



Innovation –
What it is and
why it matters



Who is inventor?

- **Inventor** is a person who invented a particular process or device or who invents things as an occupation

A black and white photograph of Thomas Edison. He is an older man with white hair, wearing a dark suit, white shirt, and dark bow tie. He is holding a small, glowing incandescent light bulb in his right hand, looking at it with a focused expression. The background is a brick wall. The right side of the image is faded into a white background where the text is located.

Who is inventor?

Thomas Edison → electric
light bulb

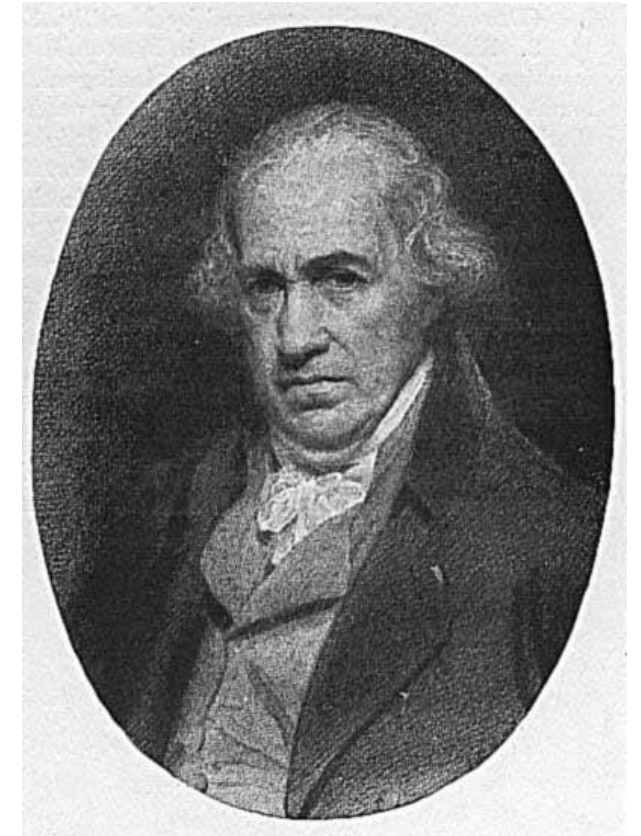
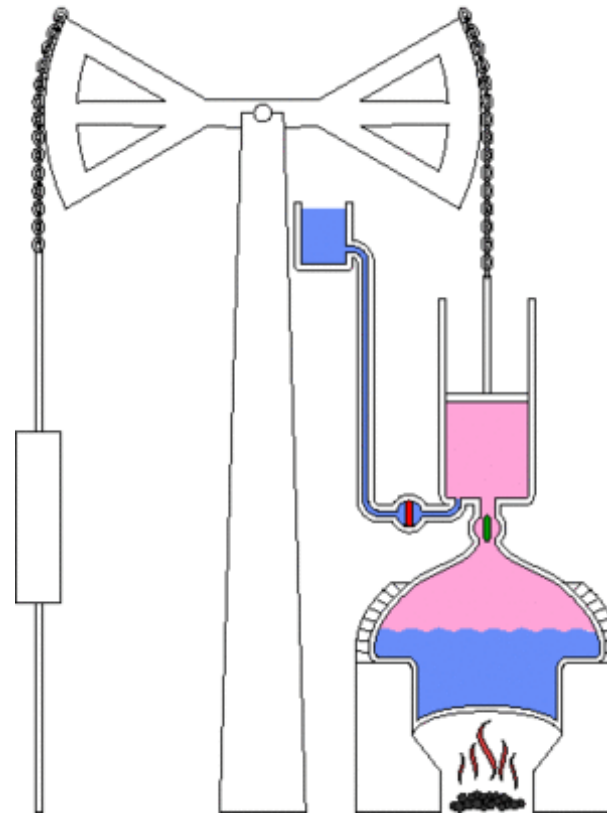
Who is inventor?

Alexander Graham Bell → the first practical telephone



Who is inventor?

