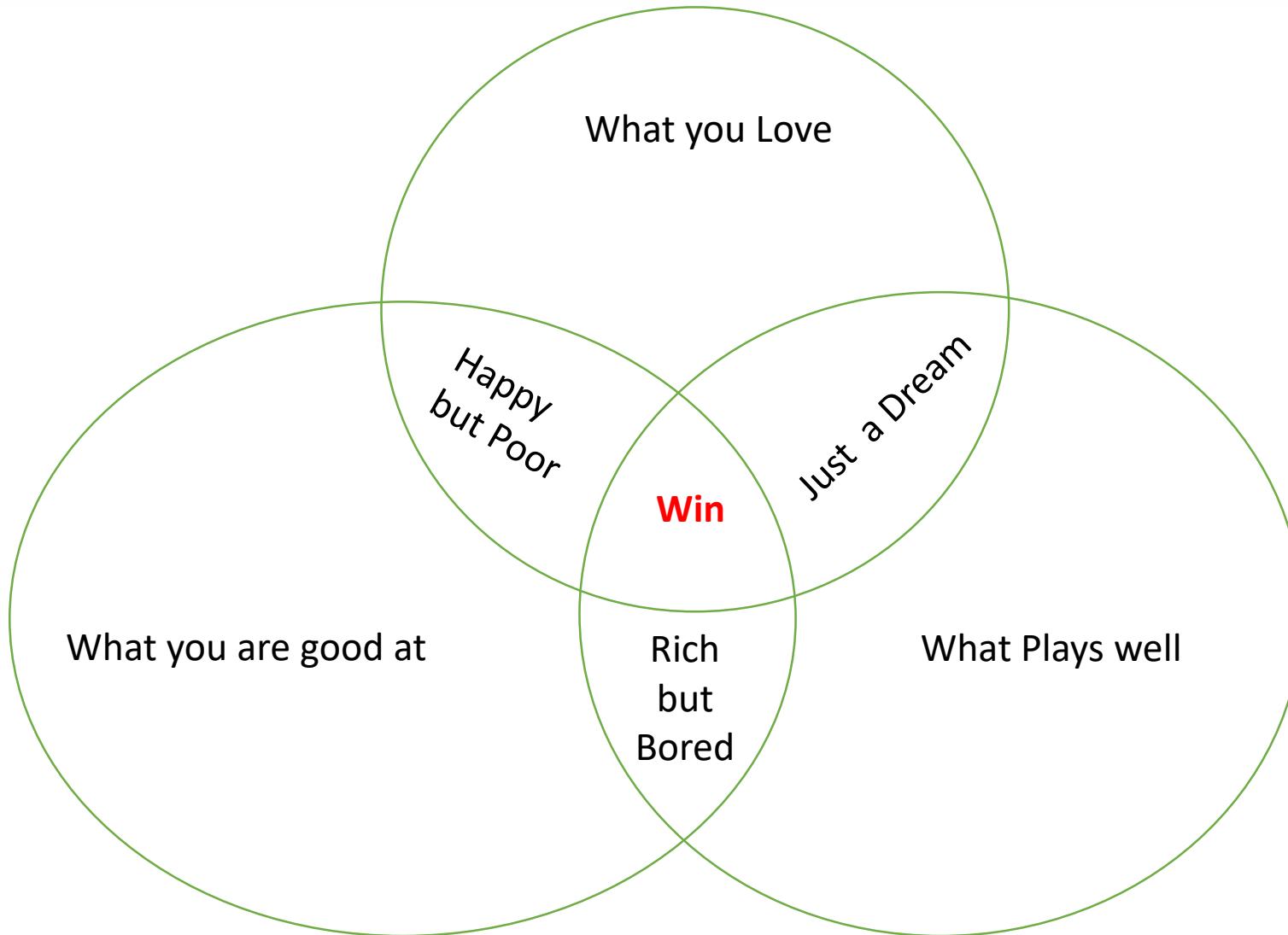
A plan of success



Consistent execution of the plan



# Career-Life Balance



# Innovation and Entrepreneurship

- Course Objectives:
  - To understand terminologies, dimensions, challenges of innovations
  - To study various aspects of entrepreneurships and motivate the students for business setup

# Innovation and Entrepreneurship

- Course Outcomes:
  - Analyze, Identify the importance of innovations and protect the innovations.
  - Demonstrate an ability to engage in entrepreneurial and innovation processes.
  - Create a well-structured and concise innovation plan.

# Innovation and Entrepreneurship

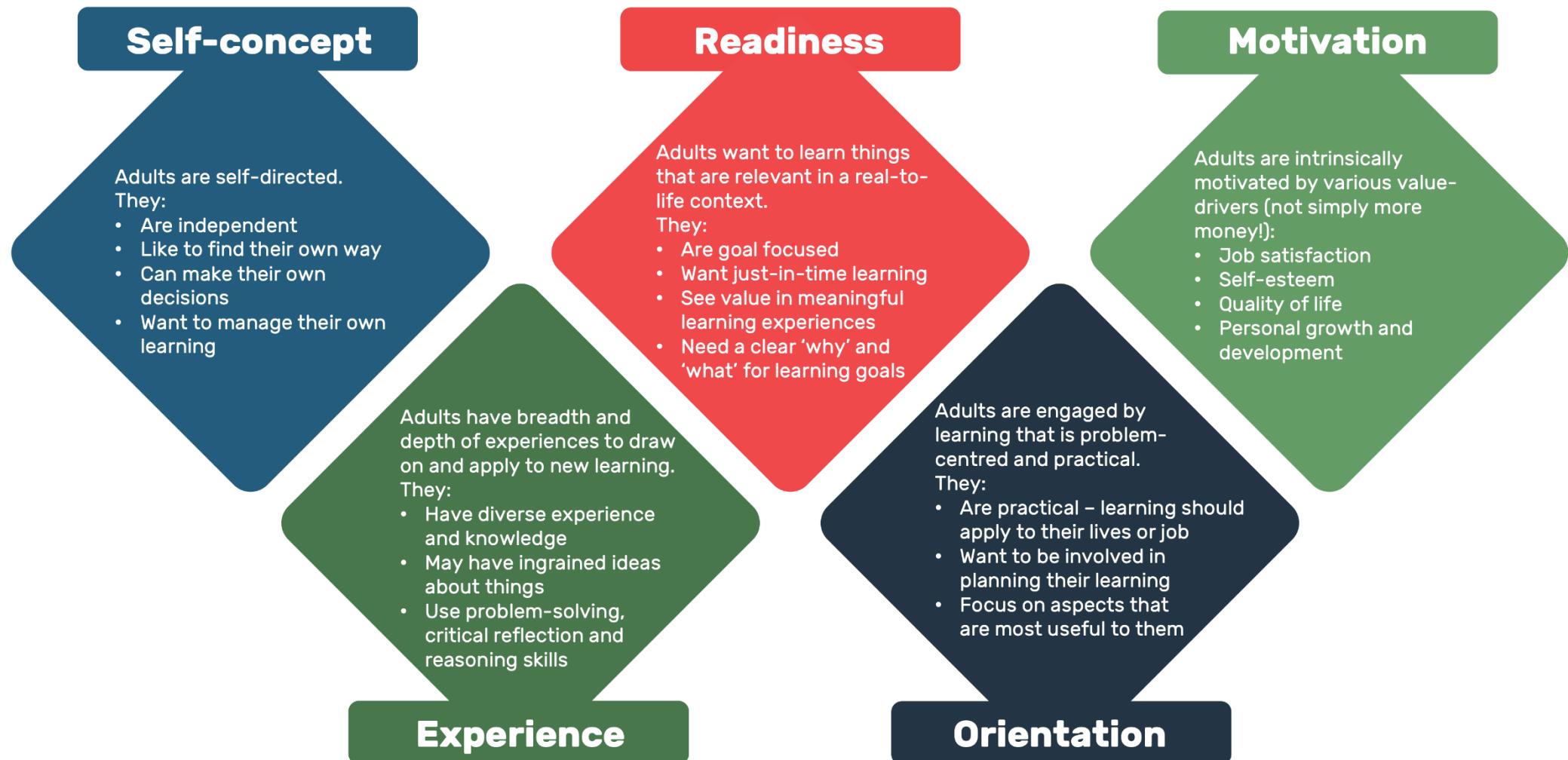
- Course Contains:
  - Technological Innovation
  - Essentials of Entrepreneurship

# Innovation and Entrepreneurship

- Pedagogy:
  - Power Point Presentation
  - White-board / Pen
  - Flip classrooms
  - Activity
  - MCQ exams / Quizzes
  - Case studies

# Andragogy

## Andragogy: The Art and Science of Helping Adults Learn



# Assessment Scheme

Sr. No	Assessment Tool	Mark Scheme
1	Assignment-01 Innovation	20
2	Assignment-02 Entrepreneurship	20
3	Case Study Report	40
4	MCQ Test	20
<b>Total</b>		<b>100</b>

# Module: 1

## Introduction To Technological Innovation

Basic Concepts and Definitions

Introduction to Innovation management

# Basic Concepts and Definitions

## 1. Basic Concepts

# Basic Concepts and Definitions

1. Basic Concepts
2. 3-P Model: Innovation Posture, Propensity and Performance,
3. Innovation Measurement,
4. Competitiveness,
5. A Historical and Socio-Technical Perspective on Innovation,
6. Common Frameworks and Typologies to Characterize Innovations,
7. Innovation Process.

# Basic concepts

Innovation

Technology

Technology Management

Invention

Creativity

Entrepreneurship

# Innovation

- any new idea, process, or product, or a change to an existing product or process that adds value to that existing product or service

**Steve Jobs Says**

<https://youtu.be/ABrd3xIRIbc>

# Introduction to Innovation

Innovation is not **merely idea+ Value**, but it is the application of

**Knowledge to change the world and deliver knowledge value**

Mr. Gajanan Khot (CEO and MD of Aquachill)

# Introduction to Innovation

**Innovation is not about the Solving the Problem,**

But

**It is about understanding the problem!**

**It is all about the courage to solve the problem**

(Dr. Ajay Kogta, Senior Surgeon from Jalgaon)

**Elon Mask Says:**

<https://youtu.be/0JQXoSmC1rs>

# Introduction to Innovation

Innovation never differentiates between technologies,

and

It has **no attachment** to a particular way of doing things!

(Dr. Parag Kulkarni, Iknolation Research Labs, Pune)

# Introduction to Innovation

Innovation is typically an idea that could **create value** for the stakeholders preferably **measurable value** for the organization and stakeholders.

- Create Values for stakeholders:
  - Feasibility is one objective of the business?
  - What product or service does?
  - How is it made?
  - How do you build it?

