

# Lecture07: User Experience and User Interface (UX/UI)

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EGCI340: SOFTWARE DESIGN

# UX Design

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- UX Design: a field where we understand the “User”
- UX
  - How a person or a user feels and experiences a product.
    - A product can be software, webpage, poster, or packet of chips.
  - Understanding of how people’s needs are met by the business
  - Whether they are being met in a way that makes users feel satisfied.

“People ignore design  
that ignores people.”

Frank Chimero  
Designer

# UX Foundation

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- **Useful:** Software product can fulfill the needs of users
- **Usable:** Software product is not only easy to use but also enjoyable to use
- **Desirable:** Create all visual components and combine them together that can make the software product desirable
- **Learnable:** Software product is simple and navigable. User can learn while user is using the product.
- **Memorable:** Software product should be memorable. User can come back to use the software right away.
- **Accessible:** Software product can be accessible to those who have disabilities
- **Credible:** Software product can be trusted and believe that the information provided from this software is true.

# Laws of UX

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*To ideally design and improve the user experience, designers must take into account the laws of UX*

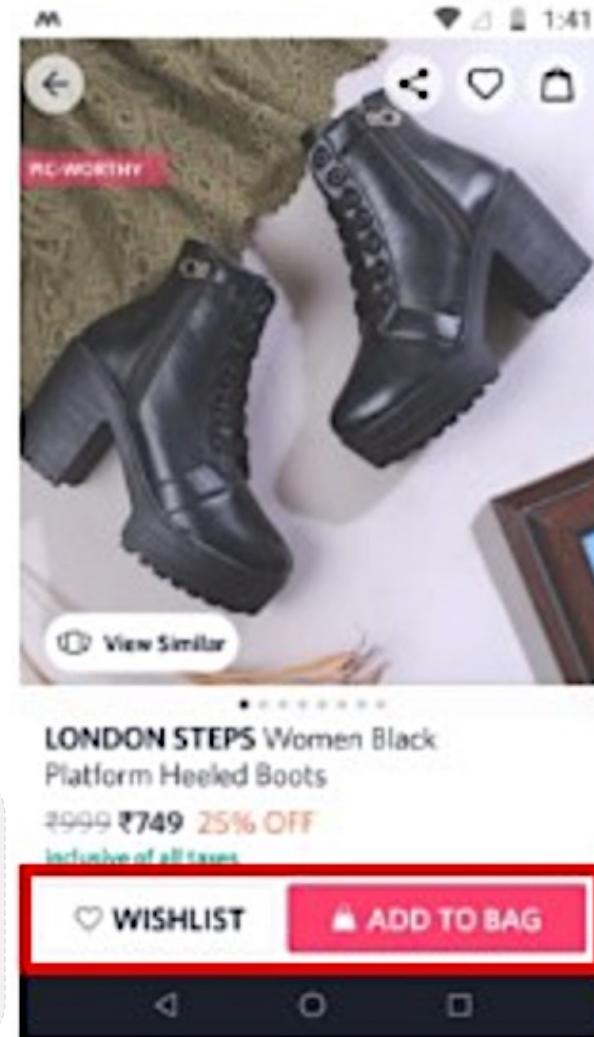
- Fitts's Law
- Hick's Law
- Jakob's Law
- Law of Proximity
- Zeigarnik Effect

# Fitts's Law

*“The time required to rapidly move to a target area is the ratio between the distance to the target and the width of the target”*

This law directly affects the user experience when designing buttons.

- Larger buttons help reaching the target easily especially on mobile screens
- Smaller buttons is more difficult to interact.



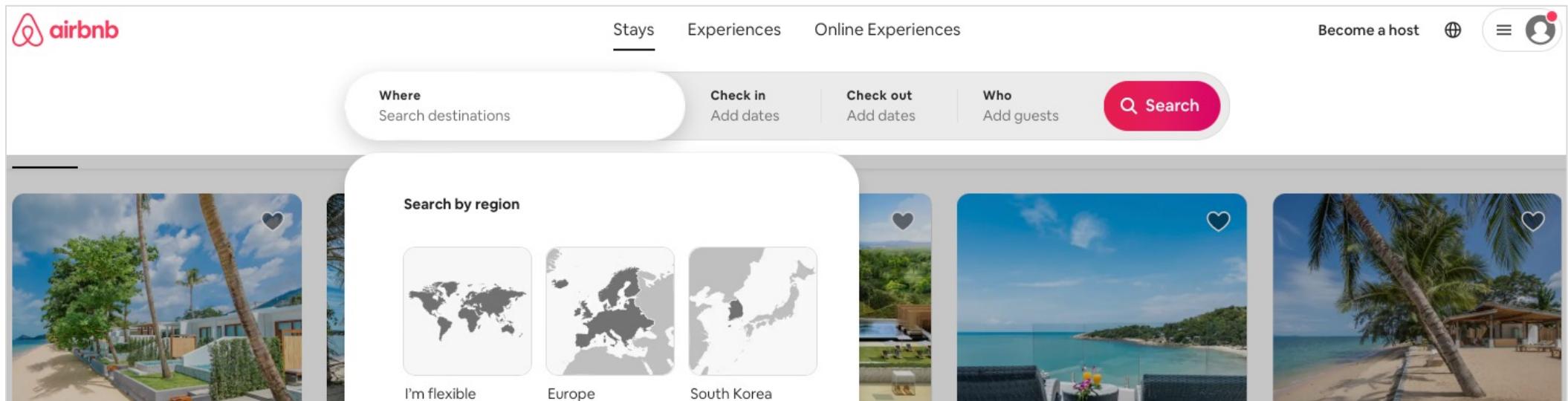
For example, “Add to Bag” and “Wishlist” buttons are easily visible to the user. This will help user to reach the target area easily and without any confusion.

# Hick's Law

*"The time to take decision increases with the complexity of choice"*

When there is variety of choices given to a user, the time to take a decision get extended.

