

Patents and Intellectual Property

Design of Services

Group 9



Aalto University
School of Engineering

What is Intellectual Property ?



EXCLUSIVE RIGHTS PATENT INNOVATION ASSETS INDUSTRIAL
INTELLECTUAL COPYRIGHT
DRESS DESIGN **PROPERTY** WORKS LAW
INFRINGEMENT TRADE SIGN PROTECTION INTANGIBLE
TRADEMARK SECRETS



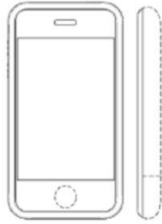
Intellectual Property (IP);

Within the context of product development, the term intellectual property refers to the **legally protectable ideas, concepts, names, designs, and processes associated with a new product**. Intellectual property can be one of the most valuable assets of firms.

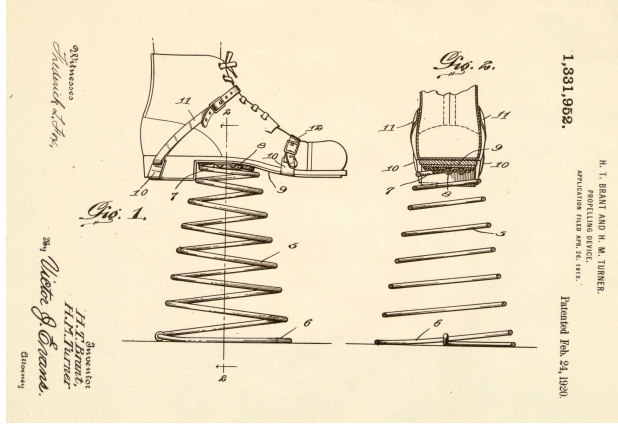
Unlike physical property, intellectual property cannot be secured with lock and key to prevent its unwanted transfer; therefore, legal mechanisms have been developed to protect the rights of intellectual property owners.



FIG. 3
iPad Design Patent Example



iPhone Design Patent Example



Patents

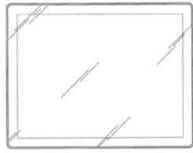
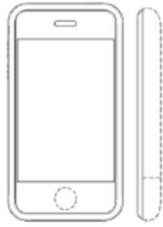
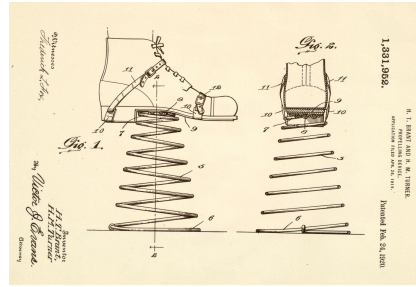


FIG. 3
iPad Design Patent Example



iPhone Design Patent Example



Trademarks



Copyrights



Trade Secrets



	Example	Patents	Copyrights	Trade Marks	Trade Secrets
Strategic	Product Concepts	X			X
	Marketing Concepts		X	X	X
	Technology Concepts	X			X
	Branding		X	X	
Manufacturing	Manufacturing Methods	X	X		X
	Product Improvements	X			
	Logistics & Distribution	X	X	X	X
	Testing Methods/Software	X	X		X
Operations	Methods of Use/Business	X			X
	Customer Systems	X			
	Operational Software	X	X		
	Sales Programs	X	X	X	X
Finance	Accounting Software	X	X	X	X
	Investing Strategies	X	X	X	X
	Inventory Tracking Methods	X	X	X	X

Type	Subject Matter	Protection Characteristics
Patents	Process, machine, manufacture, composition of matter & improvements – includes software	Limited time monopoly over subject matter in issued claims
Trade Secrets	Formula, pattern, compilation of data, device not known in industry	State law protection as long as secure <ul style="list-style-type: none"> Federal Industrial Espionage Act
Copyright	Creative expression in work	Exists Immediately
Trademark	<ul style="list-style-type: none"> Source of origin of goods/services Branding Properly used as adjective Independent of technology 	Common law and Registration <ul style="list-style-type: none"> Potential infinite life Good will value

Type of IP

IP	Protection	Duration (in the U.S)
Patents	Inventions, industrial designs, computer code	20 years
Trademarks	Unique identifiers for a business or its products or services (e.g., logos, brand names)	As long as the trademarked material remains active
Copyrights	Works of authorship, including books, poems, films, music, photographs, online content	70 years after the author dies ^[5]



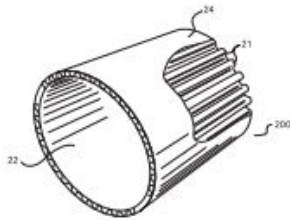
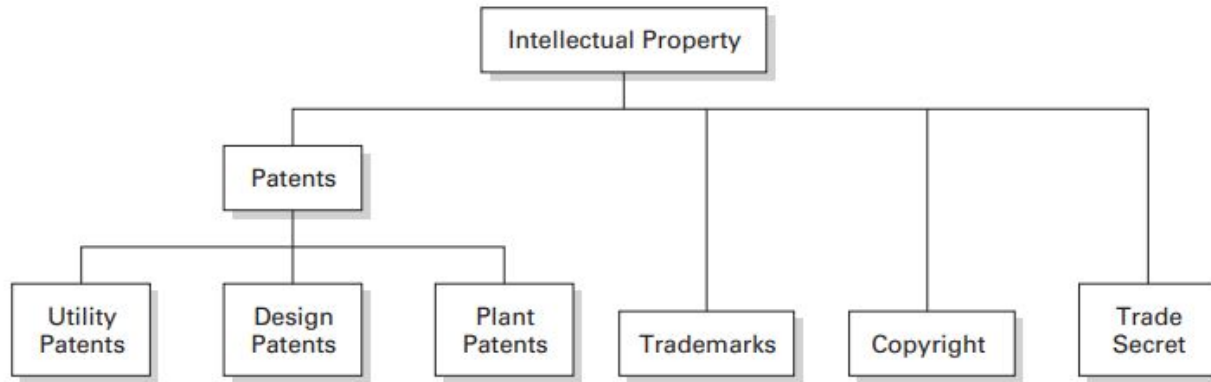


Fig 10



1. Useful
2. Novel
3. Nonobvious

Ornamental
Design Only

New
Plant

Word or
Symbol

Original
Work of
Expression

Proprietary
and Useful

requires formal application

may be registered, but
not necessary

not registered



Patent - Overview of the Patent

For most engineered goods, two basic types patent are relevant= DESIGN PATENT and UTILITY PATENT and PLANT PATENT

Design patents provide the legal right to exclude someone from producing and selling a product with the identical ornamental design described by the design patent.

Utility Patents

For patenting of an invention that relates to a new process, machine, article of manufacture, composition of matter, or a new and useful improvement of one of these things. Fortunately, these categories include almost all inventions embodied by new products.

Useful = The patented invention must be useful to someone in some context.

Novel=Novel inventions are those that are not known publicly and therefore are not evident in existing products, publications, or prior patents. The definition of novelty relates to disclosures of the actual invention to be patented as well.

Non Obvious=Patent law defines obvious inventions as those that would be clearly evident to those with “ordinary skill in the art” who faced the same problem as the inventor.