# Introduction to Innovation

Innovation is more than **Productivity** and **Creativity Management**

❖ **Sustainability:**

- ✓ meeting our own needs without compromising the ability of future generations to meet their own needs

❖ **Systematic and co-operative learning:**

- ✓ Innovating fundamental knowledge
- ✓ Creates sustainable values

# Basic concepts

## Technology

- ✓ allowing someone to get involved in a specific activity...with a steady qualitative outcome
- ✓ Technology is art of logic and logic of the art
- ✓ Components of technology are
  - ✓ Hardware and Software

# Basic concepts

## Technology Management

- ✓ set of practices and policies affecting technologies to build, maintain and strengthen the company's **competitive advantage**
- ✓ linking "**engineering, science, and management disciplines**"
- ✓ **to plan, develop, and implement technological capabilities**
- ✓ **to shape and accomplish the strategic and operational objectives of an organization"**

## Invention (1/2)

- ✓ invention as breakthrough and innovation as an actualization  
**(Florida and Kenney 1990 )**
- ✓ the creative origin of new process and the enabler of innovation **(Hindle and Lubar 1986).**
- ✓ impact on social, economic and financial processes

## Invention (2/2)

- ✓ Therefore invention is defined as **creative process or progress**, while innovation is defined as **the actualization and impact of all processes–progresses on societies and markets**.

# Basic concepts

## Creativity: (1/4)

- ✓ **It is the art of arts**
- ✓ **It is the organizer of talent**
- ✓ **At Individual Level:**
  - ✓ **Capacity to think out of box**
  - ✓ **think laterally, observe, conceive and construct ideas and models**
  - ✓ **that outweigh or outstrip existing items and ways of thought and perception**

# Basic concepts

## Creativity: (2/4)

- ✓ the capacity to imagine as it requires the creator to perceive future perspectives

Therefore, creativity is the capacity to observe new interactions between objects and ideas

- ✓ Types: Artists, Scientists, Businessmen,

# Basic concepts

## Creativity: (3/4)

### ✓ Traits of an Individual Creative Individual:

- High degree of self-discipline in work-related matters.
- Ability to delay gratification.
- Perseverance in the face of frustration.
- Independence of judgment.
- Tolerance for ambiguity .
- High degree of autonomy.
- Freedom from gender role stereotyping.
- Inner point of control.
- Willingness for risk taking.
- A high degree of individual, targeted struggle for excellence.

# Basic concepts: Creativity (4/4)

## Left brain vs. Right brain

### THINKING IN WORDS

**sequencing**

linear thinking

### MATHEMATICS

**facts**

**LOGIC**

### FEELINGS VISUALIZATION

IMAGINATION

**intuition**

**RHYTHM**

**holistic thinking**

**ARTS**

# Basic concepts

## Entrepreneurship:

- ✓ the ability and readiness to develop, organize and run a business enterprise
- ✓ the process of creating a new enterprise and bearing any of its risks
- ✓ Distinguishes between **mixed and pure entrepreneurship**

# Basic concepts: Entrepreneurship

## Entrepreneurship: (1/2)

- ✓ **mixed Entrepreneurship:**
  - ✓ Employee Entrepreneurship / Intra-prenuership
  - ✓ Capitalist Entrepreneurship
- ✓ **pure entrepreneurship:**
  - ✓ includes all the activities identified by the entrepreneur as high efficiency actions
  - ✓ take advantage of the key traits of his entrepreneurial personality

## Entrepreneurship: Characteristics (2/2)

- ✓ Ability to take risk
- ✓ Innovation
- ✓ Mindset- Vision, Mission and, B-HAG
- ✓ Flexible
- ✓ Agile
- ✓ Persistent
- ✓ Open for new Ideas.

# Basic concepts

## Entrepreneurship: Habits (3/3)

1. Get enough Sleep : Lewis Howes (YouTube)
2. Invest in yourself: Warren Buffet
3. Work Hard: Muhammad Ali
4. Develop Discipline: Tom Belyeu (YouTube)
5. Forgive: John Paul DeJoria (an Entrepreneur)
6. Stop Procrastinating: Myles Munroe (Minister, Bahamian)
7. Take Small Actions: Marisa Peer (YouTube)
8. Overcome Doubts: Brendon Burchard (Author)
9. Stay Positive: Randy Jackson (Musician) & Stay away from Naysayers (Arnold S.)
10. Pursue Excellence: Robin Sharma

# Basic concepts: Pose and Ponder

- Define Your own Idea Which may Change your life
- Map your own traits with Traits of an Individual Creative Individual
- Self- Assessment with 10 habits of Entrepreneurship
- Who are you? Left Brain V/s Right Brain

# Basic Concepts and Definitions

## 2. Innovation Posture, Propensity, and Performance

### The 3P Model

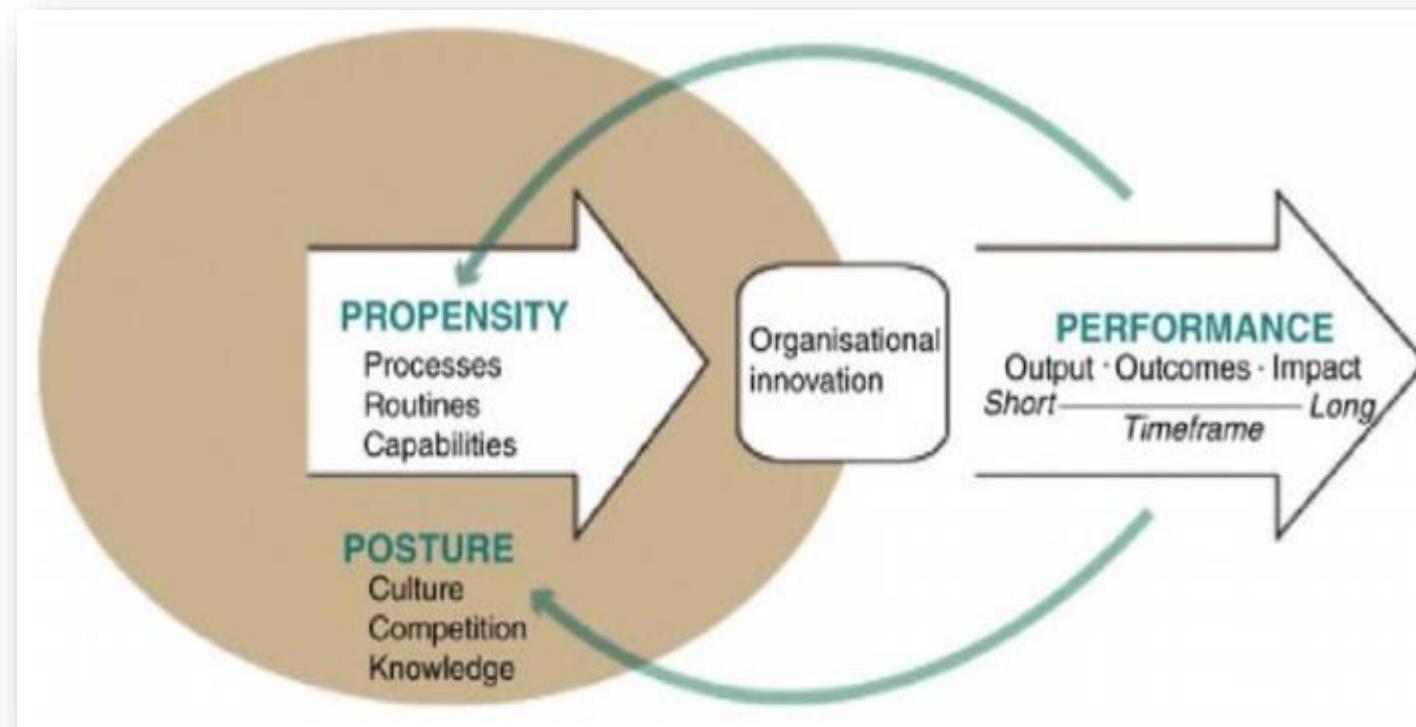
(Carayannis and Provance, 2008)

# The 3P Model-Historic Contributors

- Penrose (1959) and Barney (1991)
  - Develop a conceptual model of Organizational Innovation
  - Considered
    - the Organizational Resources at focal-point
    - The knowledge permeates as intangible resource to give new daily routines, technologies or structure
    - Impact on future performance
  - The compilation of these considerations housed with 3P Model of Innovation

# The 3P Model

- The 3Ps: as Posture – Propensity – Performance
  - Innovation's three Critical factors at Business level
  - Result oriented



# The 3P Model - Posture

- The 1<sup>st</sup> P: Posture
  - Position within the largest innovation system of its environment
  - Environment refers to region, industry, and technical domain.
- Dimensions of the Posture:
  - Organizational
  - Technological
  - Market life Cycle of the Product

# The 3P Model - Posture

- The 1<sup>st</sup> P: Posture: Dimensions:
  - Organizational Life Cycle
    - Company may exist for some time without innovation until its failure
    - E.g. Nokia, Kodak, .
  - Depends on:
    - Culture
    - Competition
    - Knowledge/ Competencies

# The 3P Model -Posture

- The 1<sup>st</sup> P: Posture: Dimensions:
  - Technological Life Cycle
    - Selection of Technologies to be adopted shall be relevant up to technology is pertinent
    - E.g. Symbian as a Discontinued Mobile Operating System
  - Depends on:
    - Innovation and Invention
    - Relevancy with requirements
    - Disruption in Market

# The 3P Model –Posture

- **The 1<sup>st</sup> P: Posture: Dimensions:**
  - Market life Cycle of the Product:
    - Competitive Context and relevant activities in various markets
    - May exist at various point of Organizational and Technological Life Cycle
    - Depends on:
      - Competencies
      - Competitive Edge
      - Sustainability: Price – Quality – Flexibility

# The 3P Model – Posture

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      - Competitive Edge
      - Sustainability: Price – Quality – Flexibility

# The 3P Model – Propensity

- **The 2<sup>nd</sup> P: Propensity:**
  - Company's capacity to capitalize on its posture
  - based on the innovation' cultural acceptance
  - an intangible reflection of procedures, routines and capabilities
    - **Procedures:** Specified way to carryout any activity
    - **Routines:** Daily repetitive Task to carry out business.
    - **Capabilities:** Competencies exists or required to fulfill assigned duty/role/responsibility
  - **Can be reflected with:** Mission Vision, Values, Goals, etc.