- To make experience better, minimize choices to enhance response time to arrive at a decision

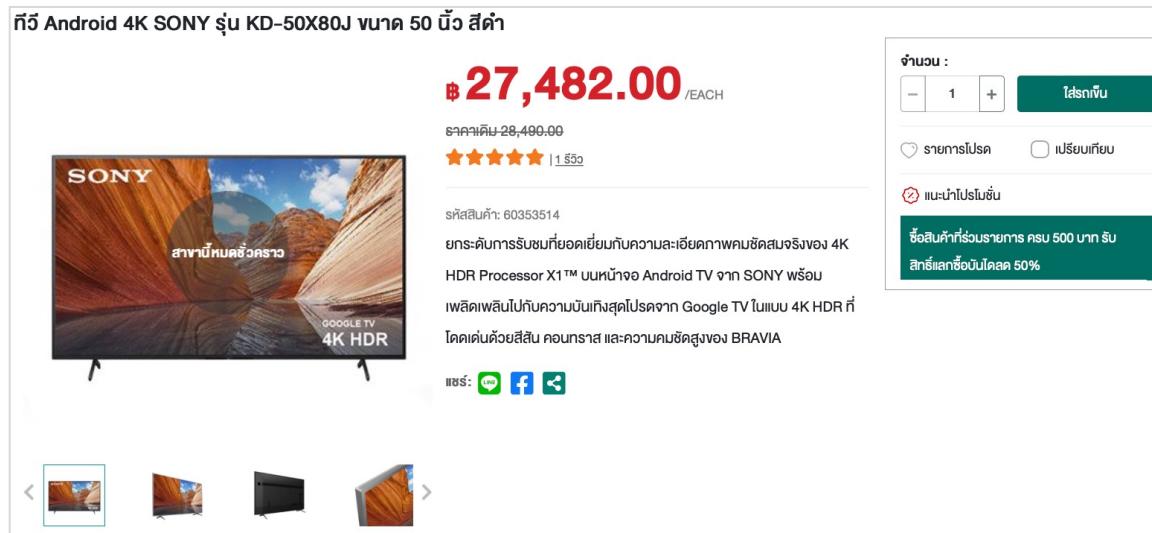


For example, Airbnb's website gives minimal options (like select dates, location and number of people travelling) to the user. This helps the user to quickly take the action and reach desired page.

# Jakob's Law

*“Best for something new, is to refer the existing. So the user don’t have to think what to do”*

The best way to create something new is to look for references so that the first clients understand what it is about and would able to make associations.



For example, these 2 websites have a similar e-commerce product detail page just like any other e-commerce online store(Shopee, Lazada, etc). This gives the user, reference of what to do, how to do and what will happen next(reducing the cognitive load to THINK!)

# Law of Proximity

*“Elements nearer to each other, are understood to be member of same group/or together”*

The Law holds that:

1. if you are handling a group of data, all the data that corresponds to the same group should be together and
2. if we start talking about **different data** there should be a **space (air)** between them. This will help user to differentiate between data/elements on the screen.

For example, Apple's website, there is a clear difference between product listing section and the specification section. Even though everything is on the same page but yet the sections are easily differentiable from each other.

**Which Mac is right for you?**

	Notebook	Desktop
<b>MacBook Air</b>	 M1 chip From \$999 <a href="#">Buy</a> <a href="#">Learn more &gt;</a>	 M2 chip From \$1199 <a href="#">Buy</a> <a href="#">Learn more &gt;</a>
<b>MacBook Pro 13"</b>	 From \$1299 <a href="#">Buy</a> <a href="#">Learn more &gt;</a>	 From \$1999 <a href="#">Buy</a> <a href="#">Learn more &gt;</a>
<b>MacBook Pro 14" and 16"</b>		

1. The two MacBook Air models are grouped together by a dashed blue circle, indicating they belong to the same product category. A blue circle with the number '1' is placed next to the first item.

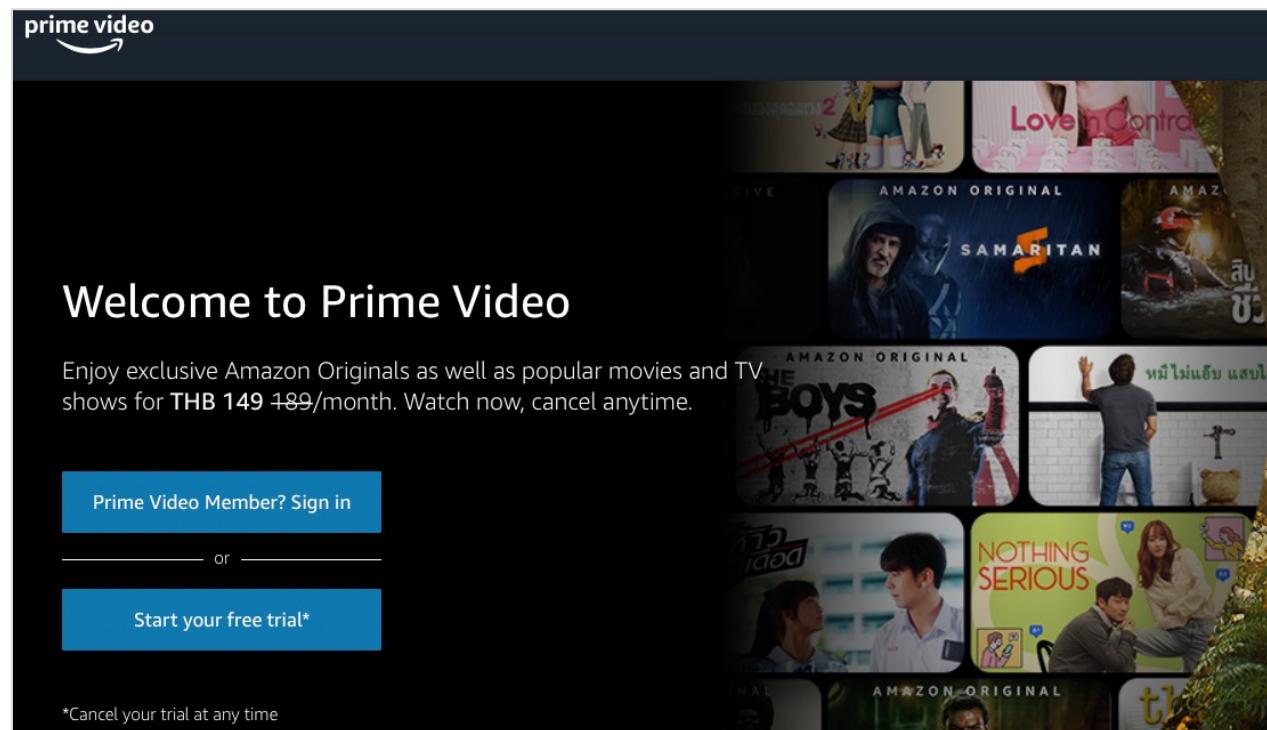
2. The two MacBook Pro models (13" and 14/16") are grouped together by a dashed blue circle, indicating they belong to the same product category. A blue circle with the number '2' is placed next to the second item.

# Zeigarnik Effect

*“People generally remember uncompleted or interrupted tasks better than the completed ones”*

This concept applies to UX when we talk about new features (services) offered to the user and tell the user that if he/she wants to continue he/she must do XYZ action (pay, register, buy, etc ...). Such as Netflix or Amazon prime services subscription.

For example, Amazon Prime Video provides monthly and yearly based subscription. For the user to have an un-interrupted service, he/she has to complete the basic registration and fill in the payment details. If they do not complete the task they get reminders on the home screen to complete steps.



# User-Centric Design

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User-centric design is when the user is given the highest priority while designing a product.