Preparing Disclosure

For preparing an invention disclosure—in essence a detailed description of an invention. This disclosure will be in the form of a patent application, which can serve as a provisional patent application and with relatively little additional work could be a regular patent application.

Inventors pursuing serious commercial opportunities should consult with a patent attorney after preparing their disclosure. **The steps in the process are:**

1. Formulate a strategy and plan.
2. Study prior inventions.
3. Outline claims.
4. Write the description of the invention.
5. Refine claims.
6. Pursue application.
7. Reflect on the results and the process.



Patents - STEP = 1 Formulating strategy

- Timing of the patent

Although we recommend that filing precede public disclosure, the inventor may benefit by delaying the application until just before such disclosure.

- The principal advantage to waiting as long as possible is that the inventor has as much knowledge as possible about the invention and its commercialization.
- By waiting, the inventor can ensure that the most important elements of the invention are captured in the patent application; however, a risk in waiting is that someone else may file a patent for the same invention.



Types of Applications

- Regular Patent Application
- Provisional Patent Application

. A provisional patent application needs only to fully describe the invention. It does not need to contain claims or comply with the formal structure and language of a regular patent application.

The principal advantage of a provisional patent application is that it requires less cost and effort to prepare and file than a regular patent application, but it preserves all options to pursue further patent filings for a period of one year.

- Domestic Patent
- Foreign Patent

Filing patents internationally is expensive and somewhat complex. The team should therefore consult with a patent professional about international patent strategy, as patent law varies somewhat from country to country

To obtain foreign patent rights, an application must eventually be filed in each country in which a patent is sought. (The European Community, however, acts as a single entity with respect to patent filing.) Foreign applications can be expensive, costing up to \$15,000 per country for filing fees, translation fees, and patent agent fe



Scope of the Application

The team should evaluate the overall product design and decide which elements embody inventions that are likely to be patentable.

Complex products often embody several inventions. For example, a printer may embody novel signal processing methods and novel paper handling techniques.

Sometimes these inventions fall into very different classes within the patent system. As a result, a product development team may need to file multiple applications corresponding to the distinct classes of invention. For simple products or for products that embody a single type of invention, a single patent application usually suffices.



Step:2 Study Prior Inventions

What is prior art?

Prior art is any evidence that your invention is already known.

Reasons for Studying Prior Inventions



- a) Firstly by studying prior patent literature, design teams can learn whether an invention may infringe on existing unexpired patents.
- b) Secondly, by studying the prior art, the inventors gets a sense how similar their invention to the prior invention and how likely they are to be granted a patent.
- c) Third the team will develop background knowledge enabling the members to craft a novel claims.



Some of the sources information on prior inventions include:

- a) Existing and historical product literature
- b) Patent searches
- c) Technical and table publications



Step 3: Outline claims



- a) Claims describe certain characteristics of the invention.
- b) They are written in formal legal language and must adhere to some rules of composition.
- c) Make a list of features and characteristics that team believes are unique and valuable.
- d) Worry about formal language later.

The outline of claims provides guidance about what must be described in detail in description.

For example, an outline of the claims for the Corrugated Beverage Container and Holder invention might be:

- Corrugations on the inside surface of the tube
- Corrugations on the outside surface of the tube

Vertical orientation of flutes

- Flutes open at top and bottom of holder

Tubular form with openings at both ends

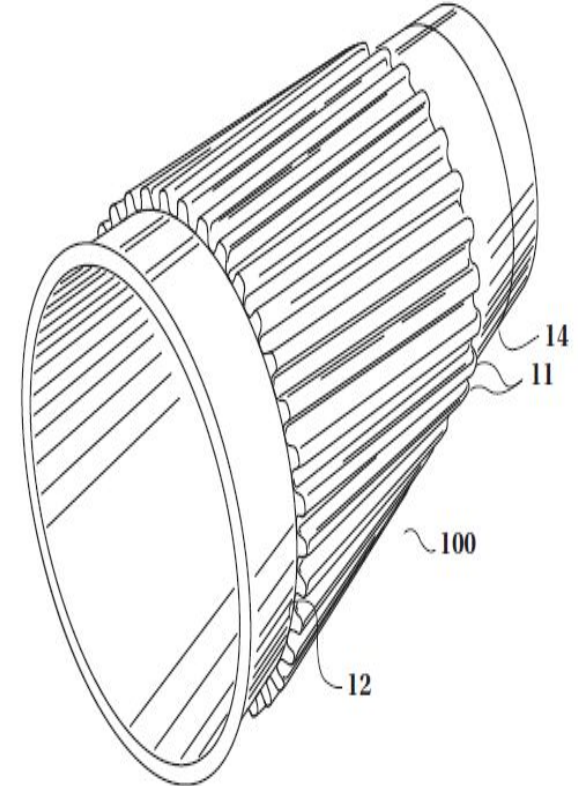
- In shape of truncated cone

Recyclable materials

- Recyclable adhesive
- Recyclable sheeting

- Cellulose material

EXHIBIT
16-3 The
first page of U.S.
Patent 5,205,473.



Coffin, David W., Recyclable Corrugated Beverage Container and Holder, United States Patent 5,205,473, April 27, 1993

Step 4: Description of Invention

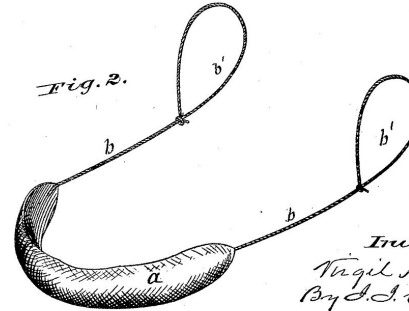
- Read by a patent examiner
- The description must convince the examiner that the invention is different and nonobvious
- A technical report?
- What about confidentiality?



Description

- Title
- List of inventors
- Field of the invention
- Background of the invention
- Summary of the invention
- Brief description of the drawings
- Detailed description of the invention

V. A. GATES
MOUSTACHE GUARD
Patented April 18, 1876
No. 176,175

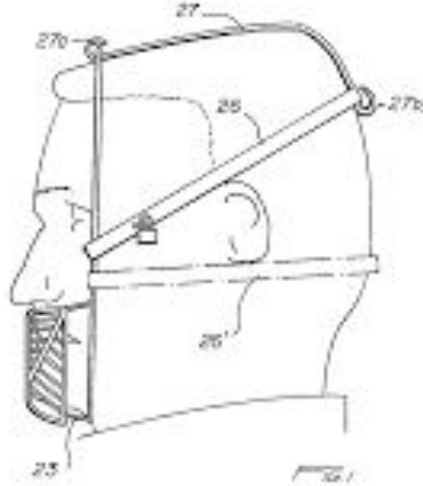
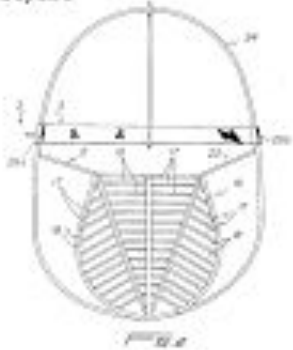