# The 3P Model – Performance

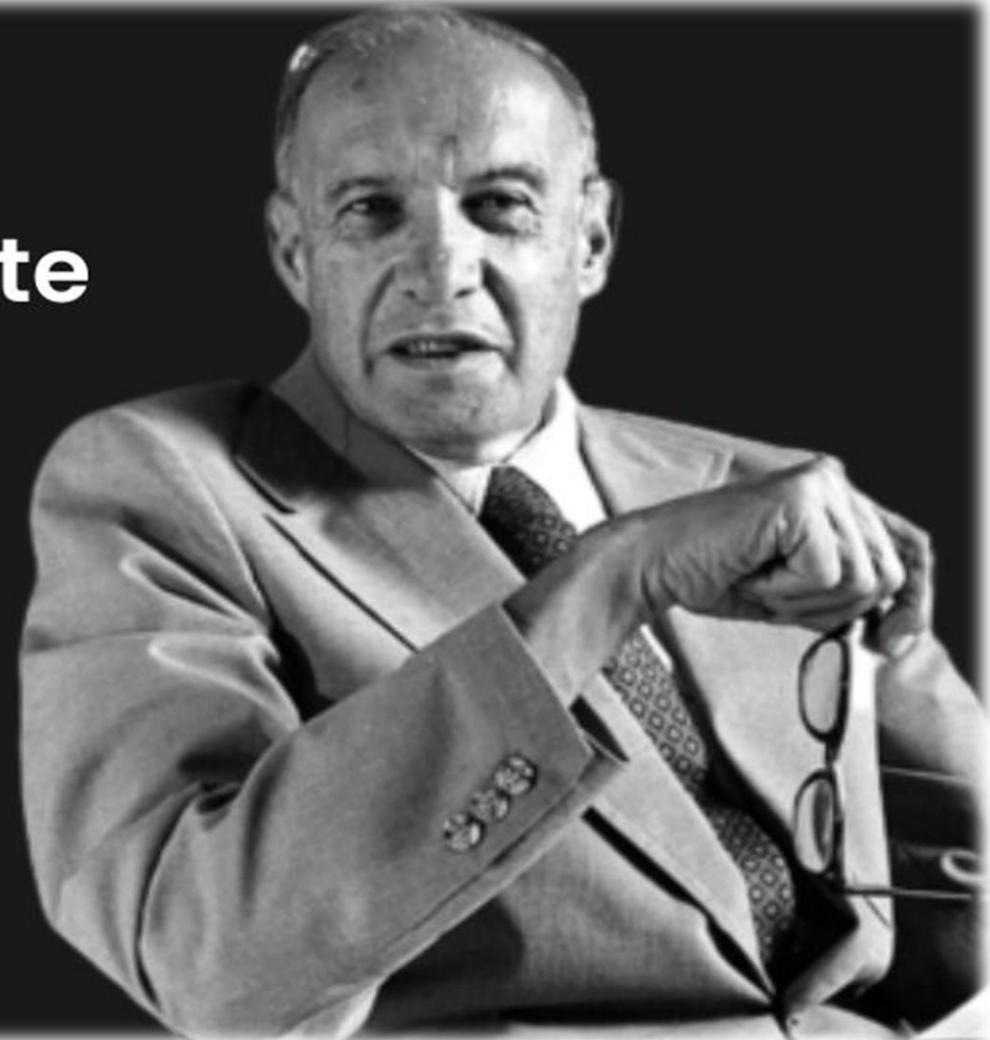
- The 2<sup>nd</sup> P: Performance:
  - Enduring results of Innovation
  - Three-level framework Involves:
    - Output – New product development, patents, etc.
    - Outcome – Medium results such revenue from new products
    - Impact - Direct, internalized benefits of innovation
      - Sustainable

# Basic concepts: Pose and Ponder

- Can we use 3-P model to improve the individual posture, propensity, and performance?
- Analyse any one organization on the basis of 3-P model.
  - Industry: Service, IT, Manufacturing/ Production

# Basic Concepts and Definitions

**“Don’t try to innovate  
for the future.  
Innovate for the  
present!”**  
– Peter Drucker

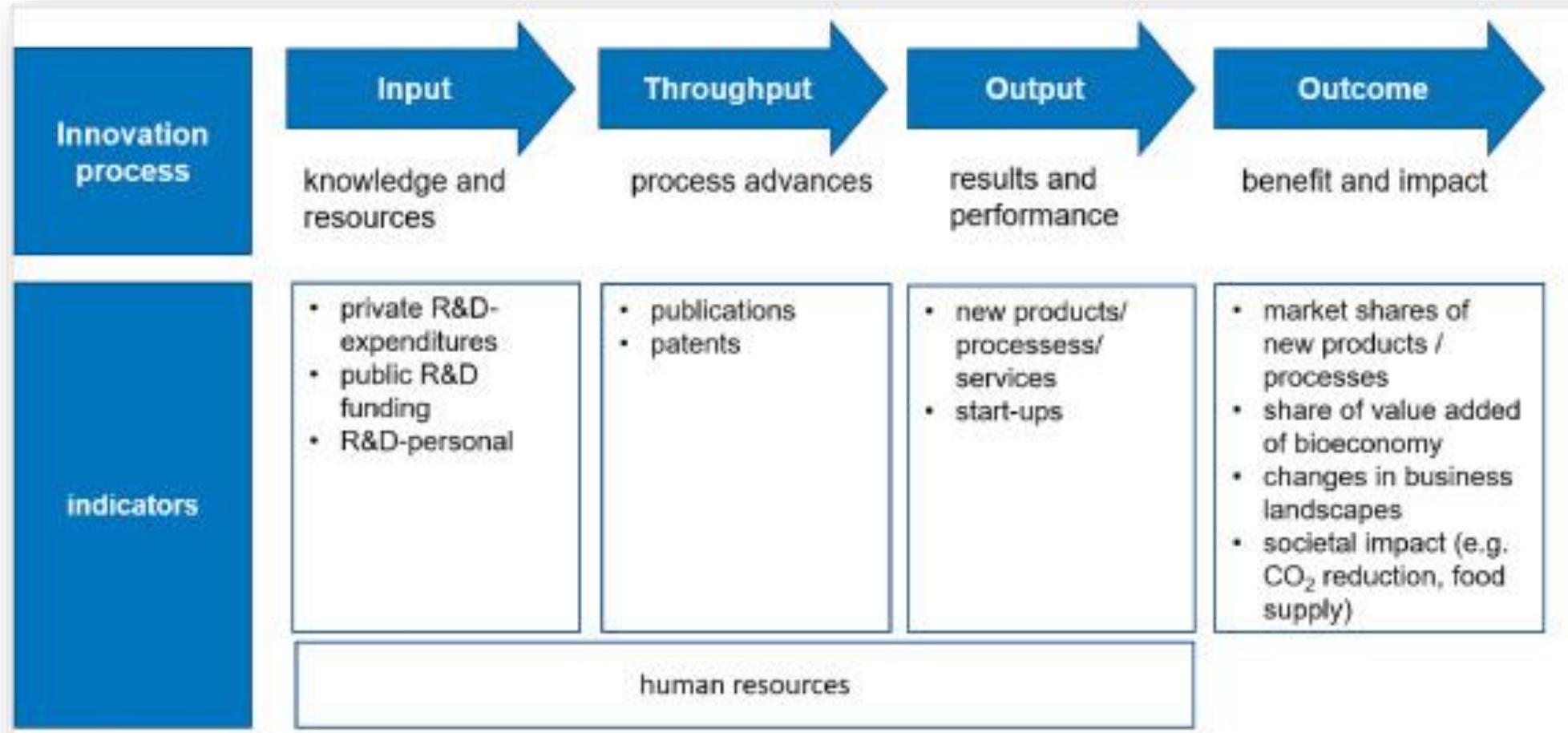


# Innovation Measurement

- Innovation is to bring ideas to life
- Less focused area than system or project level
- Project Level: Helps to reveal the impact of Innovation to  
Organizational Questions
- Measurement: Achievement Indicator for performance against target
- Alert! Missing Studies of Control required to deal with uncertain and  
dynamic environment

# Innovation Measurement

- Innovation Measurement Indicators



# Innovation Measurement

- **Innovation Measurement Indicators: (1/2)**

- **Input Indicators:**

- Measures the available resources in Innovation process
    - E.g. Man-Machine-Money-Material, etc.

- **Process /Throughput:**

- Depicts the organizational and management system of Innovation Process.
    - E.g. Patents, Publications, Market rates etc.

# Innovation Measurement

- Innovation Measurement Indicators: (2/3)

- Output Indicators:

- determine the results of organizational innovation
    - represent the realized short-term success of innovative activity
      - E.g. Profit margin, Growth rate increment, etc.
    - count the numbers and rates of patents, patents reports,
    - the number of new products, innovation-related sales rate etc.
    - Impact measures the continuous advantage enjoyed by a company as a result of innovation

# Innovation Measurement

- **Innovation Measurement Indicators: (2/3)**
  - **Outcome Indicators:**
    - determine the sustainability of organizational innovation
    - represent the realized long-term success of innovative activity
      - E.g. Brand Image, changes in business landscape, Disruption in market, etc.
    - Recognizes the impact on the Bio economy,
    - the sustainable market penetration and market shares on the innovation.
    - **Social Impact of Innovation on Society and environment**
      - E.g. Carbon footprint, quality food availability, etc.

# Innovation Measurement

- **Innovation Measurement Indicators: (2/3)**
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# The concept of Bio-economy

- Bio-Economy:

The bioeconomy has enormous potential for...



**Job creation**  
Create millions of green jobs, especially in rural and coastal areas.



**Renewal and modernisation of the industrial fabric**  
Introduce innovations in agriculture, aquaculture, forestry and other industries.