## User-centric design framework

- Help designers understand and improve the experience  
This framework is divided into 2 parts:
  - Research
  - Design

# User-Centric Design Framework

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## Research

- **Discover:**
  - Discover our user's challenges?
  - What are the pain points?
- **Define:** (after understanding the challenges and pain points)
  - Communicate with the team
  - How we improve them

## Design

- **Develop:**
  - Where the teams collaborate and develop a working prototype for users to get feedback
- **Deliver:** (after incorporating the changes found from user feedback)
  - Another iteration of the prototype is designed until a final version is created

# User-Centric Design Framework

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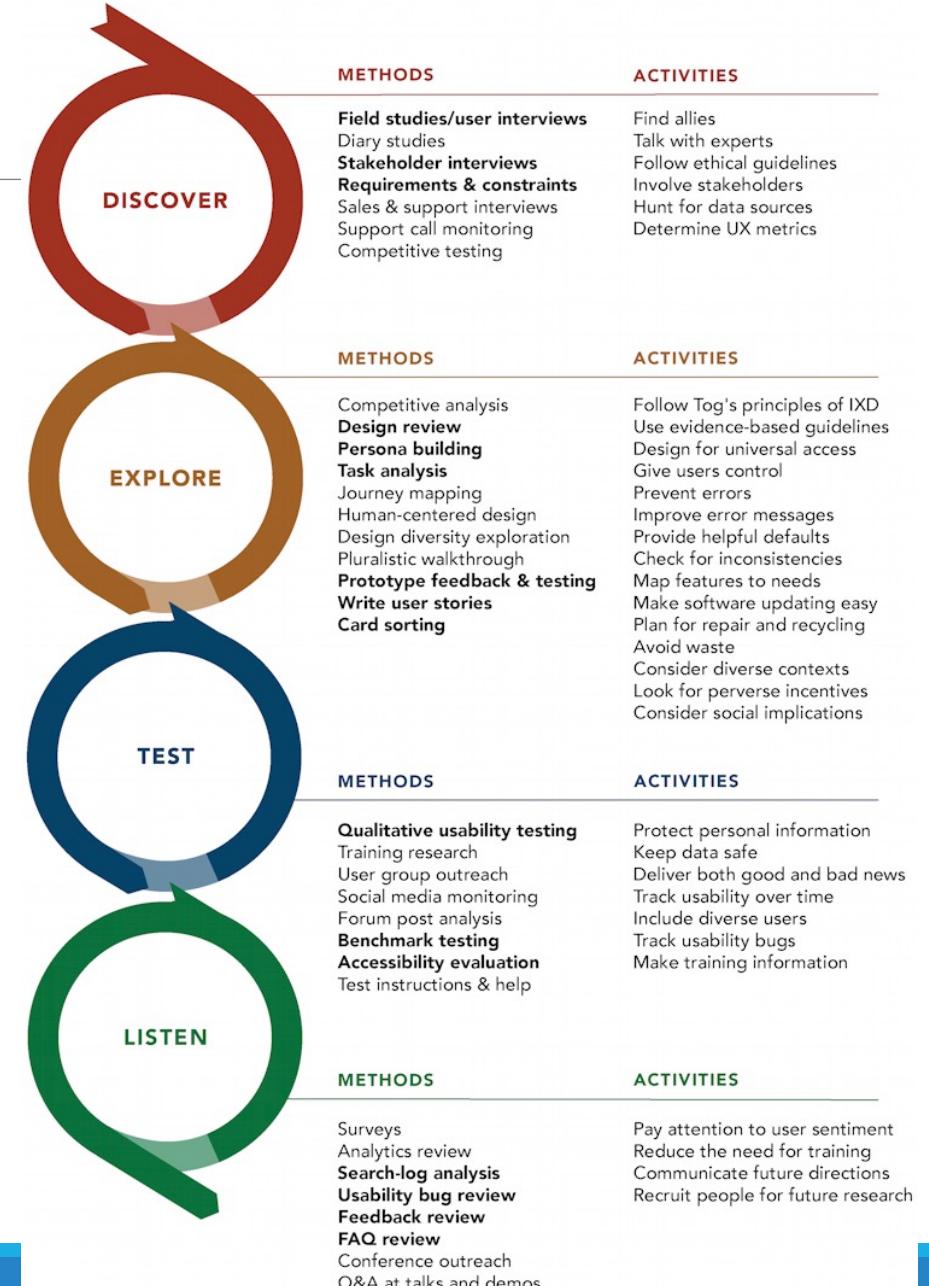
## Design

- **Develop:**
  - Where the teams collaborate and develop a working prototype for users to get feedback
- **Deliver:** (after incorporating the changes found from user feedback)
  - Another iteration of the prototype is designed until a final version is created

## Top UX Research Methods

<b>Discover</b>	<ul style="list-style-type: none"> <li>• Field study</li> <li>• Diary study</li> <li>• User interview</li> <li>• Stakeholder interview</li> <li>• Requirements &amp; constraints gathering</li> </ul>
<b>Explore</b>	<ul style="list-style-type: none"> <li>• Competitive analysis</li> <li>• Design review</li> <li>• Persona building</li> <li>• Task analysis</li> <li>• Journey mapping</li> <li>• Prototype feedback &amp; testing (clickable or paper prototypes)</li> <li>• Write user stories</li> <li>• Card sorting</li> </ul>
<b>Test</b>	<ul style="list-style-type: none"> <li>• Qualitative usability testing (in-person or remote)</li> <li>• Benchmark testing</li> <li>• Accessibility evaluation</li> </ul>
<b>Listen</b>	<ul style="list-style-type: none"> <li>• Survey</li> <li>• Analytics review</li> <li>• Search-log analysis</li> <li>• Usability-bug review</li> <li>• Frequently-asked-questions (FAQ) review</li> </ul>