Inventor.
Vincent A. Gates,
By J. J. Lombardi,
Attorney

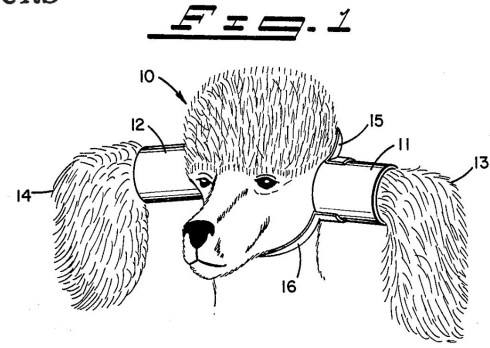
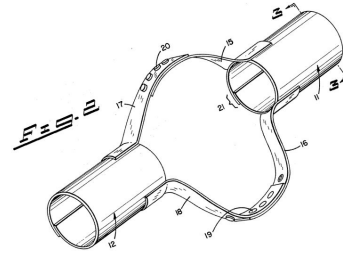


Title

LUCY L. BARMBY
ANTI-EATING FACE MASK
Patented August 17, 1962
No. 4,344,424



JAMES D. WILLIAMS
ANIMAL EAR PROTECTORS
Patented November 18, 1980
No. 4,233,942



List of Inventors

SAFETY RAZOR BLADE Invented in : 1901 Inventor : King Camp Gillette 	VACUUM CLEANER Invented in : 1901 Inventor : Hubert Cecil Booth 	AIR-CONDITIONING Invented in : 1902 Inventor : Willis H. Carrier 	AEROPLANE Invented in : 1903 Inventors : Orville and Wilbur Wright 
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Figures

Must comply with a variety of rules

For an invention disclosure or a provisional patent disclosure, hand sketches or CAD drawings are sufficient.

Formal figures → a professional drafter

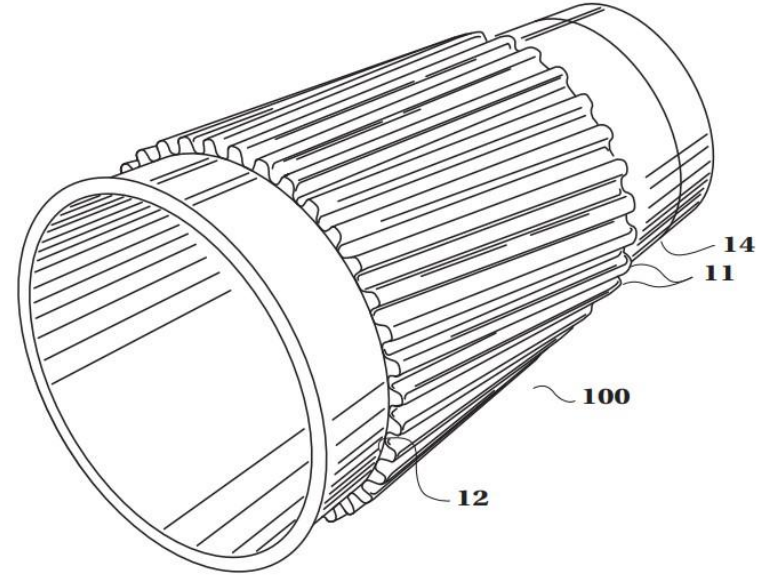
5 to 15 figures for the cup holder

Reference numerals

They do not need to be uninterrupted

EXHIBIT

16-3 The first page of U.S. Patent 5,205,473.



Coffin, David W., Recyclable Corrugated Beverage Container and Holder, United States Patent 5,205,473, April 27, 1993

Detailed Description

The detailed description describes the embodiments of the invention.

Preferred embodiment

Alternative embodiments

Strategy?

1. Create the figures
2. Labeling the features and explaining the arrangement
3. Explain how the embodiment works and why the features are important



Example

EXHIBIT 16-4

Figure 10
from the Coffin
patent.

Coffin, David W.,
Recyclable Corrugated
Beverage Container
and Holder, United
States Patent 5,205,473,
April 27, 1993

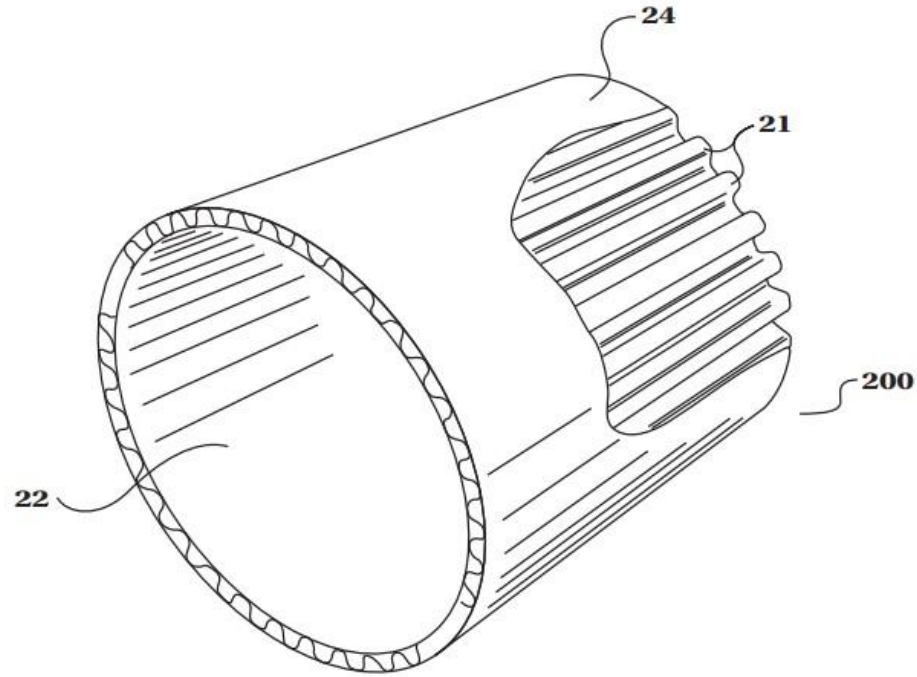


FIG. 10

Consider Figure 10 from the Coffin patent, shown here as Exhibit 16-4. A detailed description might include language like the following:

A preferred embodiment of the invention is shown in Figure 10. A liner surface 22 and an outer surface 24 sandwich a corrugation 21. The assembly 200 forms a tubular shape whose diameter changes linearly with length so as to form a section of a truncated cone. The smooth outer surface 24 provides a smooth surface onto which graphics may be printed. Corrugation 21 is bonded to outer surface 24 and liner surface 22 with a recyclable adhesive.