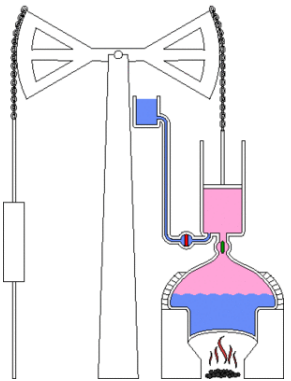
Thomas Newcomen →
steam engine





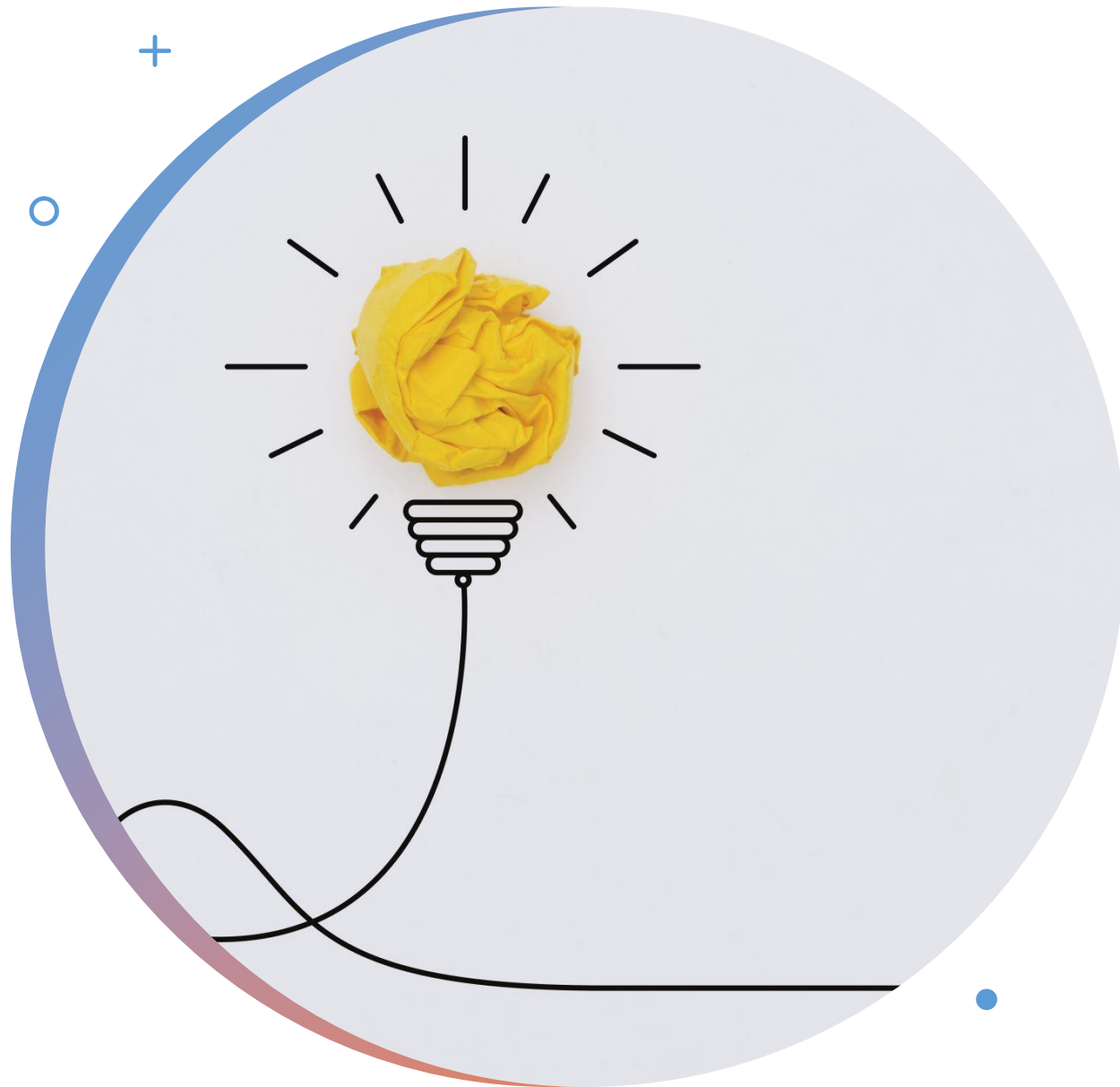
What is invention?

- **Invention** is the creation of a product or introduction of a process for the first time.
 - ✓ Electric light bulb
 - ✓ The first practical telephone
 - ✓ Steam engine





INVENTION vs. INNOVATION



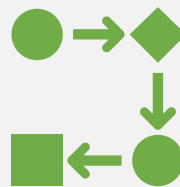
What is innovation?

- The term comes from the Latin ***innovare*** meaning 'to make something new'.
- Innovation is the successful **exploitation of new ideas.**

What is innovation?



Process of **turning ideas into reality** and capturing value from them.



It includes the **utilization of even small-scale changes** in technological know-how (**an improvement or incremental innovation**)

Analogy

- **Invention** is a pebble tossed in the pond
- **Innovation** is the rippling effect that pebble causes.
- Someone has to toss the pebble. That's the **inventor**.
- Someone has to recognize the ripple will eventually become a wave. That's the **innovator**.



What is innovation?



The process of translating an idea or invention into a good or service that **creates value or for which customers will pay.**



To be called an innovation, an idea **must be replicable** at an economical cost and must satisfy a specific need.