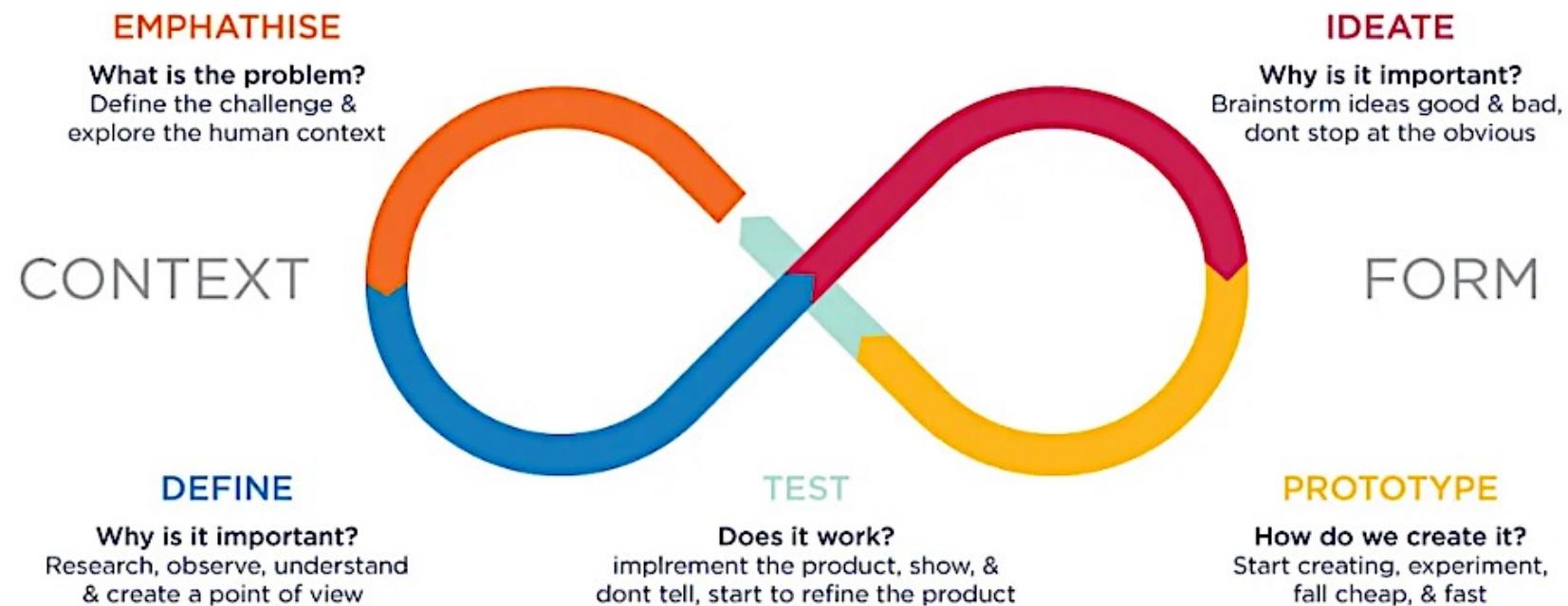
## UX ACTIVITIES IN THE PRODUCT & SERVICE DESIGN CYCLE



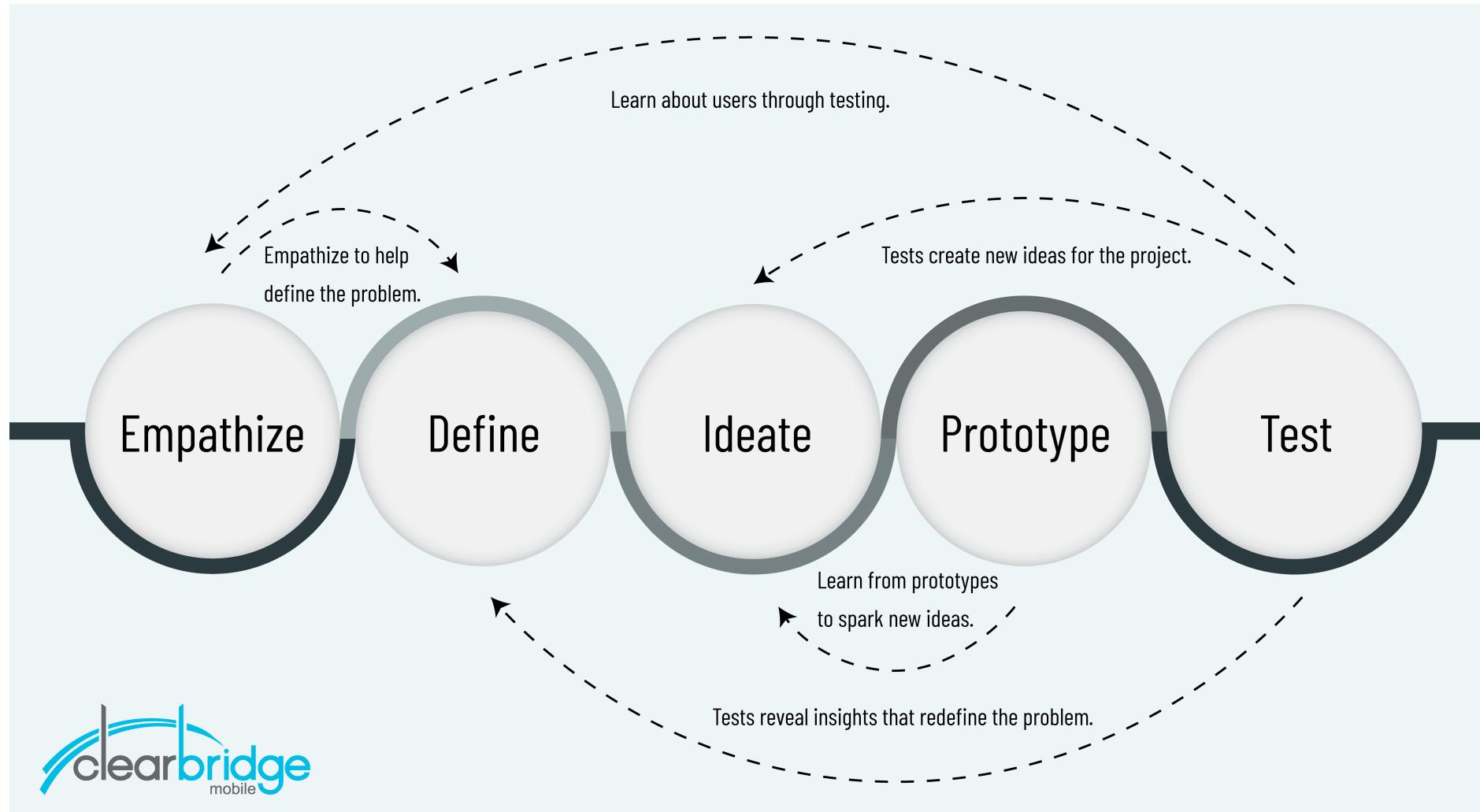
# Design Thinking: Design Process

## DESIGN THINKING

### A FRAMEWORK FOR INNOVATION



# UX Design Process



# Empathy Mapping

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## What is the need of empathy mapping?

- Helps understand the end user in a better way
- Provides insights about the user and helps identify what more is needed to be researched
- Empathy-mapping process helps distill and categorize your knowledge of the user into one place.

*Using empathy maps, you can effectively create user personas and user journey maps*





MAPPING THE USERS' THOUGHTS,  
NEEDS, MOTIVATIONS, FEELINGS  
ATTITUDES, BELIEFS, ISSUES



- GREAT TEAM EXERCISE
- VISUALIZE USERS' NEEDS
- GOOD STARTING POINT
- QUICK & COST-EFFICIENT



THERE ARE  
DIFFERENT  
TEMPLATES

OTHER ASPECTS / WORDING  
FOR EXAMPLE:

- TASKS
- INFLUENCES
- QUOTES
- GOALS



- PREREQUISITES:
- UX RESEARCH DATA
  - PERSONAS



DON'T FORGET TO  
DOCUMENT THE SESSION!