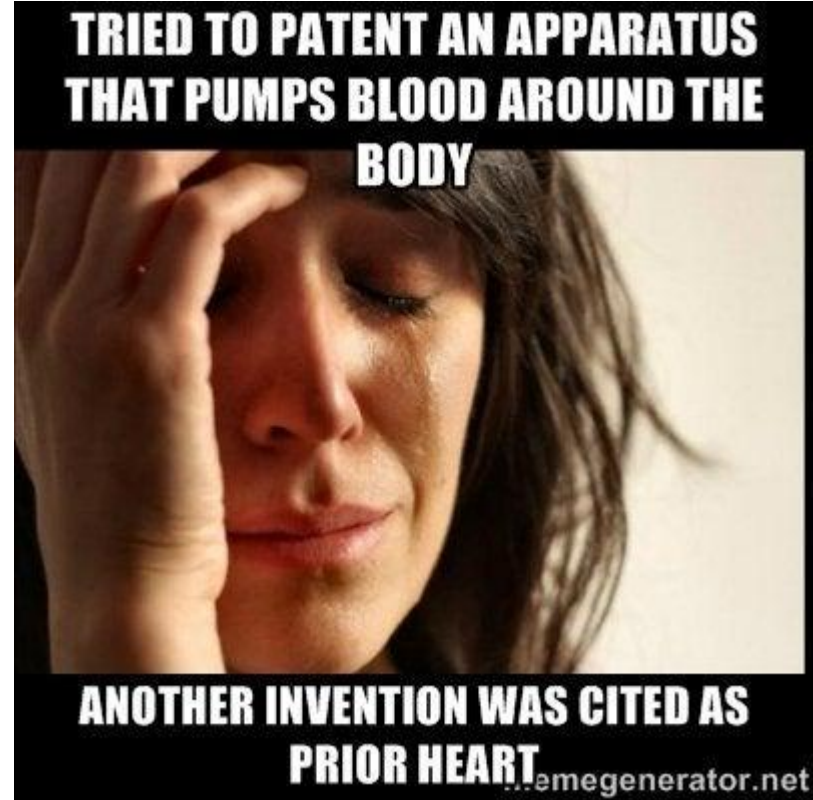
Defensive Disclosure

The primary benefit of a patent is offensive rights

They also offer a subtle mechanism for taking defensive action

Prior art

Inventors may benefit from disclosing essentially every invention they considered that relates to the claimed invention no matter how wide ranging



Step 5: Refine Claims

The claims are a set of numbered phrases that precisely define the essential elements of the invention.

They are the basis of all offensive patent rights.

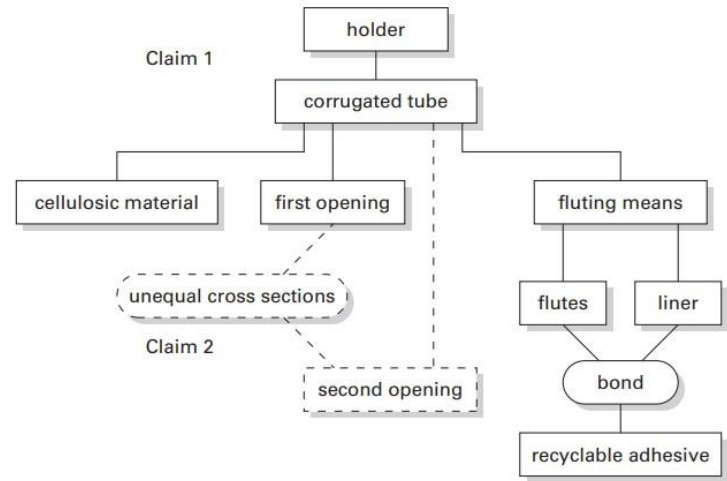
a strict mathematical logic

$X = A + B + C \dots$, where $A = u + v + w \dots$, $B = \dots$

An X comprising an A, a B, and a C, wherein said A is comprised of a u, a v, and a w and wherein said B is . . .

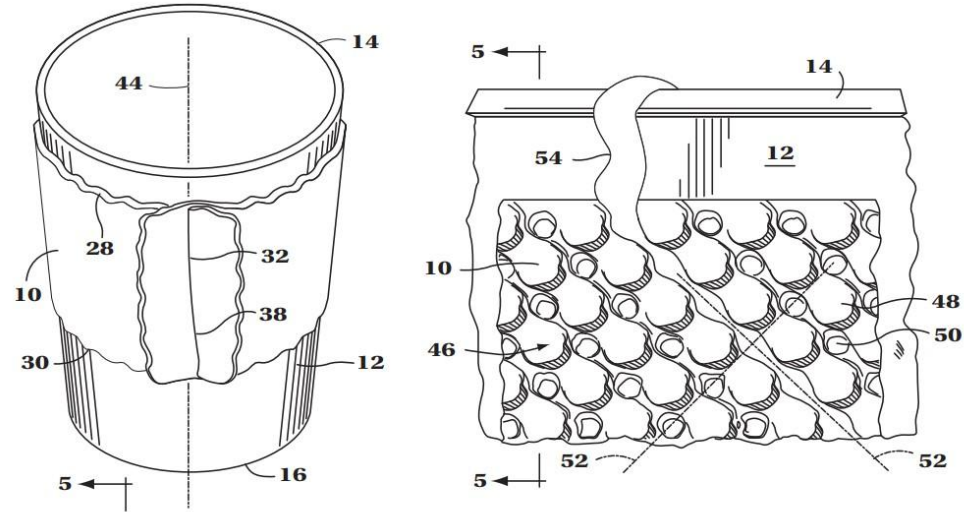
EXHIBIT 16-6

The logical structure of Claims 1 and 2 from the Coffin patent. Note that Claim 2 is dependent on Claim 1 and simply adds further restrictions, a second opening and a relationship between the first and second openings.



Guidelines for Crafting Claims

- Always try to make a claim as general as possible.
- Avoid absolute definitions by using modifiers like “substantially,” “essentially,” and “approximately.”
- Attempt to create an invention that does not infringe on the draft claim, and then try to rewrite the claim or add an additional claim such that the hypothetical invention would infringe.



Sorensen, Jay, Cup Holder, United States Patent 5,425,497, June 20, 1995

EXHIBIT 16-7 Figure from the Sorensen patent (U.S. Patent 5,425,497, “dimpled cup holder”).



Step 6: Pursue Application

Four different ways:

- a) Provisional patent application
 - <\$100
 - Labeled as **'Patent Pending'**.
 - Option to pursue a patent
- b) Regular patent application
 - About \$500 + legal fees for patent attorney
- c) Patent Cooperation Treaty (PCT) application
 - Allows a single patent application to initiate the process of pursuing international patent protection.
- d) Defer application indefinitely

The patent office does not review or act on provisional patent applications.



Step 7: Reflect on the Results of the Process

Some things to consider:

- a) Are the distinct features of the invention reflected in the claim?
- b) What is the timing of future actions?
- c) What went smoothly? What didn't?
- d) What did you learn that could improve the next process?



A word cloud featuring the words 'SERVICE' and 'DESIGN' in large, bold letters. 'SERVICE' is in orange and 'DESIGN' is in black. Surrounding these are various other terms in different sizes and orientations, including 'TOOLS', 'TECHNIQUE', 'PRACTICE', 'INSIGHT', 'METHODS', 'INFRASTRUCTURE', 'COMMUNICATION', 'EDUCATION', 'IMPROVEMENT', 'PLANNING', 'INTERACTION', 'PROTOTYPE', 'CUSTOMER', 'COMPONENT', 'NEEDS', 'ORGANIZING', 'PEOPLE', 'INTERVIEWS', 'PROVIDER', 'PROCESS', and 'METHODOLOGY'.