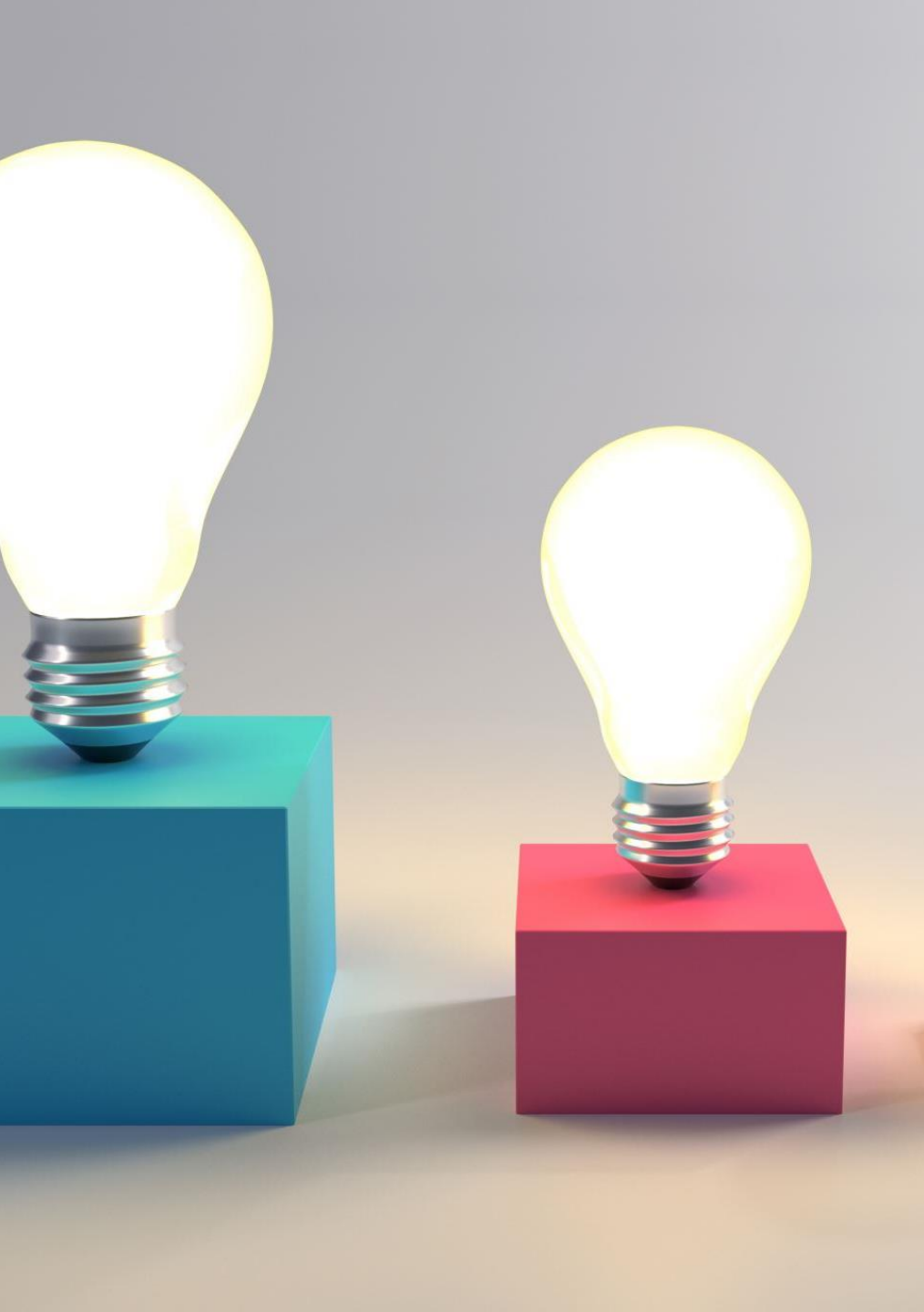


In business, innovation is required to further satisfy the needs and expectations of the customers.

*Main challenge in innovation is not an invention – coming up with new ideas – **but in making them work technically and commercially.***

Thomas Alva Edison





CREATIVITY vs. INNOVATION (?)



Creativity is **thinking up**
new things

Innovation is **doing** new
things

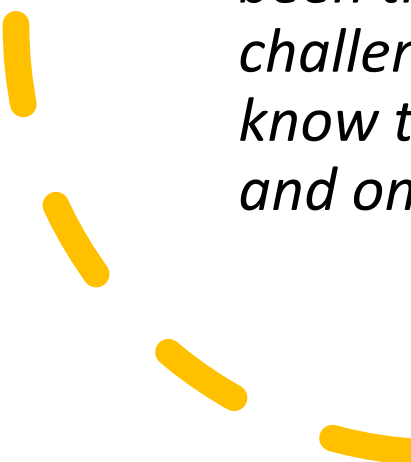


What is Creativity?

- Creativity is **subjective** making it hard to measure
- Creativity is about **identifying and uniting unique ideas** into a cohesive concept that can solve a problem.
- Creativity is finding the **valuable links between ideas** and connecting them.
- Innovation is **completely measurable**.
- Innovation is about **introducing change** into relatively stable systems.
- Innovation focuses on **putting ideas to work**



Discovery vs. Invention

- A discovery is true, whether you know it or not.
 - An invention doesn't exist until a person or a team conceives and builds it.
 - ✓ *Take a couple of **hydrogen atoms** and **bond them to an oxygen atom** and you are going to get a **water molecule**. Every time: no mystery, no magic. This has been true since long before humans occupied our world. In such a case, the challenge is to discover this structure, its mechanisms and its properties—to know that it **turns to a solid at 0°C** and **that it becomes a gas at 100°C**, on and on.*
- 

Competitive Advantage?

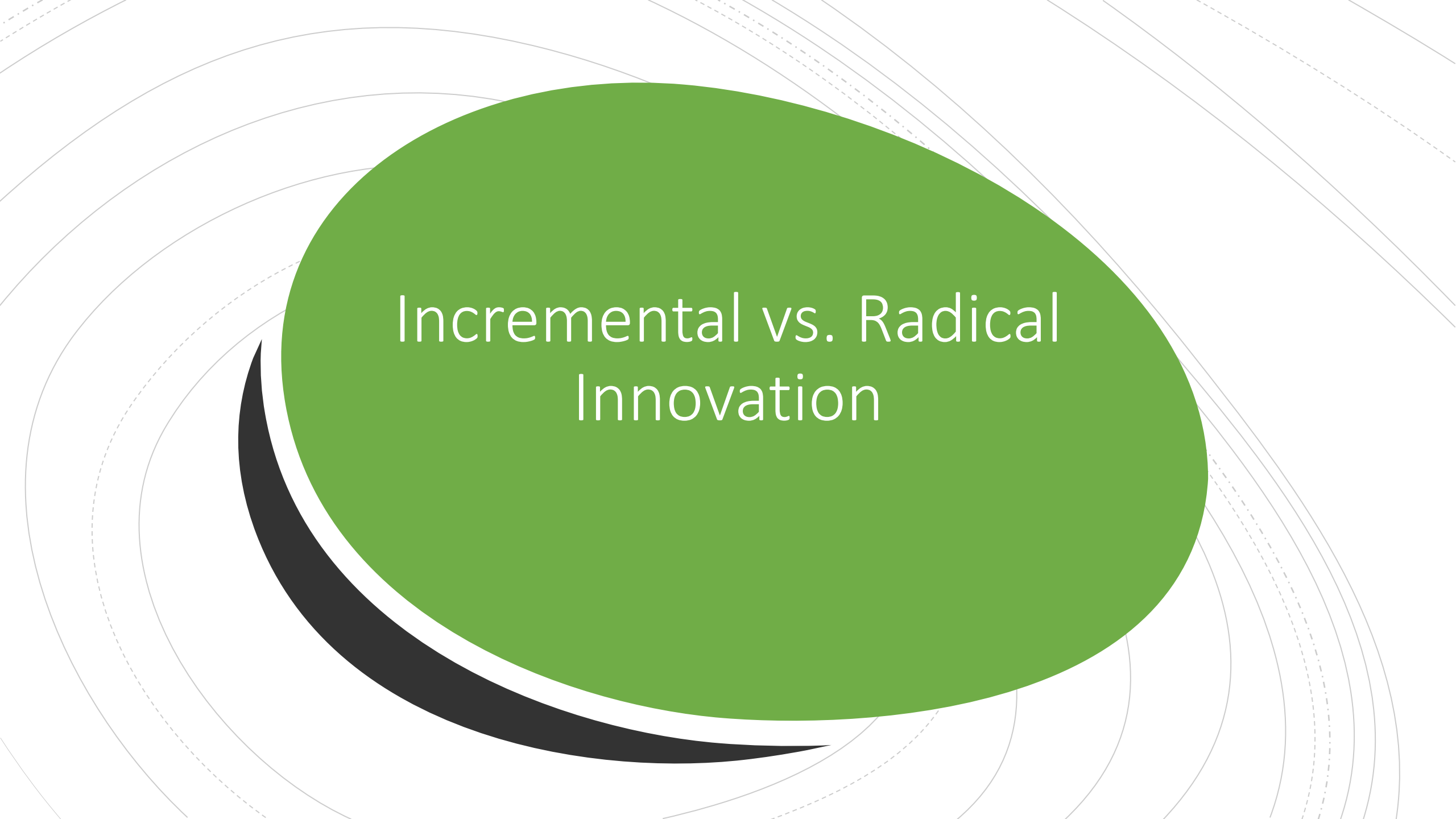
- **Competitive advantage** is a business concept that describes the attribute of allowing an organization to outperform its competitors.
- Companies achieve competitive advantage through acts of innovation