**Climate mitigation and carbon neutrality**  
Reduce atmospheric emissions and our dependence on fossil resources.



**Ecosystem and biodiversity restoration**  
Aligned with the SDGs, recover part of the degraded ecosystems.

*Source: European Commission.*

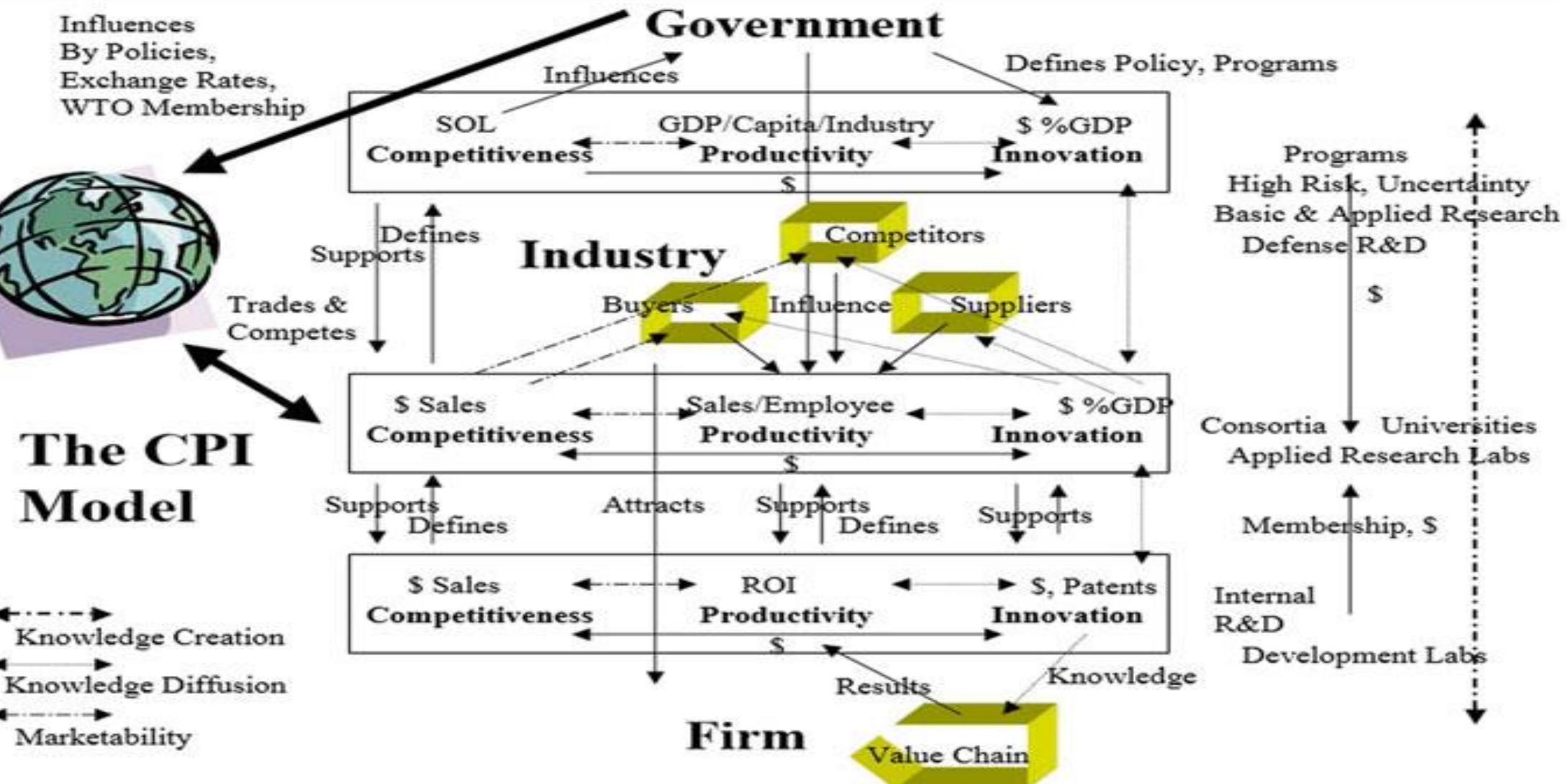
# Basic Concepts and Definitions

## 4. Competitiveness

# Competitiveness

- Innovation and Entrepreneurship as vehicle of Competitiveness
- The set of institutions, policies and factors that determine the level of productivity of a country (World Economic Forum)
- The fact of being able to compete successfully with other companies, countries, organizations, etc.: (Cambridge Dictionary)
- E.g. Uphold the position as the dominant search engine in the world, with almost 90 percent of the total search market, Google

# Competitiveness



# Competitiveness

## ✓ Outcomes of Competitiveness:

- ✓ Sustainability
- ✓ Creates diversity with more choices and more services
- ✓ Constant progress
- ✓ Assess, analyze and update market and customers
- ✓ Revitalization

## ✓ Case: Googles Competitiveness

- ✓ <https://youtu.be/gorWGoxFhHo>

# Competitiveness

## ✓ A Concluding remark:

- ✓ ability to add more value for its customers than its rivals and attain a position of relative advantage
- ✓ A situation where a business has an advantage over its competitors by being able to offer better value, quality and/or service

# Basic Concepts and Definitions

## 5. A Historical and Socio-Technical Perspective on Innovation

# History and Socio-Tech Perspective on Innovation

✓ Reality:

✓ Is it a price Competition?

✓ Determinants:

- ✓ Demand and Supply
- ✓ Government and Legal regulations
- ✓ Pricing Objectives
- ✓ Marketing Methods

# History and Socio-Tech Perspective on Innovation

✓ Reality:

✓ Is it a product of Innovation through Competing with:

- ✓ New Commodity
- ✓ New technology
- ✓ New sources of supply
- ✓ The new type of organization

Creativity is thinking up new things...Innovation is doing new things

# History and Socio-Tech Perspective on Innovation

## ✓ Historical Perspectives:

### ✓ 1934-The Theory of Economic Development- by Joseph A. Schumpeter

✓ a research focusing on profit, capital, credit, interest and cyclical economic fluctuations

✓ main contributions:

✓ the expansion of Adam Smith's economic principles from land-labor-capital to land-labor-capital-technology-entrepreneurship

✓ the introduction of the concept of imbalance in economic discourse

✓ Assumption: Socialist System replaces Capitalistic System

# History and Socio-Tech Perspective on Innovation

## ✓ Historical Perspectives:

### ✓ Marks Theory:

#### ✓ A Value added System:

✓ the value of a commodity,

✓ taking into account the perfect balance; and

✓ the ideal competition



✓ .....is proportional  
to introduction of  
labor

# History and Socio-Tech Perspective on Innovation

✓ **Historical Perspectives:**

✓ **Marks V/s Schumpeter:**

✓ **Schumpeter:**

✓ disagreed with Marx on this issue reaching the conclusion  
that the perfect balance and the perfect competition were  
problematic even in the best of cases

# History and Socio-Tech Perspective on Innovation

✓ **Historical Perspectives:**

✓ **Marks V/s Schumpeter:**

✓ **Schumpeter:**

✓ **the capitalist system shall collapse as the result of inherent  
injustice**

✓ **the natural evolution of capitalism would destroy the  
foundations from within**

# History and Socio-Tech Perspective on Innovation

✓ **Historical Perspectives:**

✓ **Schumpeter:**

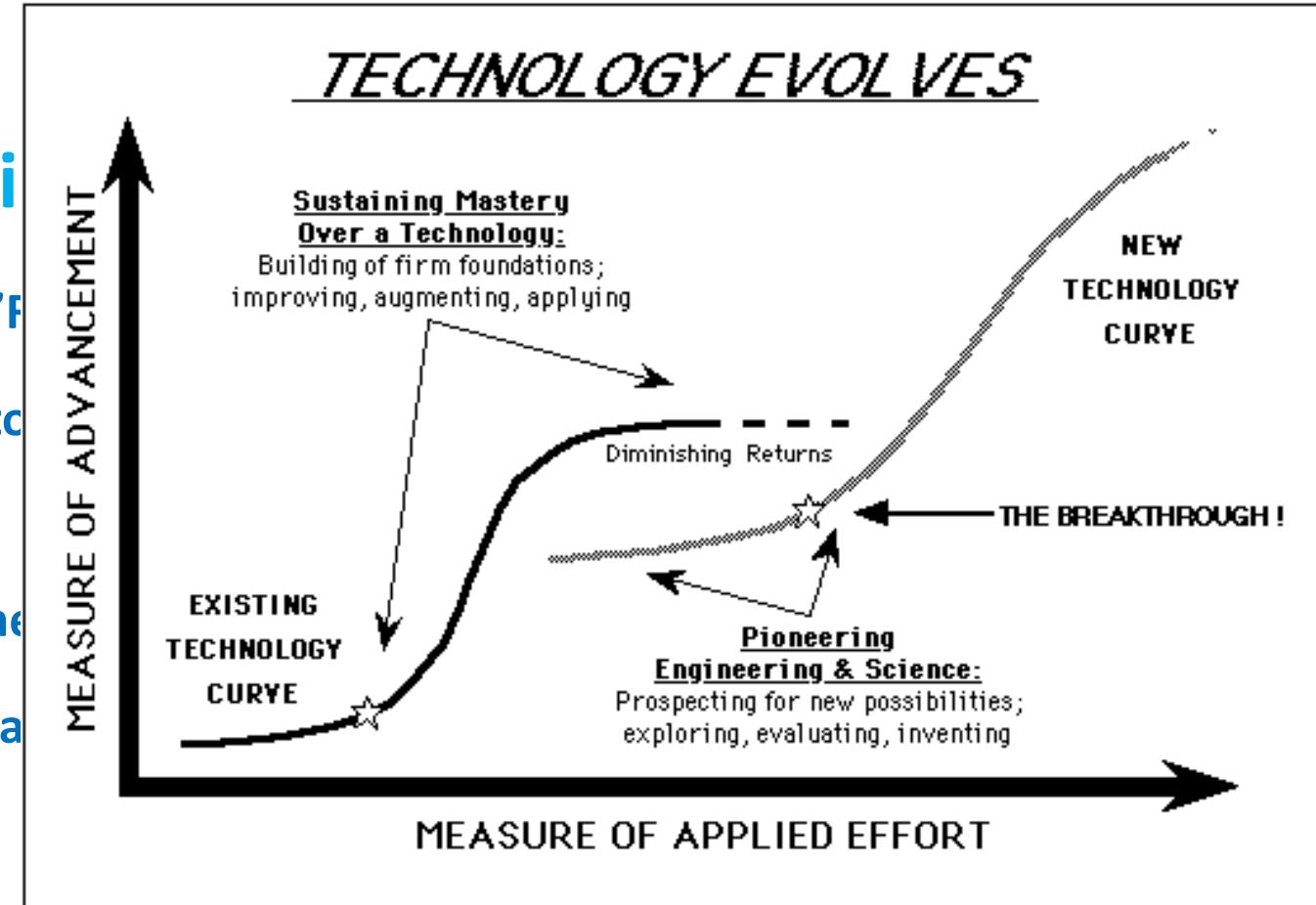
- ✓ Proposed the theory of imbalance as the main powerful factor to and continued in powerful disequilibrium
- ✓ capitalism in almost the same way he saw innovation process.
- ✓ His theory ended in
  - ✓ Fisher-Pry (S) curves,
  - ✓ discontinuous or/and disruptive innovations
  - ✓ the change of the ‘rules of the game’,