©KRISTINA SZEROVAY  
WWW.SKETCHINGFORUX.COM

# EMPATHY MAP

UX Knowledge Base Sketch #12



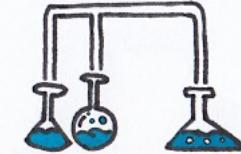
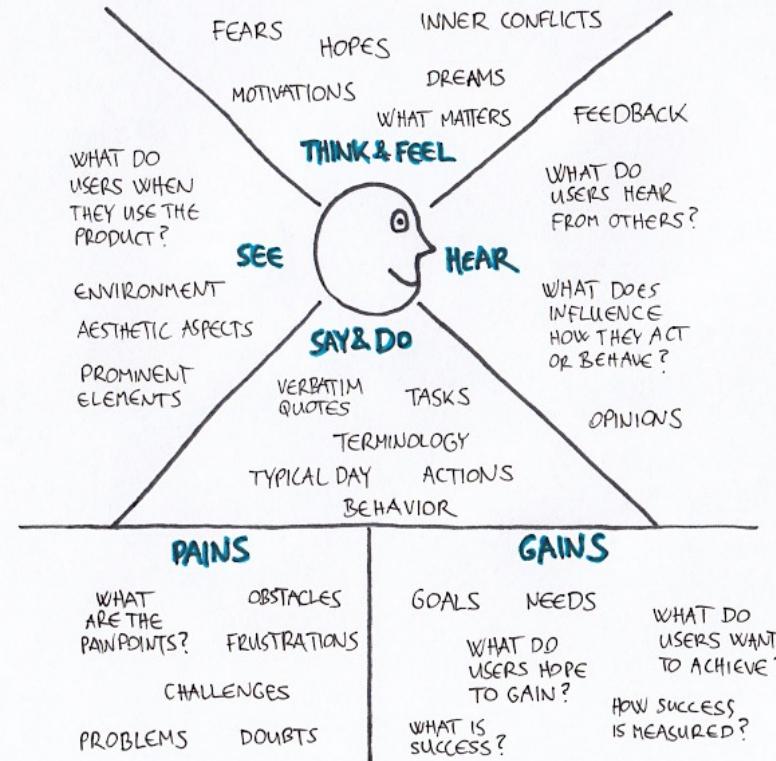
CREATE A MAP FOR  
EACH PERSONA  
(/CUSTOMER SEGMENT)