Sources of Competitive Advantage

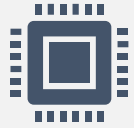
1. People (The knowledge and abilities of your people)
2. Culture (Your ability to innovate and change.)
3. Business Processes
4. Knowledge
5. Technology
6. Capital (own unique capital that no one else can buy)



The background features a series of concentric circles in light gray, some solid and some dashed, creating a sense of depth and movement. A large, solid green oval is positioned in the center, serving as a container for the text. A thick, dark gray curved line sweeps across the lower-left portion of the green oval.

Incremental vs. Radical Innovation

Incremental Innovation



Incremental innovation is a series of **small improvements** or **upgrades** made to a company's **existing** products, services, processes or methods.



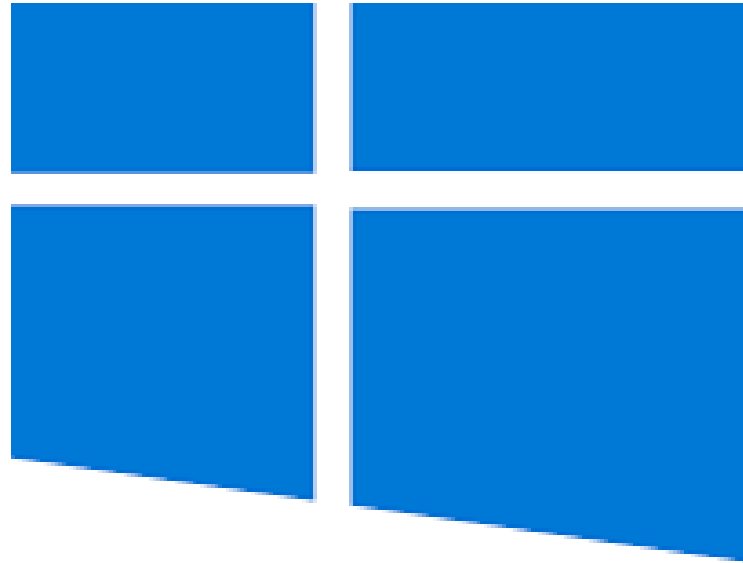
The changes implemented through incremental innovation are usually focused on **improving an existing product's** development **efficiency**, **productivity** and **competitive differentiation**.

Incremental Innovation (examples)



Incremental Innovation (examples)





Windows 10



Incremental Innovation

Incremental Innovation (Gillette)

- Gillette is a great example of a company that has used incremental innovation to stay ahead of the competition.
- Gillette razors started life with a single blade but their product has evolved, adding different features and more blades as the company has sought to better meet customer needs.



Incremental Innovation (doing what we do but better)

- The Bic Ballpoint pen was originally developed in 1957 but remains a strong product with daily sales of 14 million units worldwide.
- Although superficially the same shape, lots of incremental changes that have taken place in **materials, inks, ball technology, safety features, etc.**



Incremental Innovation (Coca-Cola)

- The brand's line extensions such as Cherry Coke, Coke with Lime and more recently Coca-Cola Life have enabled a 130 year old brand to stay relevant, tap into emerging trends and bring something new to its customers over the years.





Incremental Innovation

Other examples to Incremental Innovation?

Radical Innovation

- Unlike incremental innovation, radical innovation blows up the existing system or process and replaces it with something entirely new.



Radical Innovation


- Gasoline Car
- Hybrid Car



Radical Innovation

- Updating the styling on our car is not the same as coming up with a completely new concept car which has an electric engine and is made of new composite materials as opposed to steel and glass.
- There are degrees of novelty in these, running from minor, incremental improvements to radical changes which transform the way we think about and use them.





Radical Innovation (Amazon)

- Amazon Dash buttons:
 - ✓ small WiFi connected devices that allow you to reorder household essentials such as toilet paper, razors or washing powder at the click of a button.
- Both the technology and the business model of relying on repeat orders are new.