TECHNIQUE
PRACTICE
INSIGHT
METHODS
INFRASTRUCTURE
COMMUNICATION
EDUCATION
IMPROVEMENT
PLANNING
TOOLS
SERVICE
INTERACTION
PROTOTYPE
CUSTOMER
COMPONENT
NEEDS
ORGANIZING
DESIGN
PEOPLE
INTERVIEWS
PROVIDER
PROCESS
METHODOLOGY



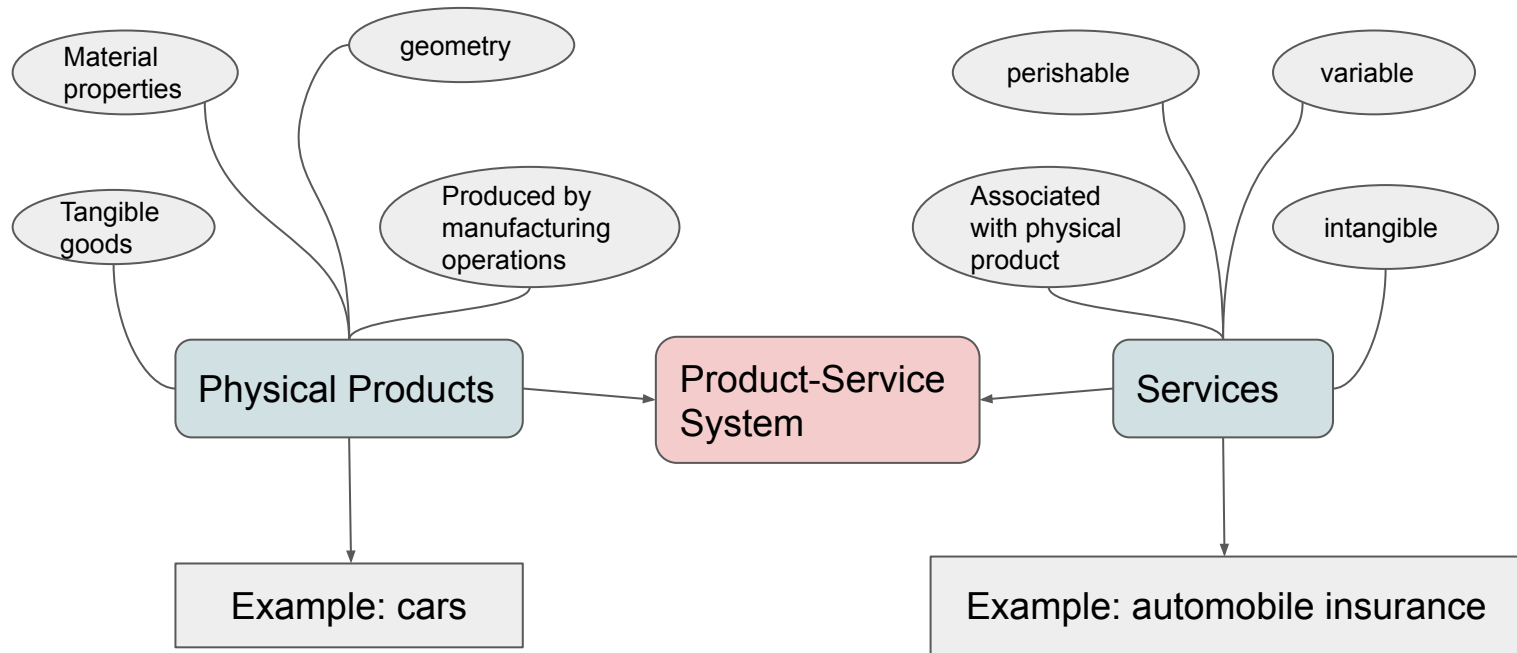
Product-Service Systems



<https://youtu.be/3vkz3VcaoRg>

While the vehicles used by Zipcar are the tangible products of automobile manufacturers, what Zipcar offers to its customers is a **service**.





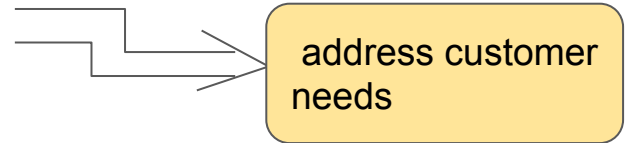
Examples of product-service systems

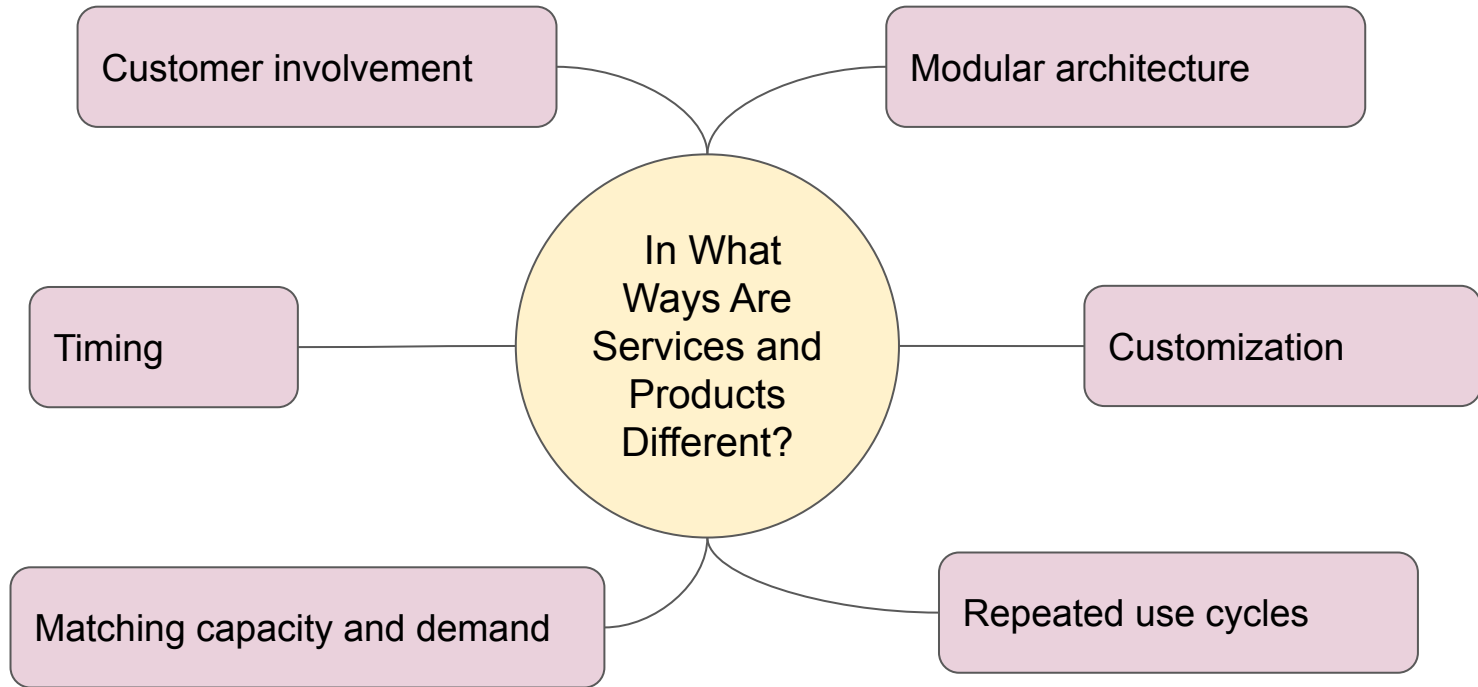
Category	Physical Product Elements	Service Elements
Mobile communications	Handsets, transmission towers	Network connectivity
Enterprise computing	Computing hardware, switches, servers	Information processing, storage, back-up
Desktop printers	Printer hardware	Cartridge recycling
Auto rental	Vehicles	Reservation, insurance, maintenance, billing
Restaurants	Food	Reservations, food preparation, wait service, ambiance
Airlines	Aircraft	Ticketing, in-flight entertainment, piloting, baggage handling, loyalty programs
Healthcare	Drugs, medical devices	Diagnosis, procedures, advice