AFTER  
COLLECTING  
RESEARCH DATA



BEFORE DEFINING  
THE PRODUCT REQUIREMENTS



WAY TO SYNTHESIZE  
RESEARCH DATA TO BETTER  
UNDERSTAND THE USERS



PARTICIPANTS  
OF THE MAPPING  
↳ SCORE TEAM MEMBERS  
↳ OPTIONAL: STAKEHOLDERS



TOOLS FOR THE  
MAPPING SESSION

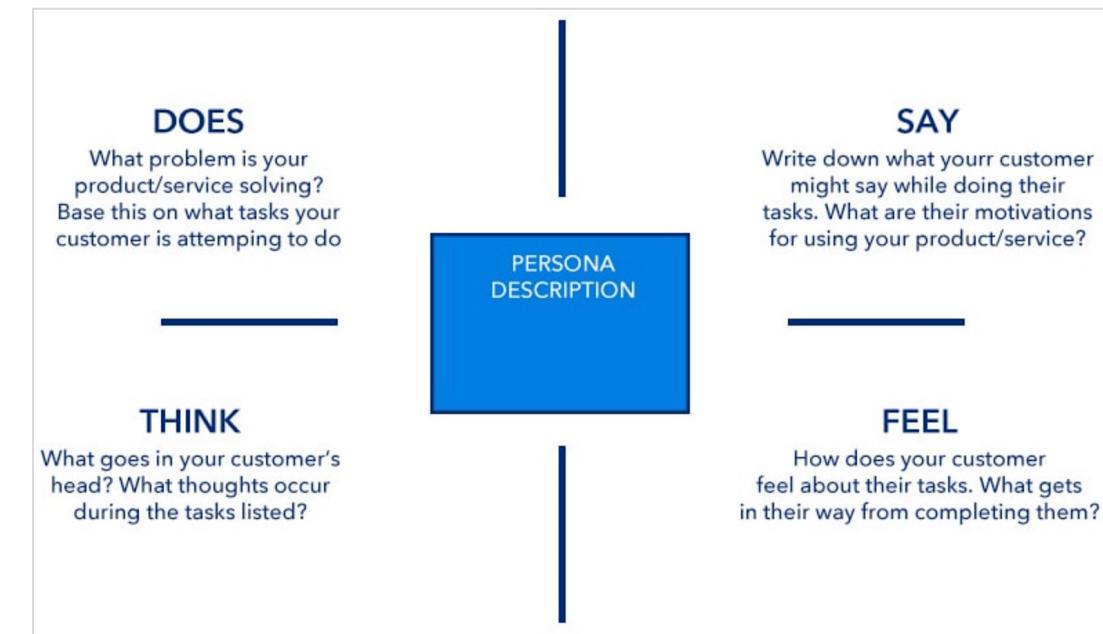
- ↳ WHITEBOARD OR PRINTED OUT MAPS
- ↳ STICKY NOTES & PENS / MARKERS



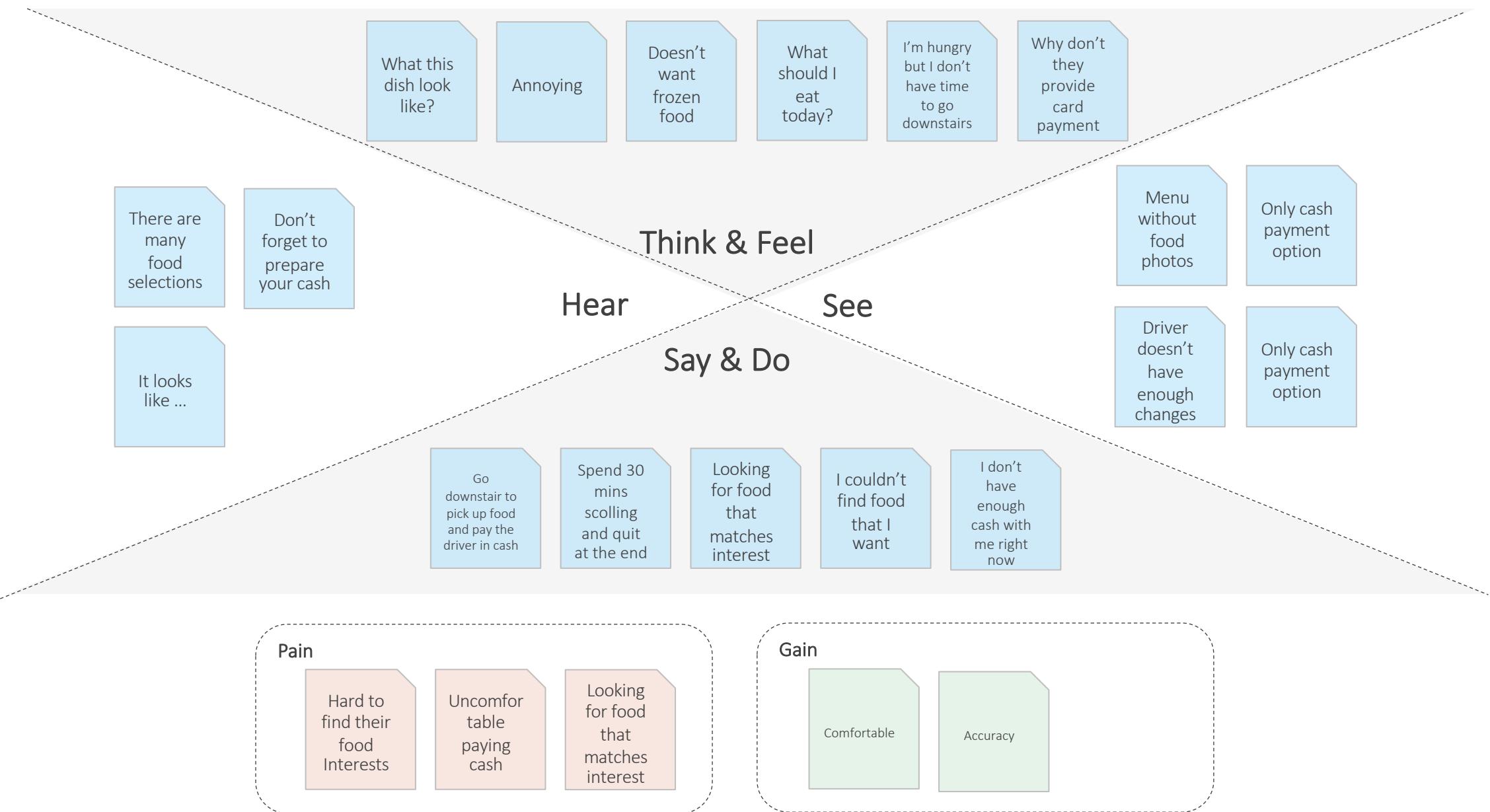
PREPARE THE DATA  
YOU'VE COLLECTED  
FROM THE RESEARCH  
(E.G. USER INTERVIEWS  
CONTEXTUAL INQUIRY  
ONLINE SURVEY  
TESTIMONIALS &  
OTHER FEEDBACK)

# Empathy Mapping (cont.)

- **Says:** What the user says out loud in an interview or some other usability study. Something which you hear from the user.
- **Thinks:** What the user is thinking throughout the experience.
- **Does:** What are the actions does the user take.
- **Feels:** What is the user's emotional state throughout the experience



# Empathy Map: Food Delivery App



# User Journey

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## User journey

- An experience a person has when interacting with something, typically software
- This idea is generally used by those involved with user experience design, web design, user-centric design, or anyone else focusing on how users interact with software experiences.  
*(Source: Wikipedia)*

## User journey map

- A visual representation of your customer's experiences with your brand.
- It includes every touchpoint they run into, along with their goals and emotions as they progress along with their journey.

# User Journey (cont.)

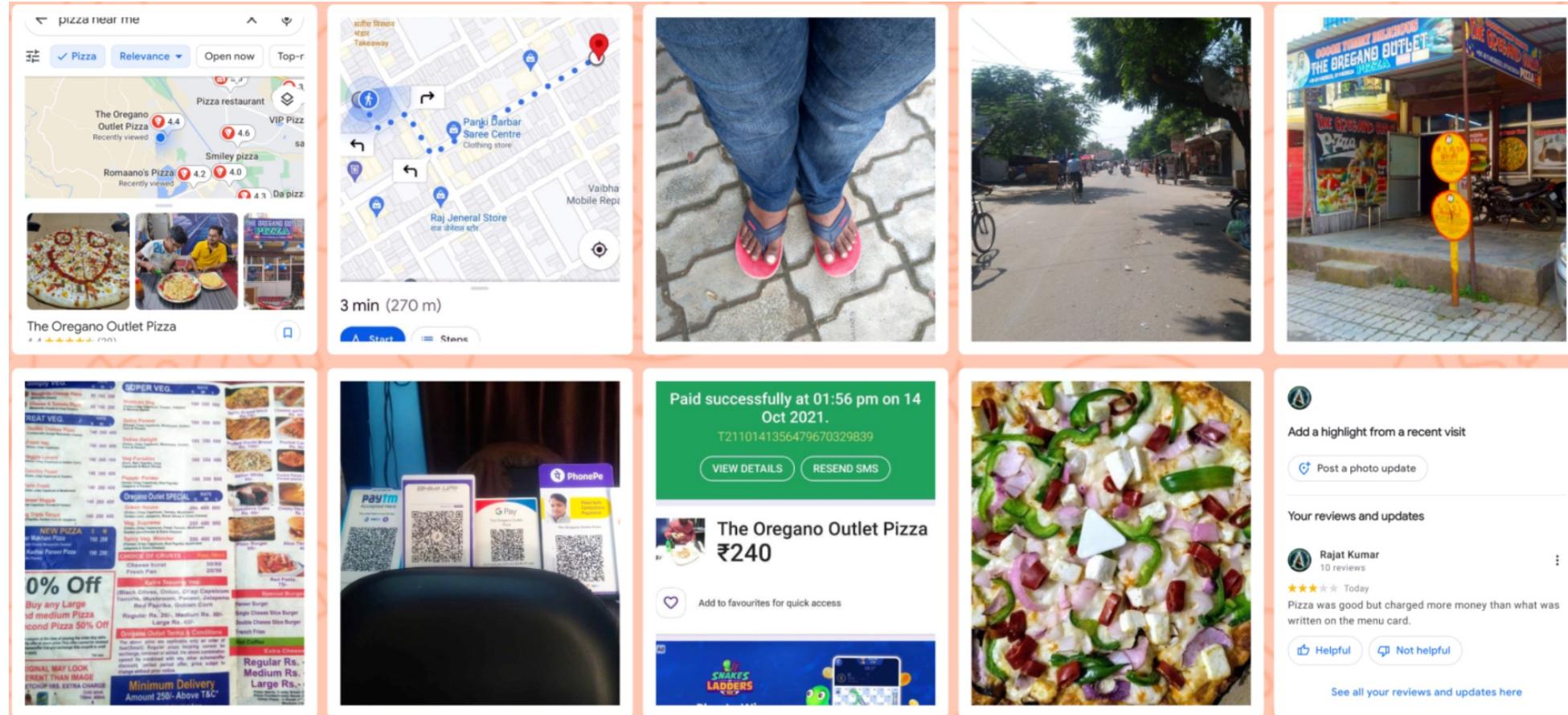
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## Common terms used in user journey map

- **Persona:** the user in the story
- **Goals:** the task that the user needs to accomplish
- **Expectations:** what the user expects from the product or services
- **Journey Phases:** the user goes through to complete the task
- **Actions/Steps:** all the steps that the user takes
- **Touchpoints:** through which interaction is been done
- **Emotions:** what the user feels in the entire journey
- **Experience:** the experience of the user while going through different phases of the journey
- **Ideas/Suggestions:** where the user thinks, that there is a chance of improvement.