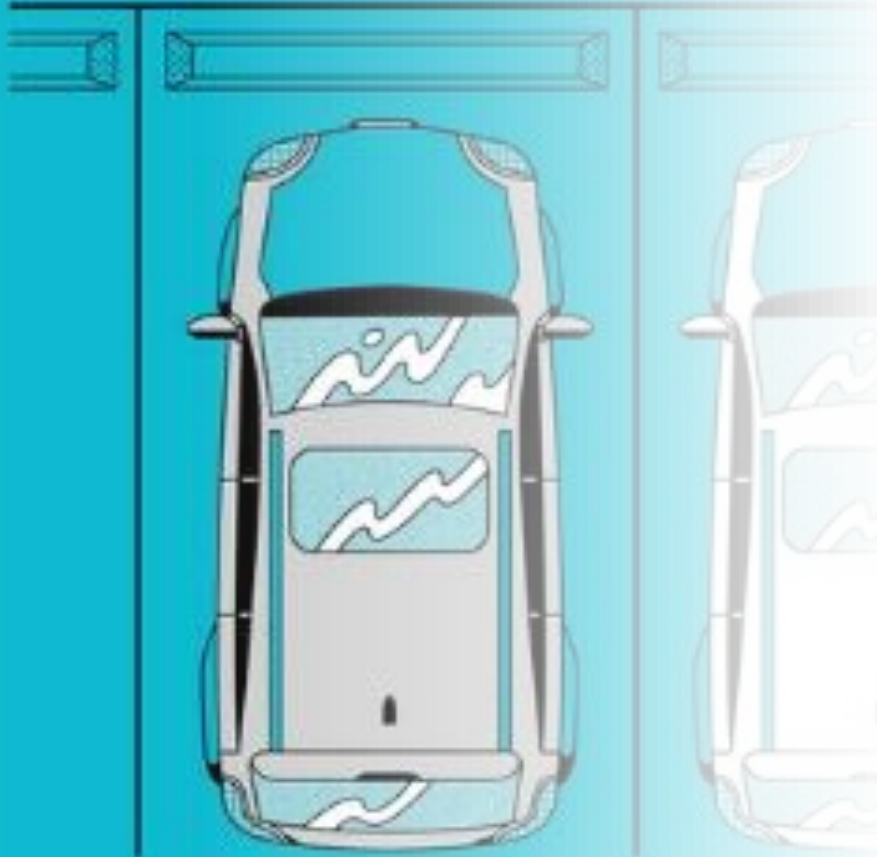
Apple Airtags (Radical Innovation)



PAYING



NOT PAYING



Radical Innovation (Metromile)

- Metromile: Pay-per-mile insurance
 - Pay-per-mile insurance is an affordable insurance for low-mileage drivers. If you aren't driving much, you shouldn't be paying much.
 - <https://www.youtube.com/watch?v=KN8K0lfBqsg>

Sustaining vs. Disruptive Innovation



Sustaining Innovation



Doing **what you do but better.**



Sustaining innovation comes from listening to the **needs of customers in the existing market** and creating products that satisfy their predicted needs for the future.



Established market leaders are extremely good at dealing with and exploiting sustaining innovations in order to fuel the short-term growth of their companies.

Disruptive Innovation



Suddenly and dramatically **change the dynamics of the industry**



Entirely new-to-the world products, made to perform a function for which no product has previously existed.



Disruptive innovations disrupt established routine and may even require a very different set of capabilities and new behavior patterns

Disruptive Innovation

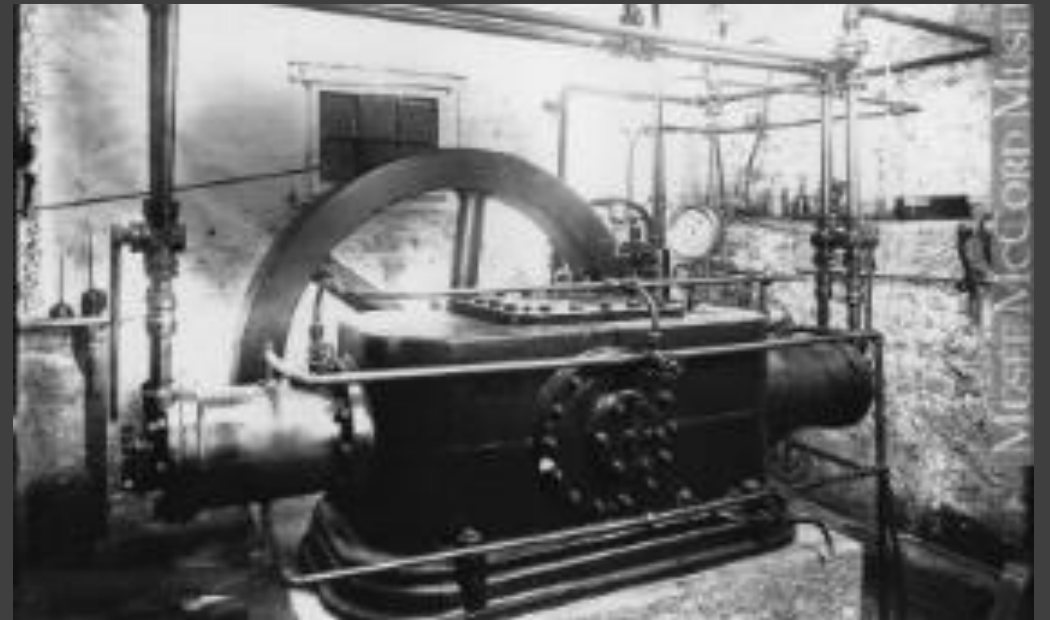
Disruptive innovation creates **new markets** separate to the mainstream

Disruptive innovations create markets that are initially too small to 'be interesting' to large established firms.

These firms have a responsibility to their shareholders to maintain continued growth rates which cannot be satisfied by the small initial returns obtained through pursuing emerging markets.

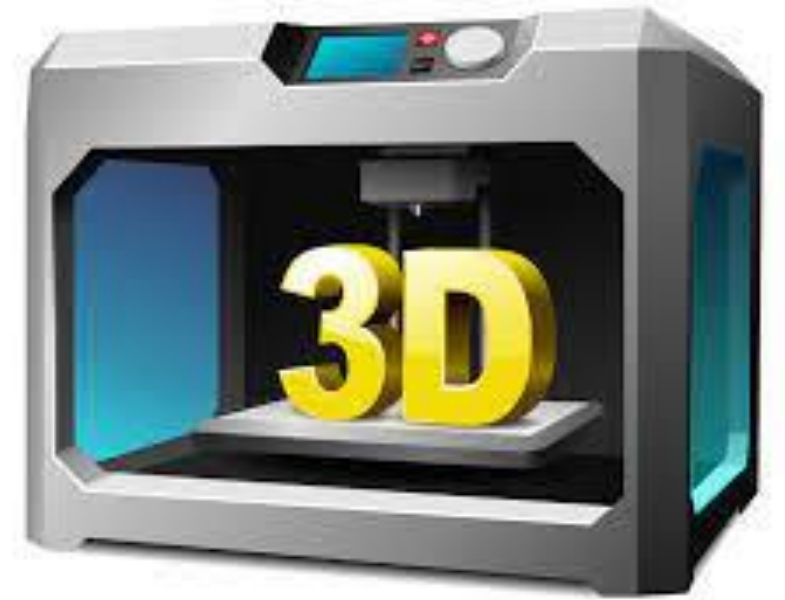
Discontinuous innovation (example)