# History and Socio-Tech Perspective on Innovation

## ✓ Historical Perspectives:

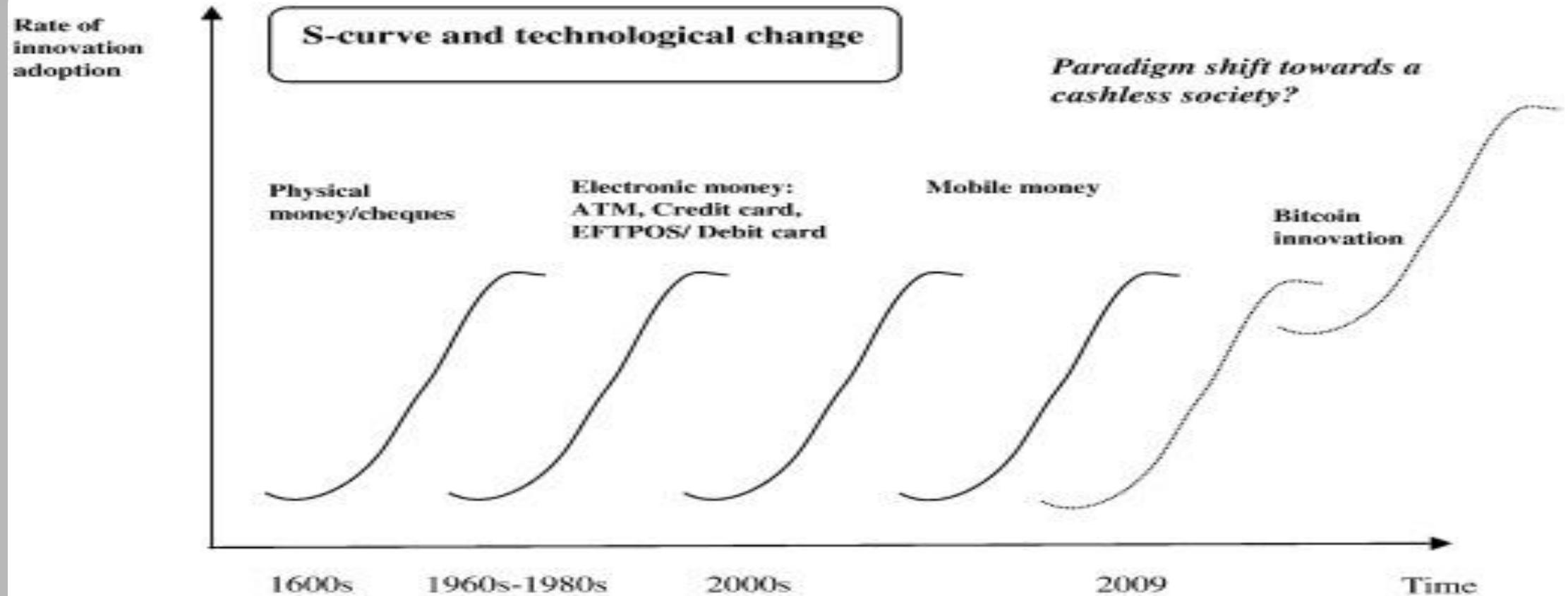
## ✓ Discontinuous Innovation

- ✓ Michael Tushman and Charles O'Reilly's work on discontinuous innovation.
- ✓ involves breaking with the past to create something new.
- ✓ 'S-curves',
- ✓ resulting in significant leaps in technology.
- ✓ enabling entire industries and markets.



# History and Socio-Tech Perspective on Innovation

## ✓ Historical Perspectives:



Source: The authors' design, based on Utterback and Abernathy (1975) and Fisher and Pry (1971)

# History and Socio-Tech Perspective on Innovation

✓ **Historical Perspectives:**

✓ **Radical Innovation:**

✓ helping companies to establish new rules for the enterprises

✓ to create enterprises anew are usually considered  
discontinuous

✓ This theory of discontinuation is also known as 'Radical  
Innovation'

# History and Socio-Tech Perspective on Innovation

## ✓ Historical Perspectives:

### ✓ Capitalism- Schumpeter - Innovation:

- ✓ capitalism is referred to as ‘laissez-faire’ till World War-II
- ✓ capitalism is more closely related to social, political and legal models
- ✓ The concept of innovation as a ‘socio-technical’ system has been fairly consolidated
- ✓ Hence The innovation divided in four basic dimensions-Rogers (1995)

# History and Socio-Tech Perspective on Innovation

✓ Historical Perspectives:

✓ Innovation and 04 dimensions:

- ✓ The process of innovation (the way innovation develops, disseminated and adopted).
- ✓ The content of innovation (the specific technique or social nature of innovation itself).
- ✓ The environment of innovation (the environment in which innovation takes place and the environmental impact on innovation).
- ✓ The impact of innovation (the social and technological change arising from the innovation process completion)

# History and Socio-Tech Perspective on Innovation

✓ Historical Perspectives:

✓ Innovation and 04 dimensions and Key factors: [1/2]

- ✓ Environment: The environment where the above dimensions take place.
- ✓ Process: What is the process actualizing all the above.
- ✓ Content: What is the content of the above taking into account the interaction with other factors.
- ✓ Impact: What is the impact of each of the above on the other factors.
- ✓ Level: The properties should be viewed at all levels including the company, industry, national and international levels.

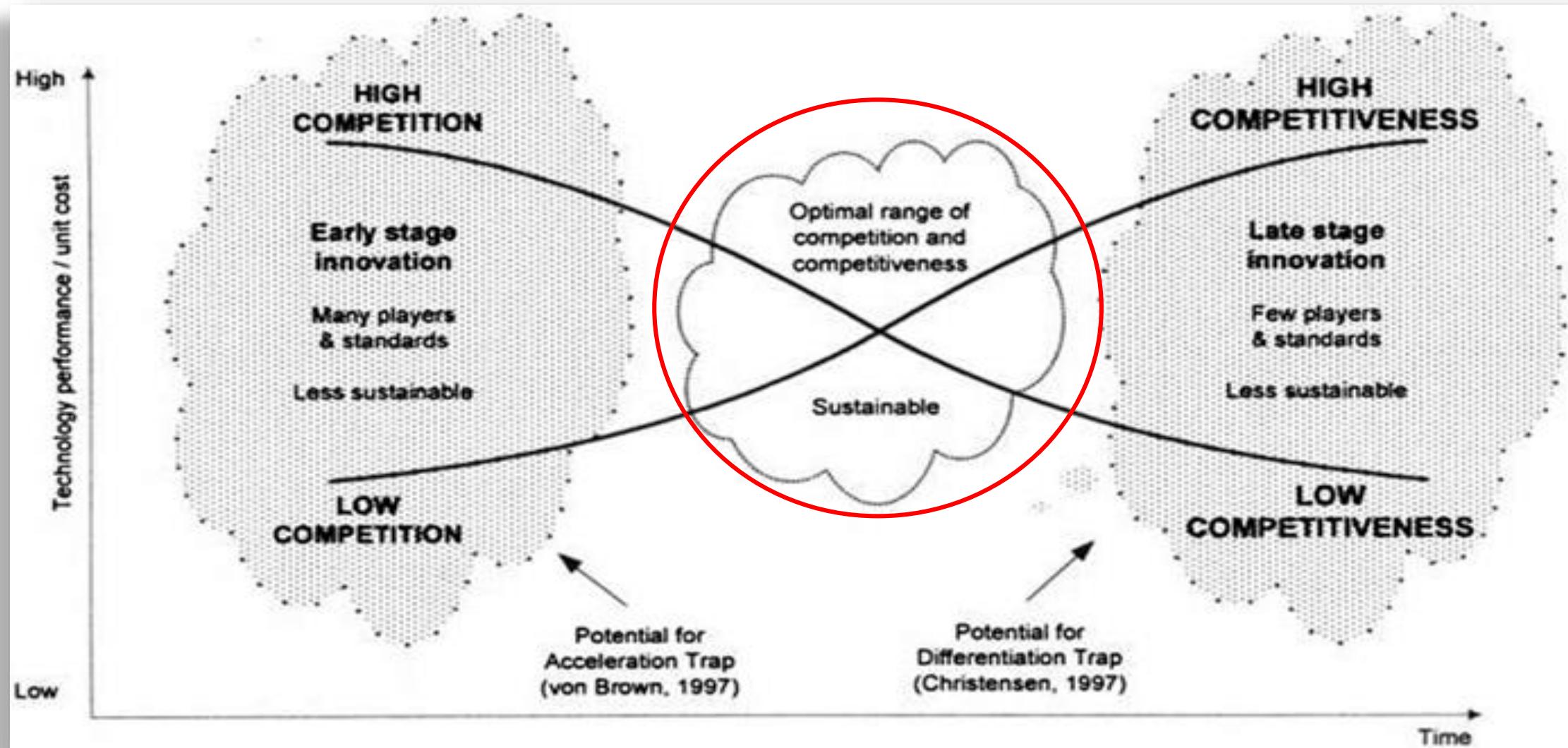
# History and Socio-Tech Perspective on Innovation

## ✓ Historical Perspectives:

### ✓ Innovation and 04 dimensions and Key factors: [2/2]

- ✓ **Invention:** What is being invented determines the content of innovation.
- ✓ **Mechanization:** It is a necessary but no satisfactory condition for innovation.
- ✓ **Stabilization:** It may reproduce satisfaction.
- ✓ **Radical technologies:** They can renew competitiveness with significant productivity profits.
- ✓ **Creativity and Competition:** They may be extrinsic factors to competitiveness.  
**Competition facilitates or inhibits competitiveness**

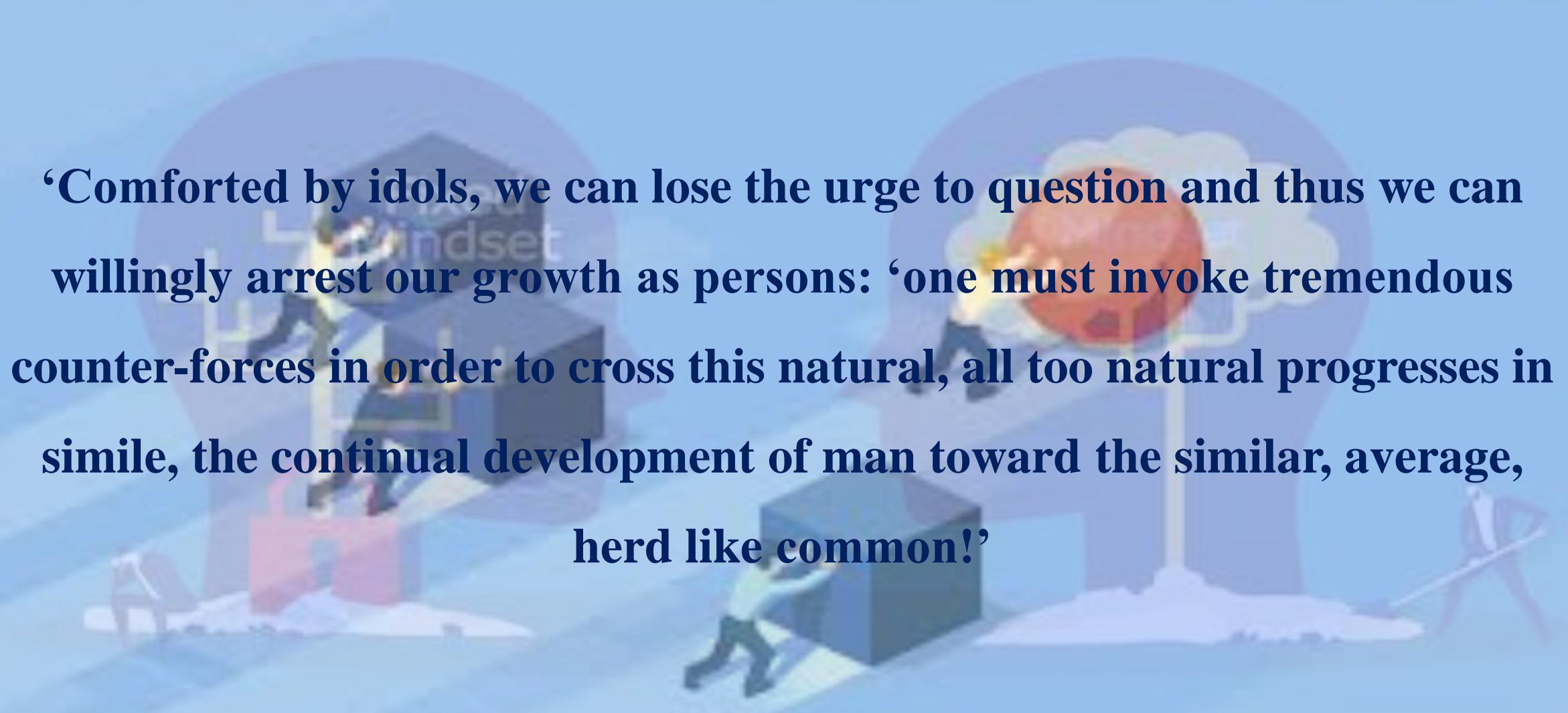
# History and Socio-Tech Perspective on Innovation





## 6. Common Frameworks and Typologies to Characterize Innovations

## Common Frameworks and Typologies to Characterize Innovations



**‘Comforted by idols, we can lose the urge to question and thus we can willingly arrest our growth as persons: ‘one must invoke tremendous counter-forces in order to cross this natural, all too natural progresses in simile, the continual development of man toward the similar, average, herd like common!’**

# Common Frameworks and Typologies to Characterize Innovations

## ✓ Classification of Innovation:

- ✓ General Innovations
- ✓ Influential Innovations
- ✓ Distinguished Innovations

# Common Frameworks and Typologies to Characterize Innovations

## ✓ Classification of Innovation:

### ✓ General Innovations

✓ **Process Innovation:** Regard the change in the methods adopted by a company to offer products and services.