# Case study: My journey to the nearest pizza outlet

## My Journey to the nearest pizza store



# Case study: My journey to the nearest pizza outlet

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## Goal:

- I have not eaten pizza for a long time
- I search the nearest pizza store
- I heard very good feedback about this pizza store so today I thought of eating pizza from this shop

## Expectation:

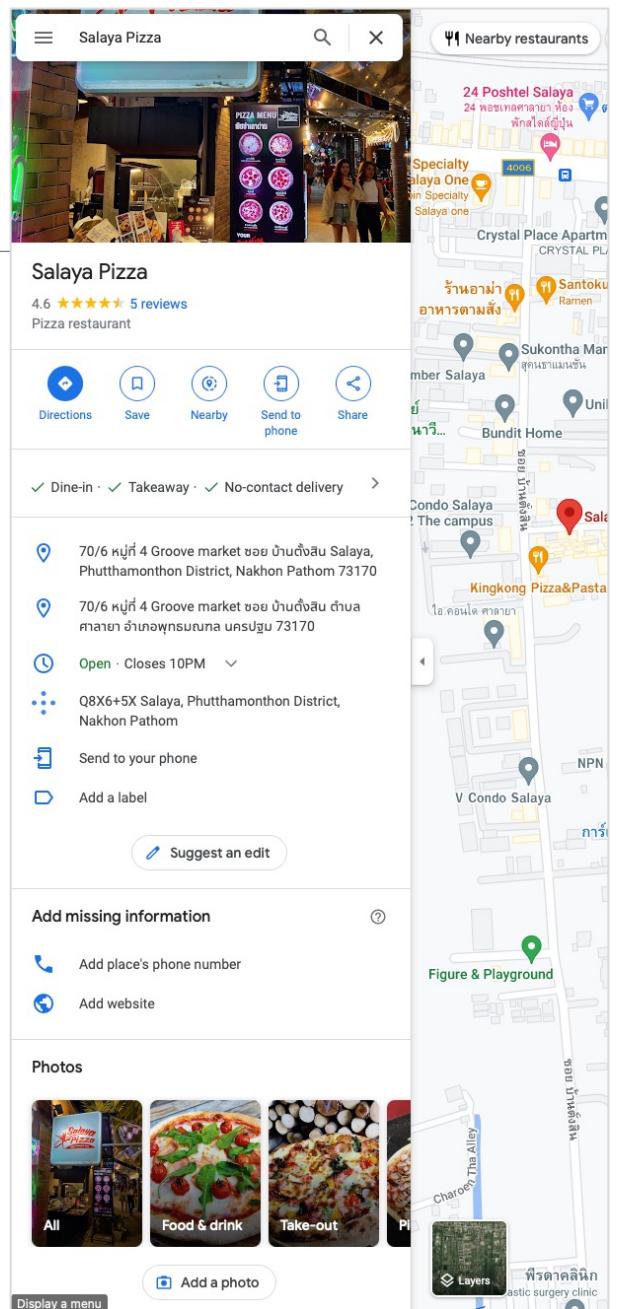
- Getting specific kinds of pizza
- Good taste
- Getting them as quickly as possible

# Case study: My journey to the nearest pizza store

Journey Phases	Discovery	Commute to pizza store	Order pizza	Receive pizza	Payment	Feedback
Steps	<ul style="list-style-type: none"> <li>▪ Searching of different pizza store near my home on Google map</li> <li>▪ I found there are no major pizza brands available in my area</li> <li>▪ Then I saw a local pizza store which had a good rating so I decide of buying pizza from here</li> </ul>	<ul style="list-style-type: none"> <li>▪ Since the pizza store is so close to my house, I decided to walk</li> </ul>	<ul style="list-style-type: none"> <li>▪ After reaching the store, I saw the menu</li> <li>▪ I ordered 2 pizzas from the menu</li> </ul>	<ul style="list-style-type: none"> <li>▪ Store's owner packed me two pizza</li> </ul>	<ul style="list-style-type: none"> <li>▪ I paid the store through digital money</li> </ul>	<ul style="list-style-type: none"> <li>▪ None</li> </ul>
Touch Points	<ul style="list-style-type: none"> <li>▪ Smart phone</li> <li>▪ Google map</li> <li>▪ Rating &amp; Reviews</li> </ul>	<ul style="list-style-type: none"> <li>▪ Walking</li> <li>▪ Streets</li> </ul>	<ul style="list-style-type: none"> <li>▪ Menu card</li> <li>▪ Pictures</li> <li>▪ Prices &amp; Discounts</li> </ul>	<ul style="list-style-type: none"> <li>▪ Waiting for order</li> <li>▪ Packaging</li> <li>▪ Store's Owner</li> </ul>	<ul style="list-style-type: none"> <li>▪ Smart phone</li> <li>▪ Bank app</li> <li>▪ Internet</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rate store on app</li> <li>▪ Rate store on Google map</li> </ul>
Experience	<ul style="list-style-type: none"> <li>▪ Looking forward to try pizza from the new store</li> </ul>	<ul style="list-style-type: none"> <li>▪ Feels happy to walk</li> </ul>	<ul style="list-style-type: none"> <li>▪ The prices of everything are written on the menu card very low while in reality, they charge much more than that</li> </ul>	<ul style="list-style-type: none"> <li>▪ Very eager to have pizza</li> <li>▪ Had to wait a long time to get pizza</li> </ul>	<ul style="list-style-type: none"> <li>▪ There were a lot of payment option at this store, I pain through Bank app</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pizza was very hot and it smelled good</li> </ul>
Emotion						
Suggestion	<ul style="list-style-type: none"> <li>▪ None</li> </ul>	<ul style="list-style-type: none"> <li>▪ None</li> </ul>	<ul style="list-style-type: none"> <li>▪ The owner of the store should retain the menu card of the new price</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pizza making time can be reduce</li> </ul>	<ul style="list-style-type: none"> <li>▪ None</li> </ul>	<ul style="list-style-type: none"> <li>▪ None</li> </ul>

# Ex. Discovery

Journey Phases	Discovery
Steps	<ul style="list-style-type: none"> <li>■ Searching of different pizza store near my home on Google map</li> <li>■ I found there are no major pizza brands available in my area</li> <li>■ Then I saw a local pizza store which had a good rating so I decide of buying pizza from here</li> </ul>
Touch Points	<ul style="list-style-type: none"> <li>■ Smart phone</li> <li>■ Google map</li> <li>■ Rating &amp; Reviews</li> </ul>
Experience	<ul style="list-style-type: none"> <li>■ Looking forward to try pizza from the new store</li> </ul>
Emotion	
Suggestion	<ul style="list-style-type: none"> <li>■ None</li> </ul>



# Practice: Order a coffee by food delivery platform

Journey Phases	Search on menu	Select items	Confirmed Order	Payment	Delivery	Feedback
Steps	■ XXX	■ XXX	■ XXX	■ XXX	■ XXX	■ XXX
Touch Points	■ XXX	■ XXX	■ XXX	■ XXX	■ XXX	■ XXX
Experience	■ XXX	■ XXX	■ XXX	■ XXX	■ XXX	■ XXX
Emotion						
Suggestion	■ XXX	■ XXX	■ XXX	■ XXX	■ XXX	■ XXX

# User Flow

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- The series of actions or steps a user takes to achieve a goal.
- It shows the path that a user takes through the product as they complete a specific task.