Services and Products are Similar enough

For both products and services, these tools and methods are important:
opportunity identification; identifying customer needs;
generating concepts; selecting concepts;
establishing specifications; concept testing;
economics; project management;
and product planning.





To be specific

A high degree of customer involvement:

The customer is generally an integral part of the service delivery process, providing information inputs, making choices, interacting with the service provider, and consuming the service during its delivery.

A prominent time dimension:

Services are usually time-sensitive. Customers are generally concerned with waiting for service, the timing of key touch points, and the overall elapsed time in the service experience.

A requirement for close matching of capacity and demand :

Many service products are consumed quite close to the time at which they are produced. Because of this close coupling of production and consumption(e.g., restaurant meals, air travel), either capacity and demand must be closely matched, or excess capacity must be provided.



To be specific

Modular architecture usually in the form of a process:

Service processes are essentially modular— process steps map closely to features and functions of the service. With this type of modular architecture, services are easily modified, refined, and extended.

Repeated purchase and use cycles by customers :

Although some services may be experienced just once or infrequently (e.g., laser vision correction surgery), more typically a customer uses a service repeatedly (e.g., automobile rental, hotels, gyms). As a result, customer acquisition and relationship management are critical elements of the service.

At least some customization or adaptation to the needs of individuals :

Because of the customer involvement in services and the modular process flow of most services, the experience can often be readily customized to the needs of individual customers with more limited investment than is typically required to customize products.

Designing a service

The design and development processes for services and products are more alike than different

Few methods for concept generation

- Storyboard describing events in sequence
- Distinctive attributes of services opposed to products
 - a. The role of time
 - b. Customer interactivity
 - c. Modularity of the process
 - d. Close matching of capacity and demand