✓ E.g. Managing Supply change through tech-approach like Ordering, monitoring, etc.

# Common Frameworks and Typologies to Characterize Innovations

## ✓ Classification of Innovation:

### ✓ General Innovations

### ✓ Content Innovations:

✓ reflect the changes in the final products and services

✓ E.g. New characteristics of product or service like innovation of **Remote control**

# Common Frameworks and Typologies to Characterize Innovations

## ✓ Classification of Innovation:

### ✓ General Innovations

### ✓ Administrative Innovations:

✓ refer to the changes in the characteristics of an organization or an institution

✓ E.g. Change in Policy, Structure and distribution of sources

# Common Frameworks and Typologies to Characterize Innovations

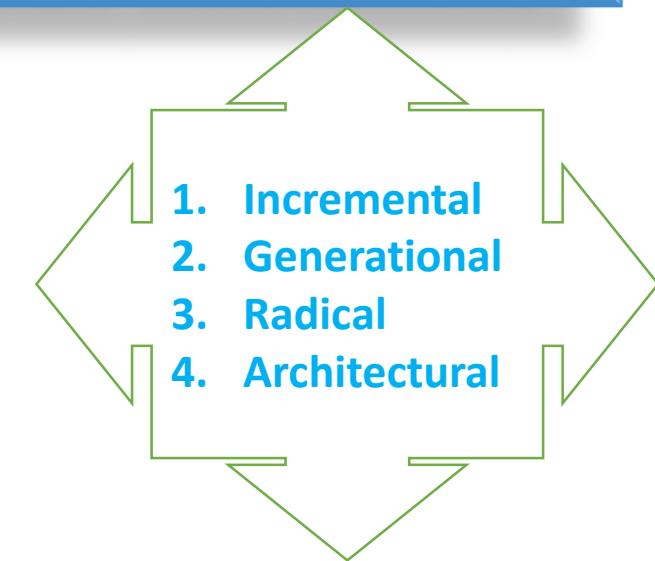
## ✓ Classification of Innovation:

### ✓ Influential Innovations

- ✓ helps in identification of influencing characteristics
- ✓ e.g. geographical regions, decision making criteria, etc.
- ✓ Limited to particular Region, criteria, situation, or condition only
- ✓ E.g. R& D based patents filled with regional patent offices

# Common Frameworks and Typologies to Characterize Innovations

✓ **Classification of Innovation:**



✓ **Distinguished Innovations:**

✓ **Incremental:**

- ✓ innovations exploit the potential of established designs
- ✓ reinforce the dominance of already existing enterprises
- ✓ enhance current operational capabilities of a technology
- ✓ adding attributes such as performance, safety, quality and cost

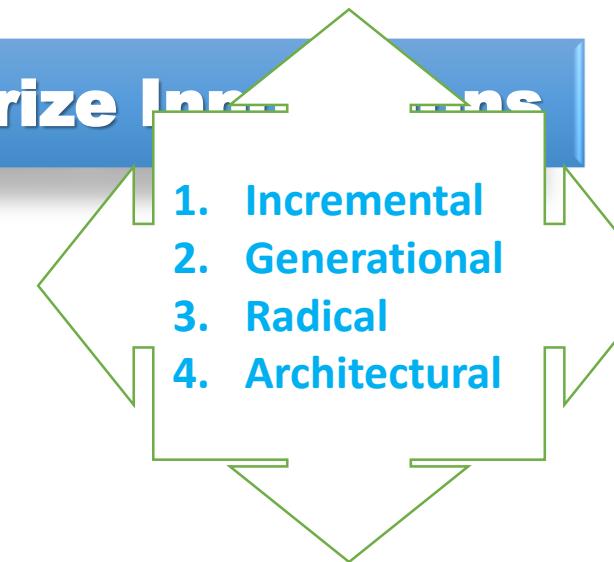
# Common Frameworks and Typologies to Characterize Innovations

✓ Classification of Innovation:

✓ Distinguished Innovations:

✓ Generational:

✓ incremental innovations resulting in the creation of a new system that does not present radical changes

- 
1. Incremental
  2. Generational
  3. Radical
  4. Architectural

# Common Frameworks and Typologies to Characterize Innovations

✓ Classification of Innovation:

✓ Distinguished Innovations:

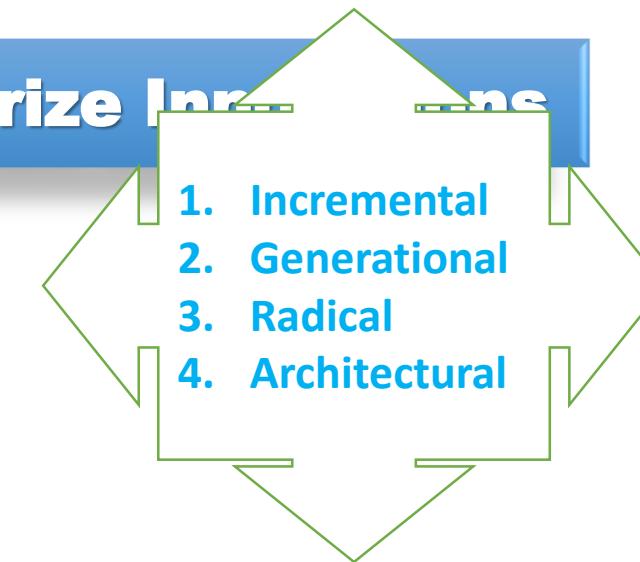
✓ Radical:

✓ Introduce new concepts that diverge significantly from the practices of the past

✓ based on different engineering and science principles

✓ Lead to new markets and possible applications

✓ Offers new capacity and discontinue current tech capacity.

- 
1. Incremental
  2. Generational
  3. Radical
  4. Architectural

# Common Frameworks and Typologies to Characterize Innovations

✓ **Classification of Innovation:**

✓ **Distinguished Innovations:**

✓ **Architectural:**

- ✓ serve to broaden the classification of radical and incremental innovations
- ✓ introducing the concept of changes in the way the constituent parts of a product or system are linked together.

- 
1. Incremental
  2. Generational
  3. Radical
  4. Architectural

# Common Frameworks and Typologies to Characterize Innovations

## ✓ Classification of Innovation:

### ✓ Extended classification

- 1. Incremental
- 2. Generational
- 3. Radical
- 4. Architectural

Classification	Content
Evolutionary Innovation	Incremental innovation or Next generation innovation
Revolutionary Innovation	Radical innovation or Architectural innovation

# Common Frameworks and Typologies to Characterize Innovations

## ✓ Classification of Innovation:

## ✓ Environmental Impact

Process	Contain	Environment	Impact
Evolutionary Innovation	Incremental innovation	Continuous innovation	Non-disruptive or Disruptive innovation
	Next generation innovation	Continuous innovation	
Revolutionary Innovation	Radical Innovation	Discontinuous innovation	Non-disruptive or Disruptive innovation

- 1. Incremental
- 2. Generational
- 3. Radical
- 4. Architectural

## 7. Innovation Process

## ✓ Innovation Process

- ✓ Varied definitions and models are available to define Innovation Process
- ✓ Determined through the correlation of its research constituent parts ([Nelson, 1977](#))
- ✓ measured, while the process of R&D
- ✓ determined or constitute an object of research
- ✓ Science and inventions can be linked in Innovation

## ✓ Innovation Processes: Sources

- ✓ Innovations can be further developed
- ✓ the organization-bound factors can be investigated
- ✓ technological evolution can be studied
- ✓ diffusion of innovation can be assessed
- ✓ learning phenomena can be disclosed