- Ice harvesting industry in USA
- In 1886 the record harvest ran to 25 million tons
- 1870 Carl Linde invented artificial ice making refrigerator.
- 1879 there were 35 plants and 10 years later 222 making artificial ice.
- **His invention finished the ice-harvesting industry**

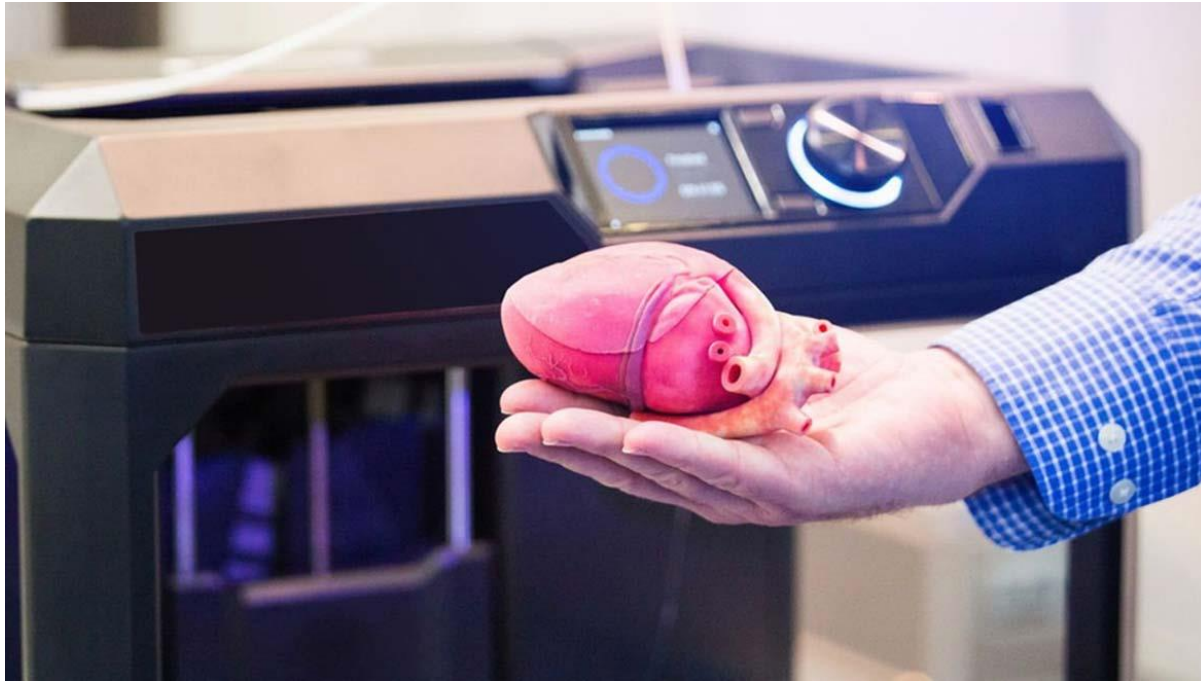


Possible Examples to Disruptive Innovation

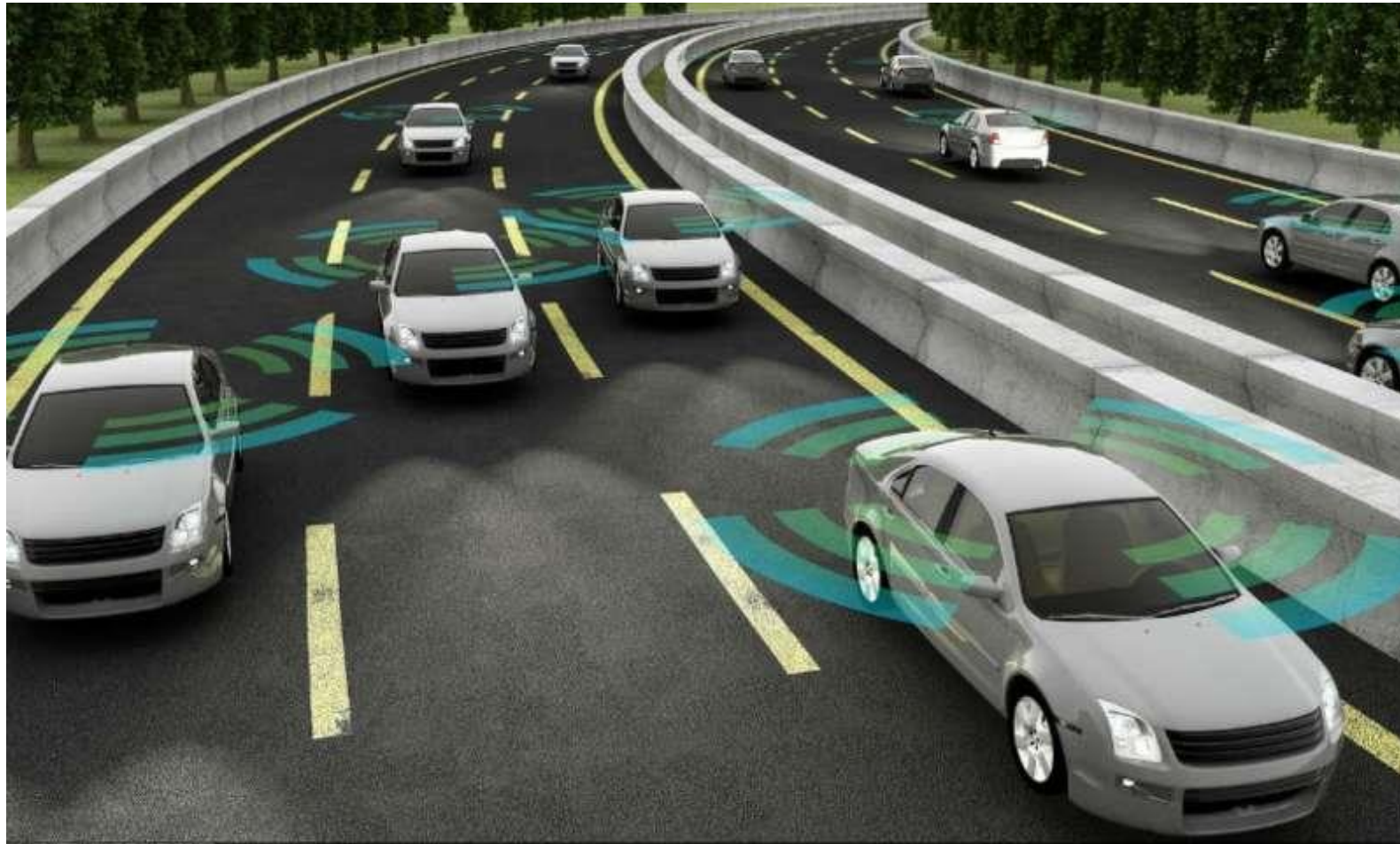
- What would happen if we could **create anything simply by printing**? Although this is hard to imagine, it is already happening.
- We could now print settlements, space-stations, furniture, utensils, transportation, clothes, games, food, body-parts, and a long list of other assets through the transfer of a document containing such files.