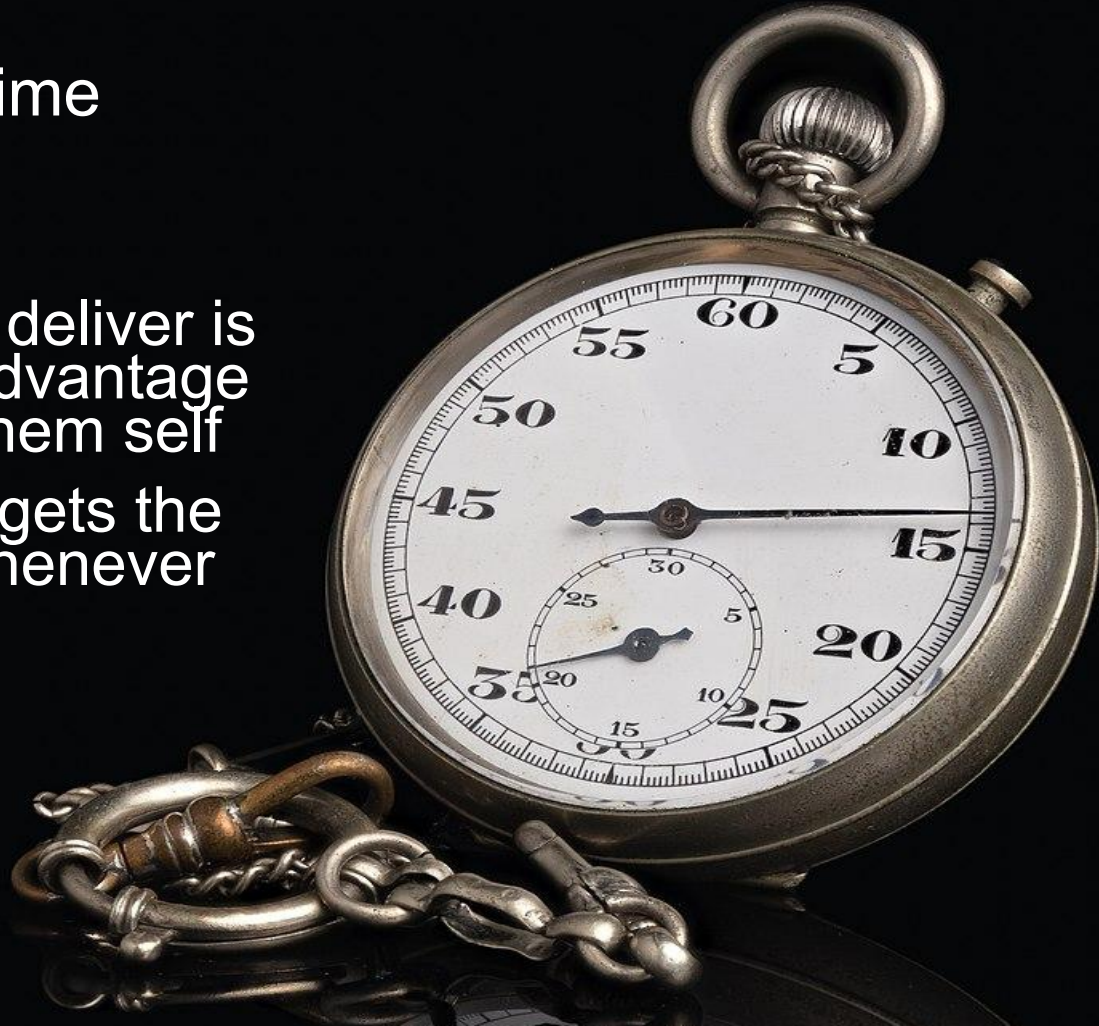




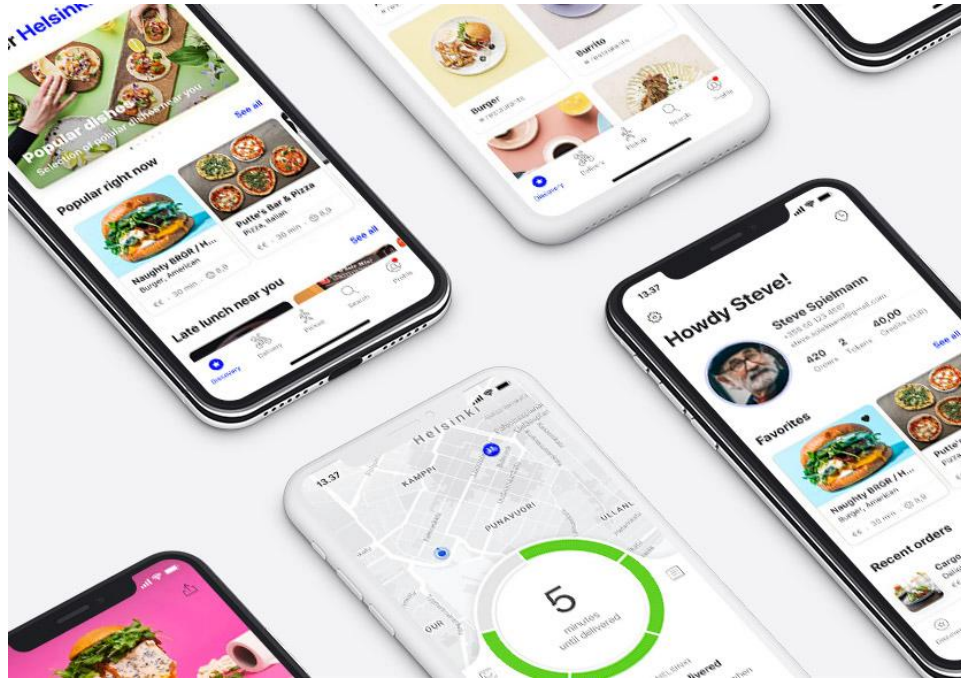
Distinctive attributes of Wolt's service

The role of time

- Wolts time to deliver is their market advantage according to them self
- So customer gets the service fast whenever they want it



Customer interactivity



- With Wolt users can browse different types of foods and restaurants
- Users can also see where their delivery is going on a map when they have made a purchase

Modularity of process

- Wolt was able to branch out from delivering restaurant food only to deliver all kinds of products from dog toys to electronics picking up big brands

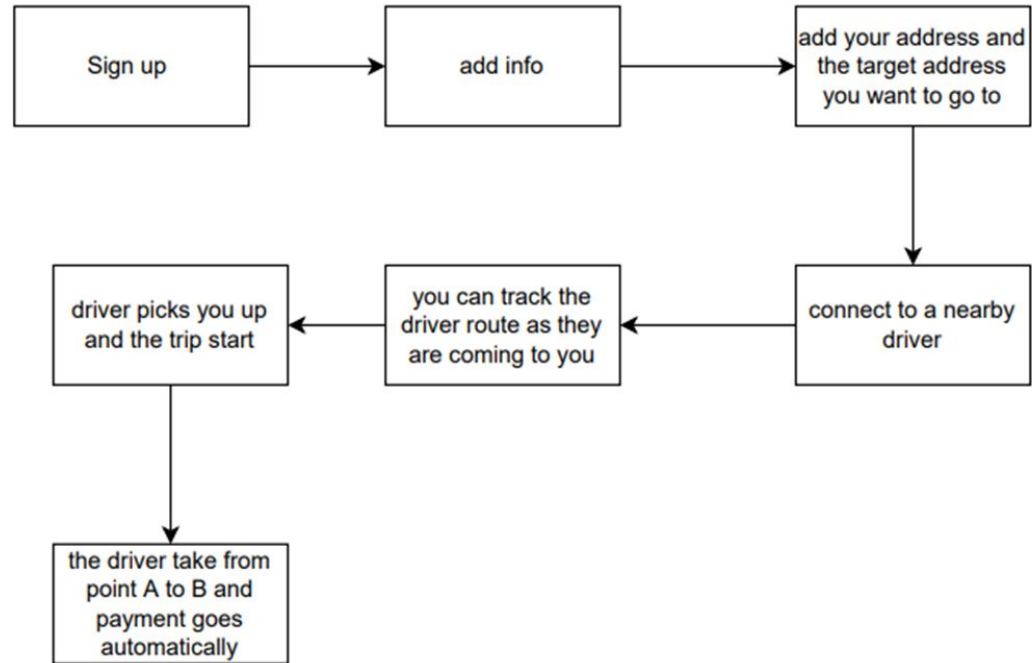


Close matching of capacity and demand

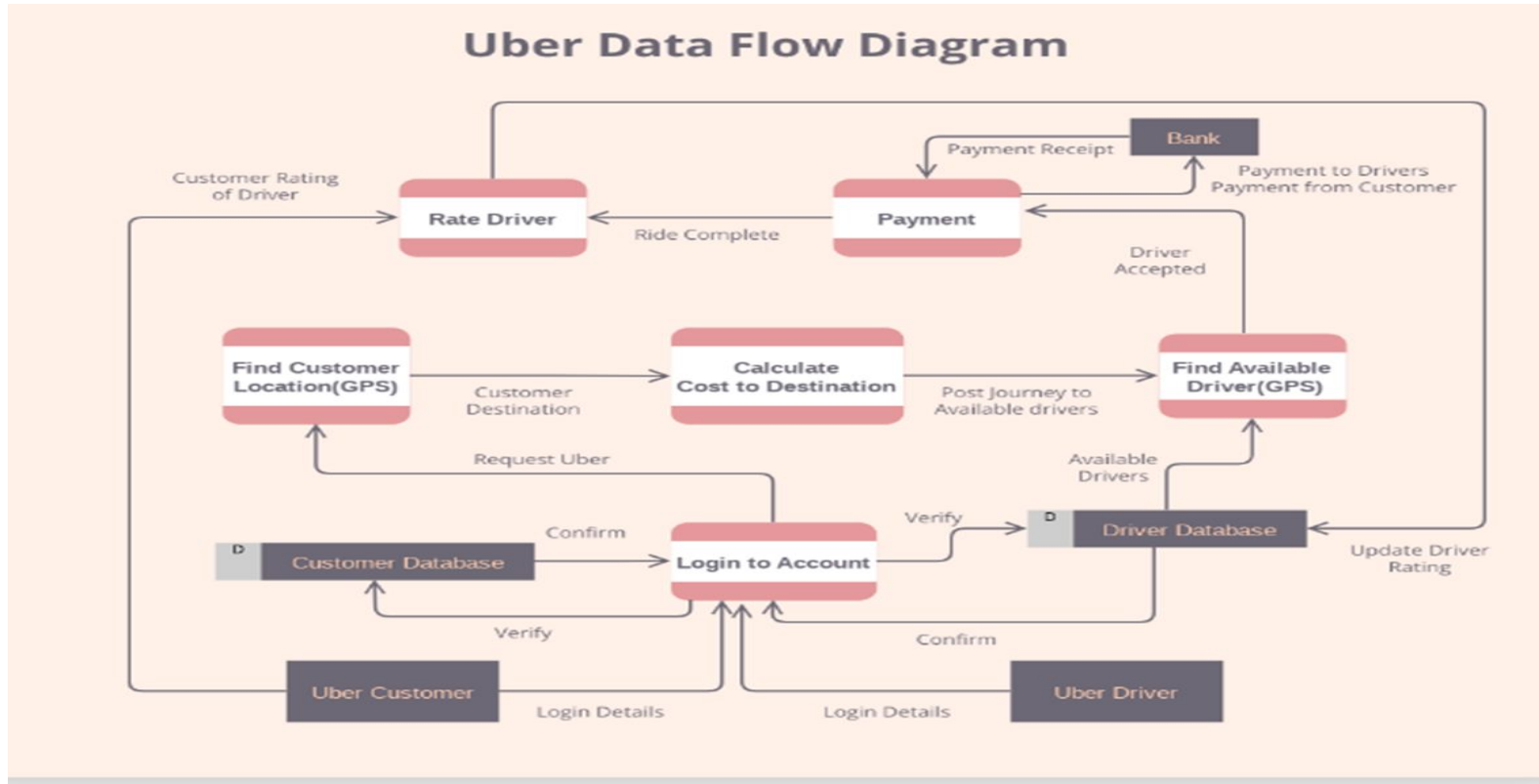
- One of the key components of Wolt's financial success was that the deliveries were made by other kinds of users of the sister application that gives out small delivery jobs as users of Wolt make purchases
- This way Wolt avoids hiring a lot of staff and the matching of capacity and demand depends almost purely on demand as no employees means no wasted capacity on slow days or hours