**Inventions are viewed as complementary, cumulative, and leapfrog**

## ✓ Innovation Processes: Digital Leadership

### Supportive canvas points:

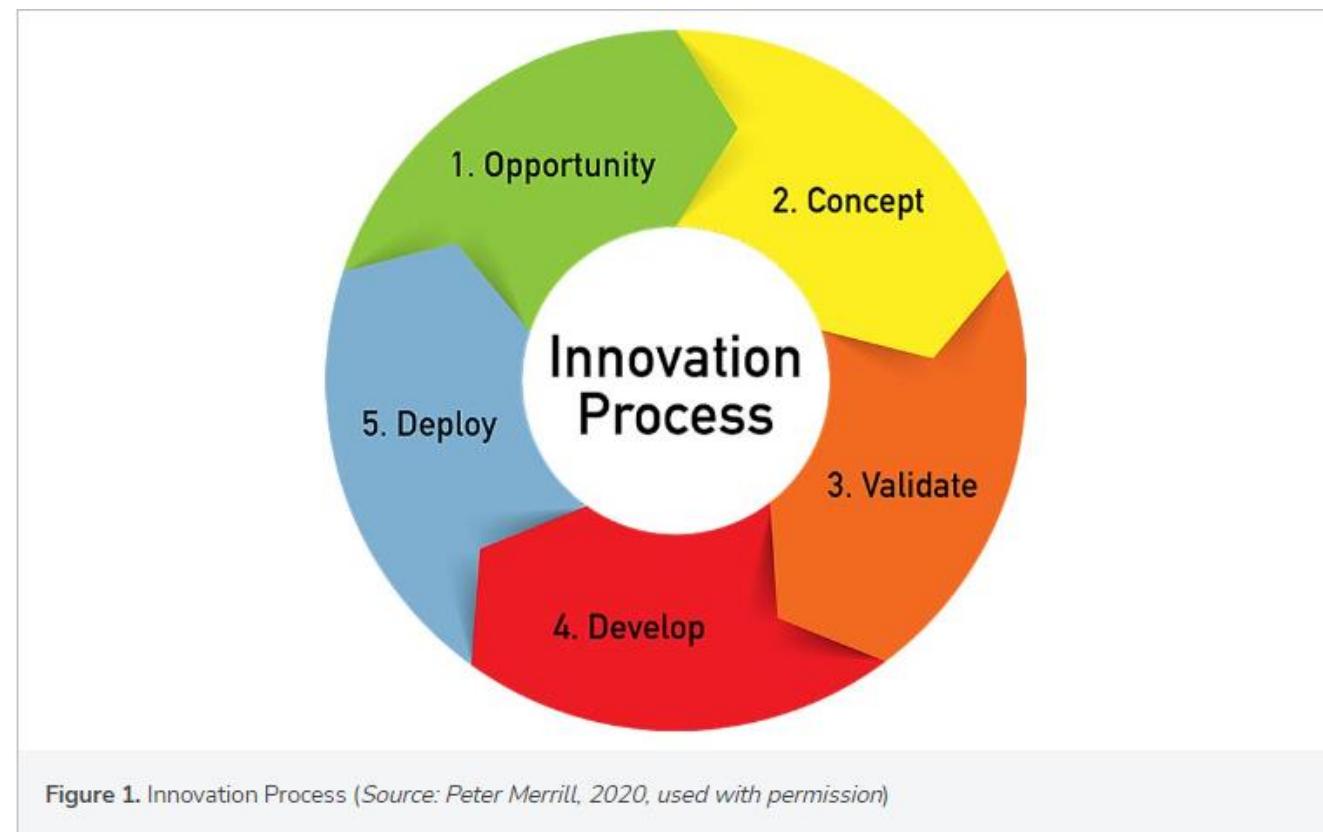
- **Operating model:**
  - Value chain, key resources, key partners
- **Value Model:**
  - Value Proposition, product system, Service Model
- **Experience model:**
  - Brand, Customer Relation and engagement
  - Channels



✓ Innovation Processes: Quality Management

✓ Important Points are:

- ✓ Customer at focal Point
- ✓ Risk Tolerance
- ✓ Embrace new Technologies
- ✓ Leverage Traditional Quality Tools

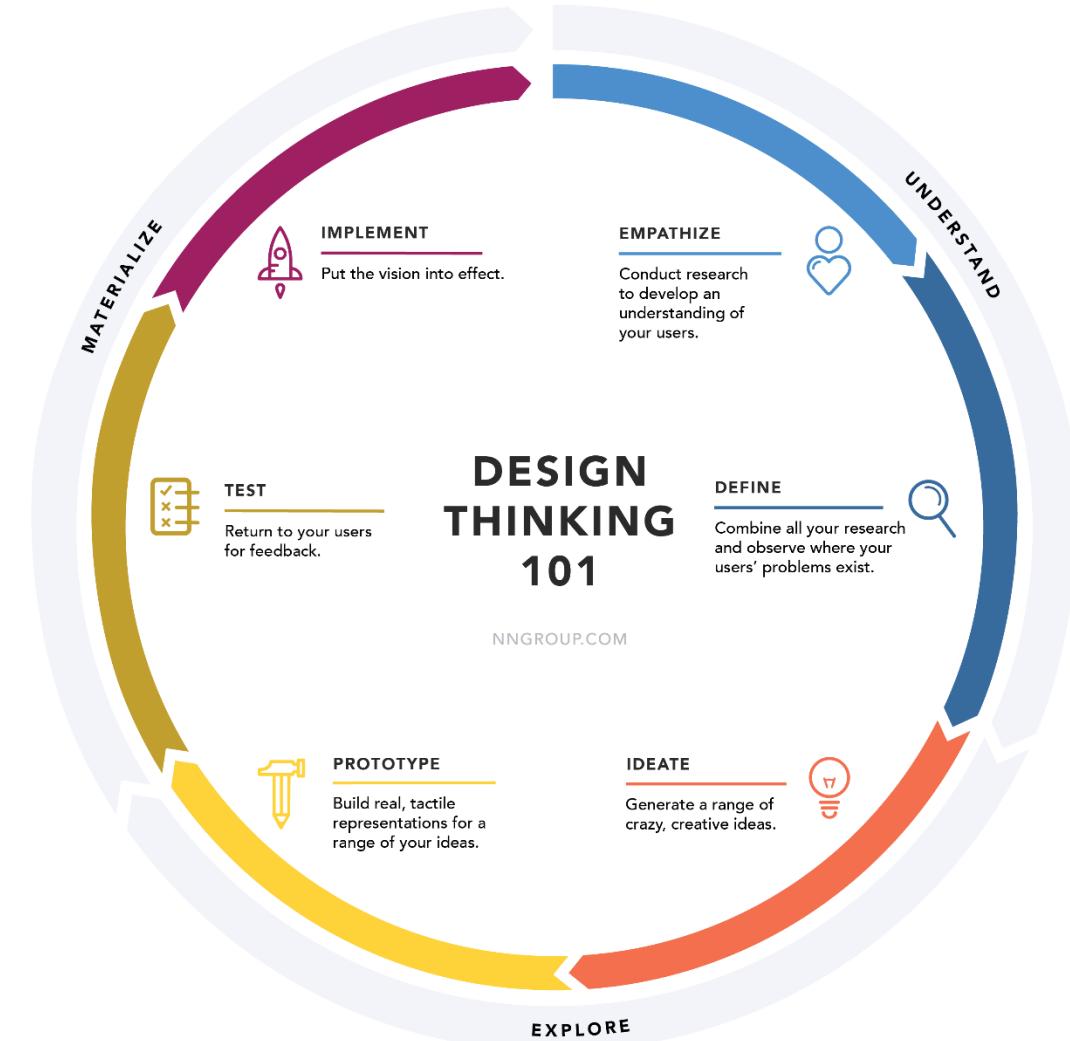


# Innovation Process

✓ Innovation Processes: Design Thinking

✓ Important Points are:

- ✓ Human Centric
- ✓ Uses Designer's tools
- ✓ Explore multiple avenues and possibilities
- ✓ IDEO Design thinking Process:
  - ✓ <https://youtu.be/l0YzbV0NDp8>



## ✓ Innovation Processes: Basic activities to manage innovation

- **Technological Integration:** Regards the relation between technologies and the company's products
- **Process of innovations:** involves functions creating and preserving innovations.
- **Strategic planning:** planning of innovation-related technologies.
- **Organizational change:** encompasses the disruptive nature of innovations
- **Development of an enterprise:** creation of new markets for the products of innovations.

✓ **Innovation Processes: Outcomes**

✓ **Innovation process enables :**

✓ **The organization-bound factors investigation**

✓ **To cater Needs of technological evolution**

✓ **To Support the assessment of diffusion of innovation**

✓ **To Explore learning phenomena**

✓ **To nurture the culture of invention as complementary, cumulative, and leapfrog**

✓ Innovation Processes: Outcome

✓ Invention:

✓ **Complementary:** Regards already available products e.g. mouse for computer

✓ **Cumulative:** Added to an already existing invention e.g. Product Improvement

✓ **Leapfrog:** Radical changes that differ from the existing technologies

✓ causes discontinuity in the market e.g. Kodack, Floppy Disks etc.

# Module: 1

## Introduction To Technological Innovation

**Introduction to Innovation management**

# Introduction to Innovation Management

1. Innovation Management Through Management,
2. Difference Between Innovation–Invention,
3. Types and Characteristics of Innovation
4. Introduction to Technological Innovation Management,
5. Challenges in Technological Innovation Management,
6. Over view of Innovation Systems. Case studies and examples.

# Introduction to Innovation Management

## **Innovation Management Through Management**

# Innovation Management Through Management

- the process of managing new ideas
- Managing an organization's innovation procedure
  - Ideation
  - Identify valuable and viable Ideas
  - Create Prototypes, Products and Test
  - Full Implementation.

# Innovation Management Through Management

- **Innovation management is:**
  - the process of nurturing and managing new ideas.
  - Can be defined as Ideation -> Execution ->deploy -> Kaizen
- **Key Pillars of Innovation management:**
  - Competency
  - Structure
  - Culture
  - Strategy

## Difference Between Innovation–Invention

# Difference Between Innovation–Invention

The difference can be observed on the basis of:

- Meaning
- Definition
- Concept
- Skills required
- Occurrence
- Concerns
- Activities

# Difference Between Innovation–Invention

The difference can be observed on the basis of:

- Meaning:
  - Invention:
    - Invention refers to the occurrence of an idea for a product or process that has never been made before.
  - Innovation
    - Innovation implies the implementation of idea for product or process for the very first time.

# Difference Between Innovation–Invention

The difference can be observed on the basis of:

- Definition :
  - Invention:
    - Creation of a new product.
  - Innovation
    - Adding value to something already existing.

# Difference Between Innovation–Invention

The difference can be observed on the basis of:

- Concept:
  - Invention:
    - An original idea and its working in theory.
  - Innovation
    - Practical implementation of new idea.

# Difference Between Innovation–Invention

The difference can be observed on the basis of:

- Skills required:
  - Invention:
    - Scientific skills.
  - Innovation
    - Set of marketing, technical and strategic skills.

# Difference Between Innovation–Invention

The difference can be observed on the basis of:

- Occurrence:
  - Invention:
    - New idea strikes a scientist.
  - Innovation
    - A need is felt for a product or improvement in existing product.

# Difference Between Innovation–Invention

The difference can be observed on the basis of:

- Concerns:
  - Invention:
    - Single product or process.
  - Innovation
    - Combination of various products and process.