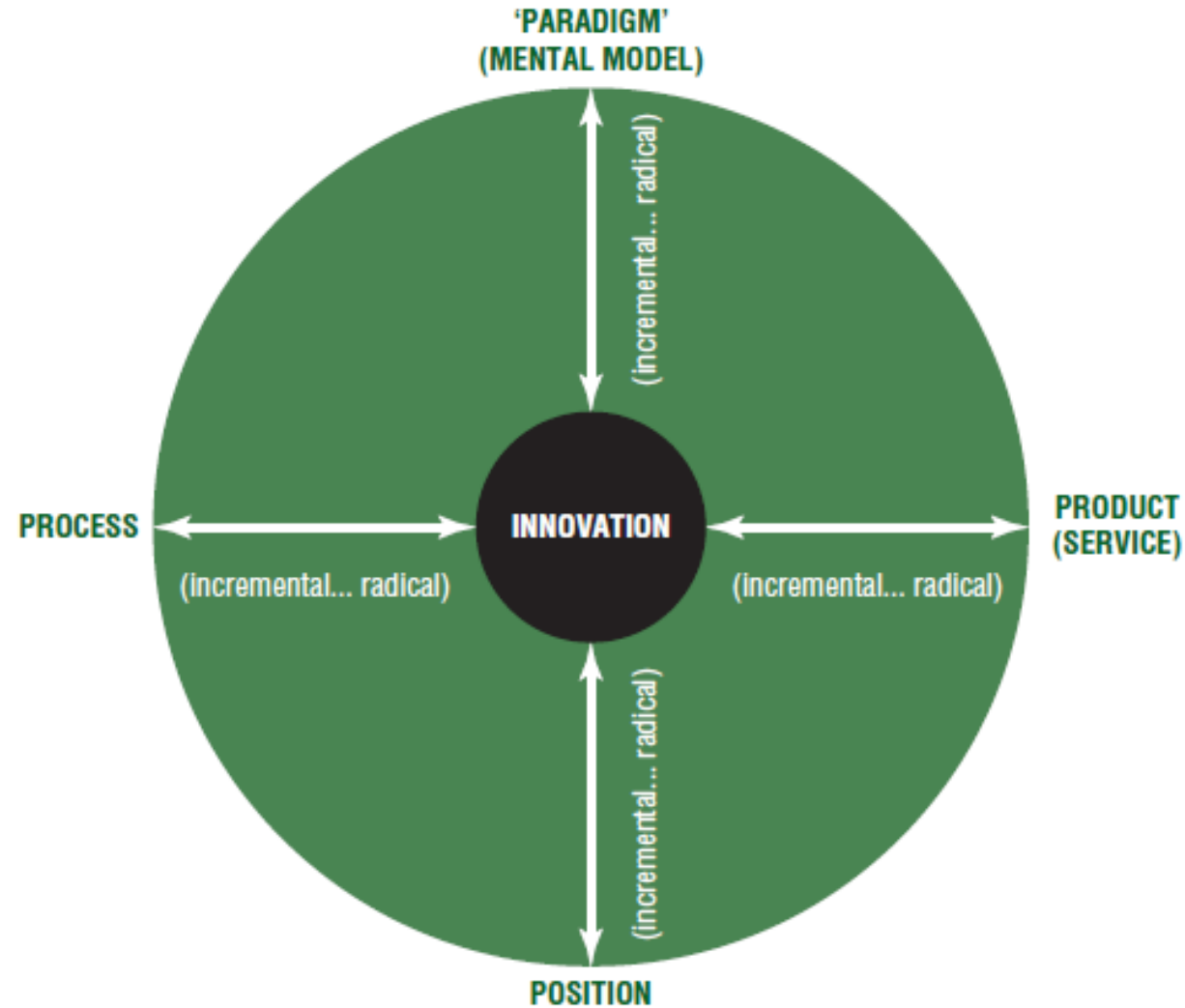
Disruptive Innovations



Disruptive Innovations



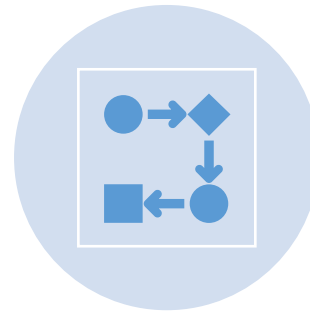
Four Dimensions of Innovation



Four Dimensions of Innovation (4Ps)



Product innovation – changes in the things (products/services) that an organization offers.