Uber: Case Study

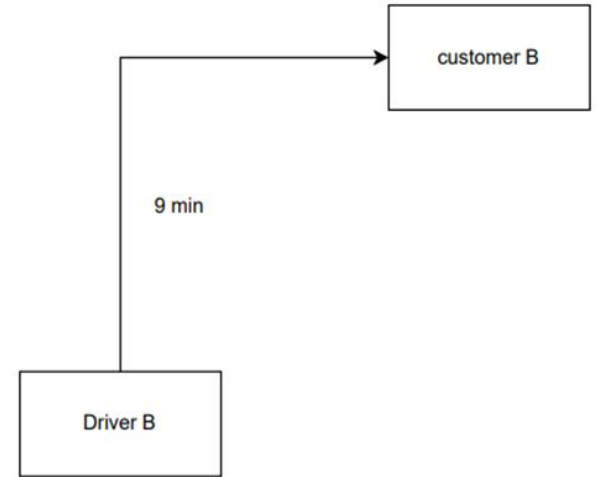
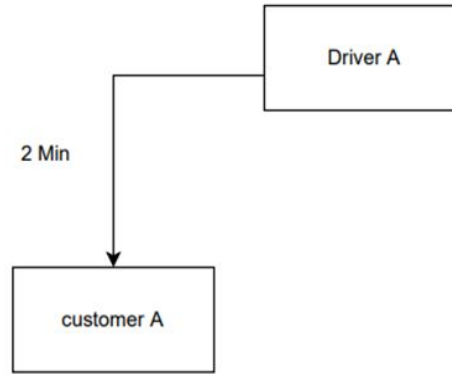


Uber: Case Study



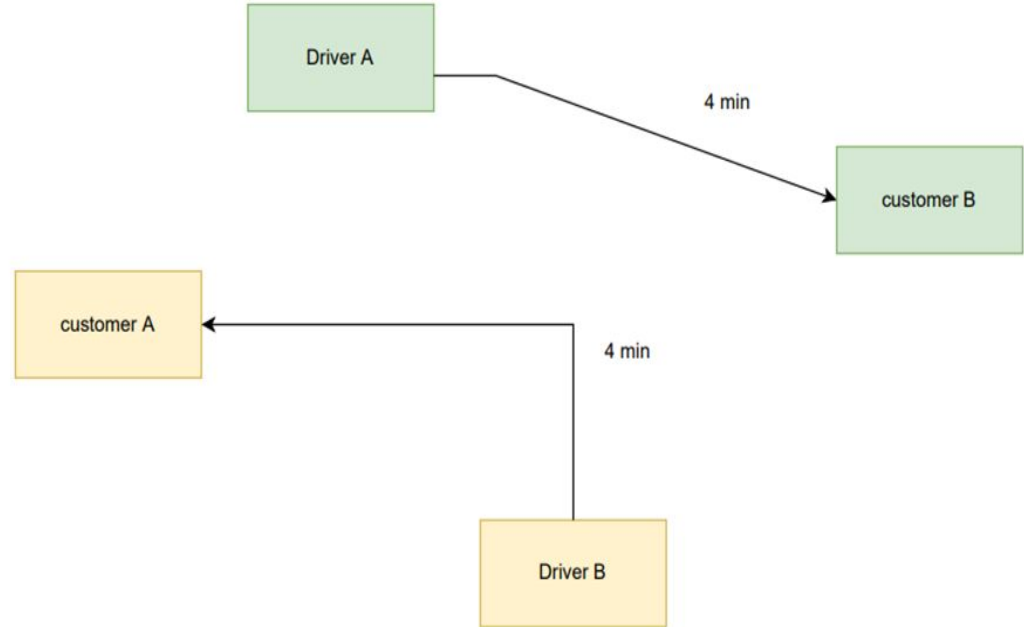
Uber: Case Study

- Timing is an important factor in customer service.
- Uber would connect you to the nearest driver.



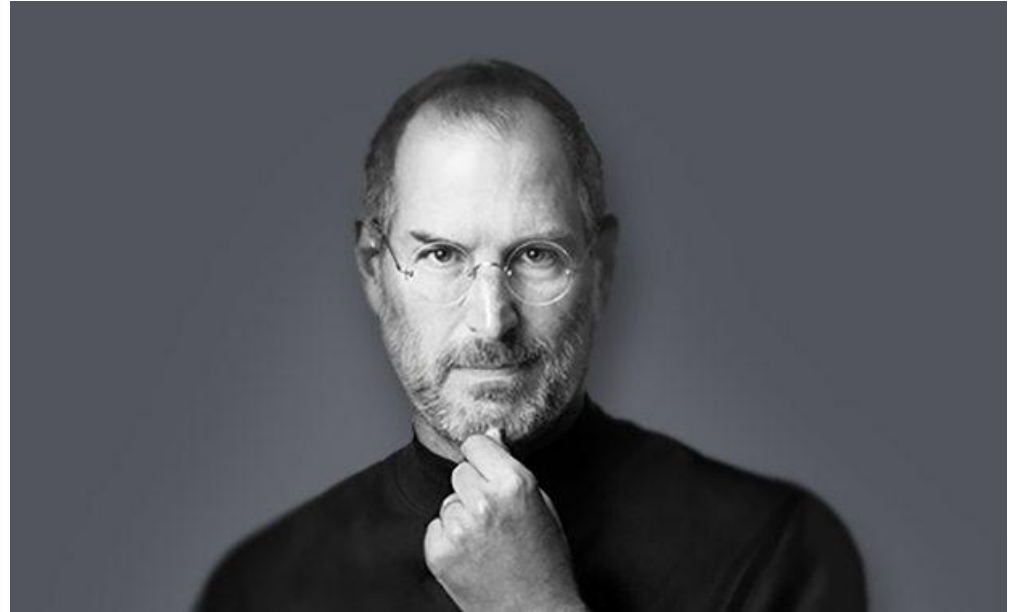
Uber: Case Study

- Uber created a service called batch matching
- This will save time for customers.



“Design is not just what it looks like and feels like. Design is how it works.”

Steve Jobs



Thank you!

Any questions?



Aalto University
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