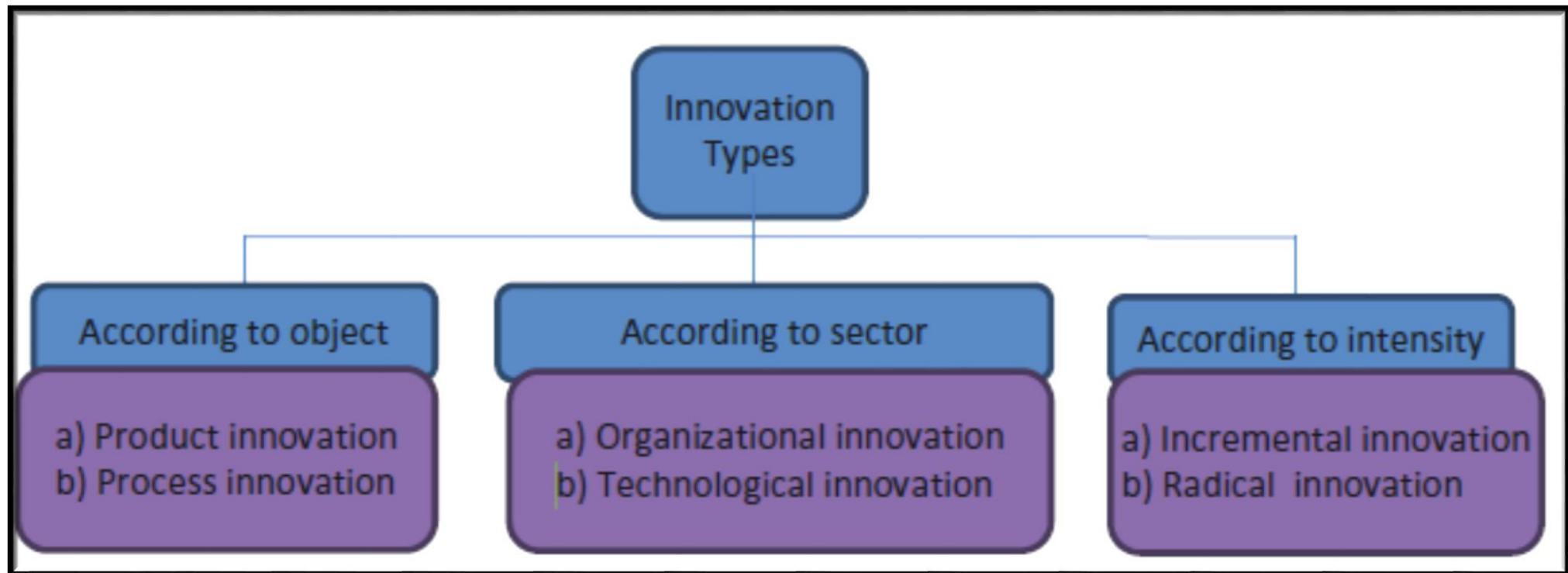
# Difference Between Innovation–Invention

The difference can be observed on the basis of:

- Activities:
  - Invention:
    - Limited to R & D department.
  - Innovation
    - Spread across the organization.

# Introduction to Innovation Management

## Types and Characteristics of Innovation



# Types and Characteristics of Innovation

## Types of Innovation: According to Object

- **Product Innovation:**
  - refers to the case when an enterprise introduces a new product or Service
- **Process Innovation:**
  - Introduces new elements in its production process or its operation

# Types and Characteristics of Innovation

## Types of Innovation: According to Sector

- **Organizational (administrative) Innovation:**
  - Introduction of a new administrative system or a new administrative process
  - does not introduce a new product or service but influences indirectly their introduction or the production process
  - Primarily adopted by large enterprises with more complex structures
  - Supports to solve auditing and coordination issues

# Types and Characteristics of Innovation

## Types of Innovation: According to Sector

- **Technological Innovation:**
  - Comprising the equipment and the procedures for raw materials
  - transformation into products or services
  - refers to the creation, improvement and expansion of the procedures sustained by the products
  - refer to the adoption of a new idea relating to a new product or service
  - Introduction of new elements in production processes or service provision of an enterprise

# Types and Characteristics of Innovation

## Types of Innovation: According to Intensity

- Incremental Innovation:
  - leading to a relatively small deviation from current practices
  - Introduced to improve old products or procedures, without intervening to the existing structure and strategy of the enterprise

# Types and Characteristics of Innovation

## Types of Innovation: According to Intensity

- Radical Innovation:
  - brings about fundamental changes in the activities of an enterprise
  - expresses a significant deviation from current practices
  - Gives momentum to new business activities, strategies and structures and introduces totally new products

# Types and Characteristics of Innovation

## Characteristics of Innovation: Product Axis:

✓ **Product innovation is in place when a new or improved product is launched in the market.**

- **Market demand:** directly linked to the company's market share and to profit margin
- **Level of resonance:**
  - target-customers locally, nationally or internationally
  - the product acceptance and market penetration yardstick

# Types and Characteristics of Innovation

## Characteristics of Innovation:

- Optimal use of existing condition:
  - Examined whether the existing technology is used in an optimal way
  - relevant to the product and its production
  - relates to updating procedures and technology forecast
- Price/Value:
  - Compared with the prices of corresponding competitive products in the market

# Types and Characteristics of Innovation

## Characteristics of Innovation:

- **Compliance with Regulation:**
  - Compliance with the safety, health, environmental regulations, etc
- **Originality:**
  - a new solution or encompasses changes compared to competitive products

# Types and Characteristics of Innovation

## Characteristics of Innovation:

- **Offer of improvements:**

- **an evolution of an existing technology**
- **the existence of new functions**

- **Coverage of operational needs:**

- **relates to customer requirements analysis**
- **Covers the additional functions not covered by the Customer needs**

# Types and Characteristics of Innovation

## Characteristics of Innovation:

- Aesthetic:
  - a criterion of innovation often underestimated
  - it constitutes though a key success factor
- Adherence to the intellectual property rules

# Types and Characteristics of Innovation

## Characteristics of Innovation: Process Axis

- The introduction of new processes in product development or the improvement
- Market research:
  - Disclose alternative solutions regarding design, price, distribution and product promotion
  - offers an estimate of product acceptance and image in the market

# Types and Characteristics of Innovation

## Characteristics of Innovation: Process Axis

- Connection to target-customers:
  - Frequency of contact between the company and target-customers at local, national or international level
  - to establish a long lasting relation mainly with large customers

# Types and Characteristics of Innovation

## Characteristics of Innovation: Process Axis

- **Access to new technology:**
  - Frequency of the contact with the current technological evolutions regarding production of product
  - departments of R&D, design, cooperation with technological bodies, participation in exhibitions, etc.

# Types and Characteristics of Innovation

## Characteristics of Innovation: Process Axis

- **Costing Methodology:**

- **in all stages of the product development process**
- **Analysis and accurate costing methodology is required to cut the total product production cost**

# Types and Characteristics of Innovation

## Characteristics of Innovation: Process Axis

- **Compliance with the regulations:**
  - Product development process with the safety, health and environmental regulations.
  - The development process with the regulations often contributes to qualitative upgrading of the product

# Types and Characteristics of Innovation

## Characteristics of Innovation: Process Axis

- Improvement techniques:
  - effort and the techniques to integrate new technologies and uses in the product are assessed.

# Types and Characteristics of Innovation

## Characteristics of Innovation: Process Axis

- Emphasis on fulfilling operational needs:
  - Focus of product development process on the specific operational need the product addresses.
  - Involves:
    - conversion of requirements to product specifications
    - relates to the way the trade mark participates in product development process

# Types and Characteristics of Innovation

## Characteristics of Innovation: Process Axis

- Focus on aesthetics in the design:
  - The aesthetic aspect of a product in combination with the analysis of its ergonomics is one of the main targets of industrial design.
  - The use of systems and design engineers is assessed

# Types and Characteristics of Innovation

## Characteristics of Innovation: Process Axis

- Formal procedures to protect copyright:
  - examine whether the required actions are taken to protect copyright
  - Assess whether an enterprise is geared towards protecting patents and designs and whether the above methodology constitutes its policy

# Types and Characteristics of Innovation

## Characteristics of Innovation: Management (organization) Axis

- Changes in administration and organization constitutes the administrative innovation that completes the first axis.
- Feasibility study:
  - The base (technical, economic, commercial) to decide upon an investment.

# Types and Characteristics of Innovation

## Characteristics of Innovation: Management (organization) Axis

- Formal procedures to ensure communication with target-customers:
  - Systematic follow up of current technological evolution
  - The assessment of the technological level of competitors
  - The identification of new technologies
  - The correct selection of the best technology

# Types and Characteristics of Innovation

## Characteristics of Innovation: Management (organization) Axis

- Cost control:
  - Control is a systematic review process applied during the design phase:
    - to cut production cost
    - preserving at the same time the value
    - the required operation specifications (value/price)
    - ensuring the product's sustainability and competitive price

# Types and Characteristics of Innovation

## Characteristics of Innovation: Management (organization) Axis

- Quality control:
  - Formal control procedures during the design phase
  - methods to analyze and improve innovation process quality
  - processes to safeguard rules applying to date

# Types and Characteristics of Innovation

## Characteristics of Innovation: Management (organization) Axis

- **Organizational culture:**
  - Emphasis of organizational culture on innovation
  - relates directly to a company's innovativeness.
  - innovation is the encouragement to create new ideas
  - the determination of performance measurement systems, personnel training etc.
- **Formal control to protect copyright:**
  - Formal control procedures to protect copyright are examined.

# Introduction to Innovation Management

## **Introduction to Technological Innovation Management**

# Technology Innovation Management

- management of innovation is a highly interactive process
- the result of an ongoing transfer of knowledge among various points-entities
- the organization and orientation of human and financial resources in a performing way, geared towards:
  - Advanced knowledge acquisition
  - Emergence of technical ideas aimed at new or improved products
  - Procedures and services
  - The development of applicable standards
  - The transmission of these ideas in production, distribution and use.

# Technology Innovation Management

- Activities in Innovation management
  - Creation of new Ideas
  - Re-design of production processes
  - Knowledge Management:
  - Products development:

## **Challenges in Technological Innovation Management**

# Challenges: Technology Innovation Management

- Challenges
  - Effort to manage something complex and hazardous
  - particular industrial production requiring different administrative approaches
  - Cater the complexities in Risk levels are determined by various factors
  - methods used to ensure desired revenue from investments in innovation

# Introduction to Innovation Management

Over view of Innovation Systems.

# Overview: Technology Innovation Management

- Overview
- Information on what can be done;
- Information on how to do it;
- Help in ensuring the firm makes the right decision on what to do and how to implement it;
- Assistance with planning and implementation;

# Challenges: Technology Innovation Management

- **Overview:**

- Money, to finance the necessary developments, together with advice on appropriate sources including grants and loans;
- Some way of ensuring the firm does not get unduly side—tracked by short term pressures and emergencies;
- Specific expertise on technological, marketing, management or organizational matters;
- Training and skills development at various levels.

# Principles: Technology Innovation Management

- **Principles of Technology Innovation Management:**
  - Simplicity and clarity in presentation & data collection
  - Founded on an open, objective model
  - Seeks best fit to company situation, with clear objectives
  - Compares with best practice in & beyond industry sector
  - Flexible – complements and does not stifle creativity
  - Collects basic information / expectations beforehand

# Principles: Technology Innovation Management

- **Principles of Technology Innovation Management:**
  - Includes time perspective
  - Balances comprehensiveness + time (e.g. via suitable software)
  - Consults cross –section on firm
  - Uses discrepancy information (differences in perception among staff)
  - Includes action planning step
  - Linkages to other tools / steps

# Principles: Technology Innovation Management

- **Principles of Technology Innovation Management:**
  - Sets success criteria
  - Facilitates learning by firm
  - Provides for mandatory follow – up

# Introduction to Innovation Management

Case studies and examples: Xerox

Why Xerox Failed:

<https://youtu.be/NIBjNmXvqlM>

The Xerox way:

[Xerox case study](#)

# Introduction to Innovation Management

Thank you!