Process innovation – changes in the ways in which they are created and delivered.



Position innovation – changes in the context in which the products/services are introduced.



Paradigm innovation – changes in the underlying mental models which frame what the organization does.

Examples to 4 dimensions of innovation

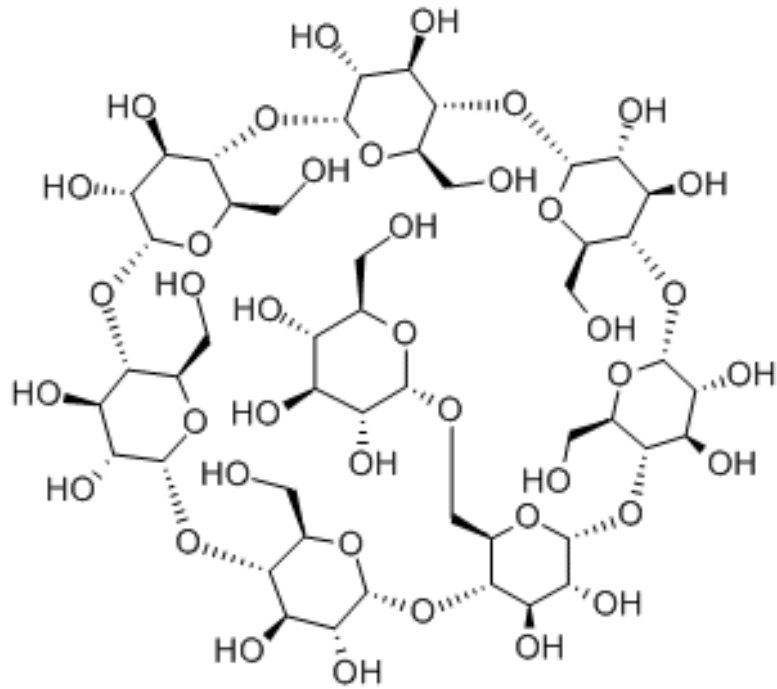
1. **Product Innovation:** a new design of car, a new insurance package for accident-prone babies and a new home entertainment system
2. **Process Innovation:** change in the manufacturing methods and equipment used to produce the car. Improving factory operations efficiency through upgraded equipment.
3. **Position Innovation:** Lucozade (a glucose-based drink) → cure illness (invalid children) now Lucozade (as a health drink) → as a performance-enhancing aid to healthy exercise. This shift is a good example of 'position' innovation. Universities building large education businesses via online approaches to reach different markets.
4. **Paradigm Innovation:** Henry ford's first affordable motor vehicle, shift to low-cost airlines, the provision of online insurance and other financial services. IBM moving from being a machine maker to a service and solution company. Rolls-Royce from high-quality aero engines to becoming a service company offering "power by the hour"



Platforms and Families of Innovation

- Creating space around an innovation and being able to establish a strong basic platform or family which can be extended.
 - ✓ Car makers are increasingly moving to produce models, which although apparently different in style, make use of common components and floor pans or chassis (examples ?).
 - ✓ Intel and AMD chips are used to design and produce a family of devices based on Pentium, Celeron, Athlon or Duron chipsets
 - ✓ Walkman originally developed by Sony as a portable radio and cassette system. This platform concept provided foundation for technologies such as minidisk, CD, DVD and now MP3 players.

Platforms and Families Of Innovation



- Procter & Gamble invested heavily in its **cyclodextrin** development for **original application in detergents** but then were able to use this technology or variants on it in a family of products including
 - Odour control ('Febreze'),
 - Soaps
 - Perfumes
 - Off-flavour food control,
 - Disinfectants
 - Bleaches
 - Fabric softening ('Tide', 'Bounce')
- They were also able to license out the technology for use in **non-competing areas** such as **industrial-scale carpet care** and in the pharmaceutical industry.

Intellectual Property

- **Intellectual Property (IP):** refers to the creations of the human minds for which exclusive rights are recognized.
- **Innovators, artistes and business owners** are granted certain exclusive rights to a variety of intangible assets for a specified duration.



Protection of Intellectual Property Rights

- Trademark
- Patent
- Copyright
- Trade Secrets

Trademark

- Any symbol, word or combination thereof used to represent or identify a product.
- Legally differentiates it from all other products.



Patent

- A **patent** is a right granted to the owner of an invention that prevents others from making, using, importing or selling the invention without his permission.
- A government license that gives the holder exclusive rights to a process, design or new invention for a designated period of time.





Patent

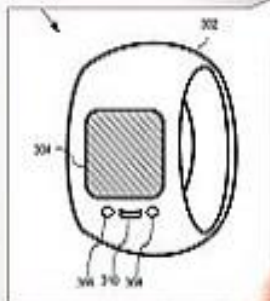
- Samsung's New Foldable Phone Patent

The ring could also be used to control external devices such as a computer's mouse cursor, a camera's shutter or a vehicle's entertainment and climate control system.



Patent

Apple applied for a new patent iRing (Smart Ring)



In some versions shown in the patent (pictured), Apple proposes a built-in microphone for Siri voice commands and a two force feedback motors to convey various notifications and directional information



Patent NOKIA - Nanotechnology Phone

Patent Wars





Copyright

- Copyright is the legal term, which describes the rights given to authors/creators of certain categories of work.
- Copyright protection extends to the following works:
 - ✓ books
 - ✓ musical or artistic works
 - ✓ sound recordings
 - ✓ films
 - ✓ broadcasts, cable programmes
 - ✓ computer programs

Trade Secret

- A trade secret is some information that gives a company an advantage over its competitors.
- Its value lies in the fact that it is not widely known, and making it known would destroy that value.
- Trade secrets are protected under law