## User flow consists of 3 main components

- Users
- User goal, expectation and needs
- Steps taken to achieve a goal

# User Flow (Cont.)

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- Helps to communicate your design to the Engineers, Stakeholders, Manager and Product Owners from a user's perspective
- Depicts the screen flow which a user will go through while interacting through a product

## Need of user flows

- Improve our awareness about the user
- Helps focusing on the user's task
- Support in-depth user research
- Enhances cross team communication

# User Flow (Cont.)

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User flow can be a combination of:

- **Task Flow:** is a diagram that represents a user's journey through a specific task.
- **Wireframes (Lo-Fi):** is a schematic blueprint, useful to help team to think and communicate about the basic layout or structure of the product.
- **Screen Flow (Hi-Fi):** helps analyze user's interactions, focusing mainly on your product screens.

# User Flow (Cont.)

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Step to create user flow:

- **Gather prior information about the user:**
  - UX/UI designer need to figure out three user flow components of information before UX/UI designer start drawing out the flows
  - User, User Goals and, Steps need to be taken.
- **Give the flow a title:**
  - UX/UI designer should start by giving the flow a name that describes its purpose: the goal of your user.
- **Keep the flow unidirectional:**
  - Keeping the flow unidirectional, as user flows work as a story teller to the reader.
  - To clarify that story, UX/UI designer needs to keep things focused and clear, and only go in one direction.
  - Try to keep it simple.

# User Flow (Cont.)

---

## Step to create user flow:

- Show each step:
  - Step about the flow.
  - This will describe how it would work once developed and ready for user.
- Include explanation:
  - Add a short description for each step.
  - Explain what's happening, and if necessary include the whys behind what the user needs to do. This will help developers to understand the flow better.
  - Be crisp to one sentence or phrase.
- Iterate and improve:
  - UX/UI designer can also try out multiple iteration(as needed) by the help of A/B Testing, determining the changes.

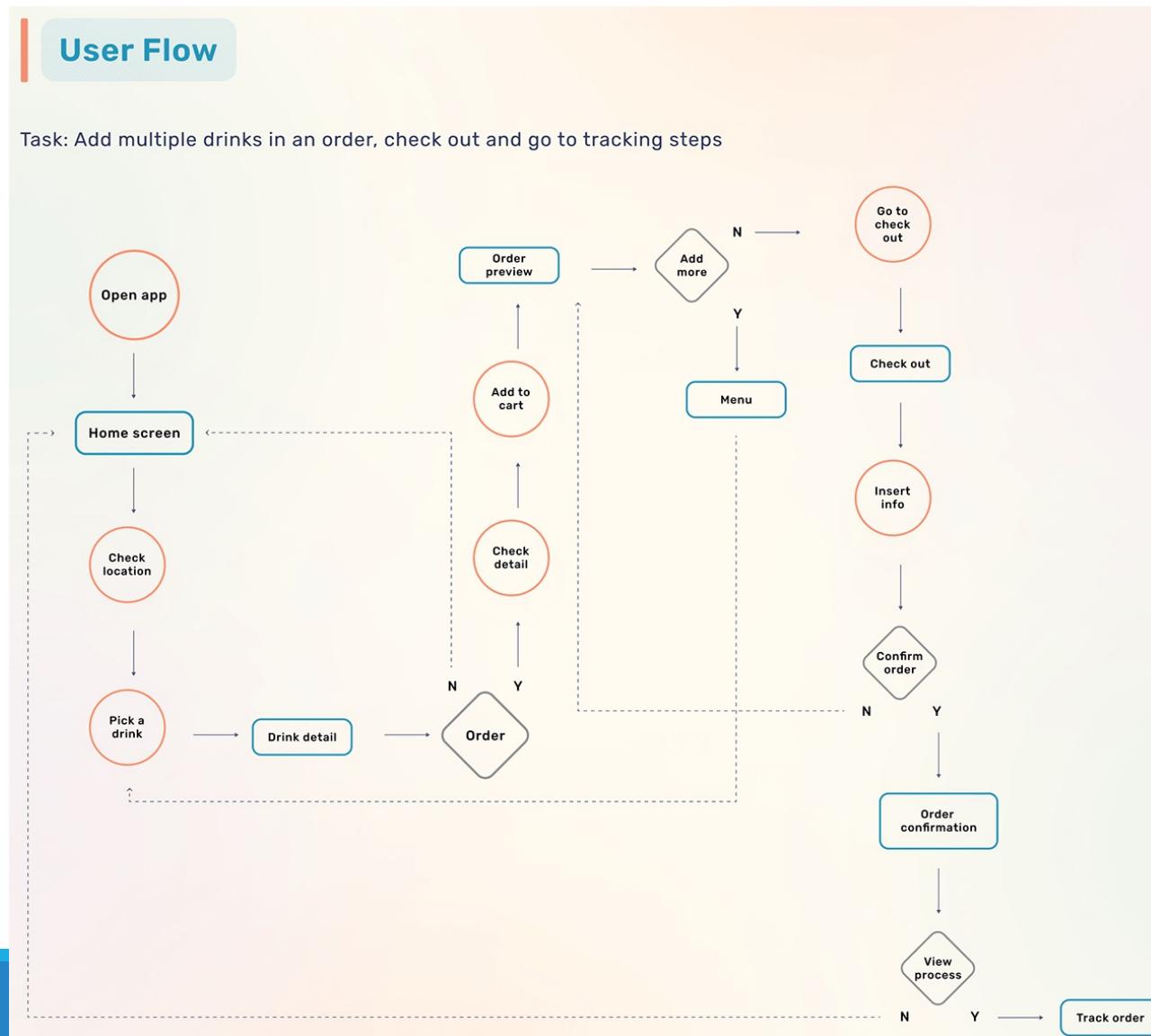
# User Flow (Cont.)

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Components to create User flow

- **Circle:** Use to represent action and start & end of a flow.
- **Rectangle:** Represents the screen(step) in a flow
- **Diamond:** Decisional step which a user takes to move ahead in the flow
- **Arrows:** Connect the screen and give interaction of the flow. These can be Solid(straight flow) or Dashed(alternative flow)

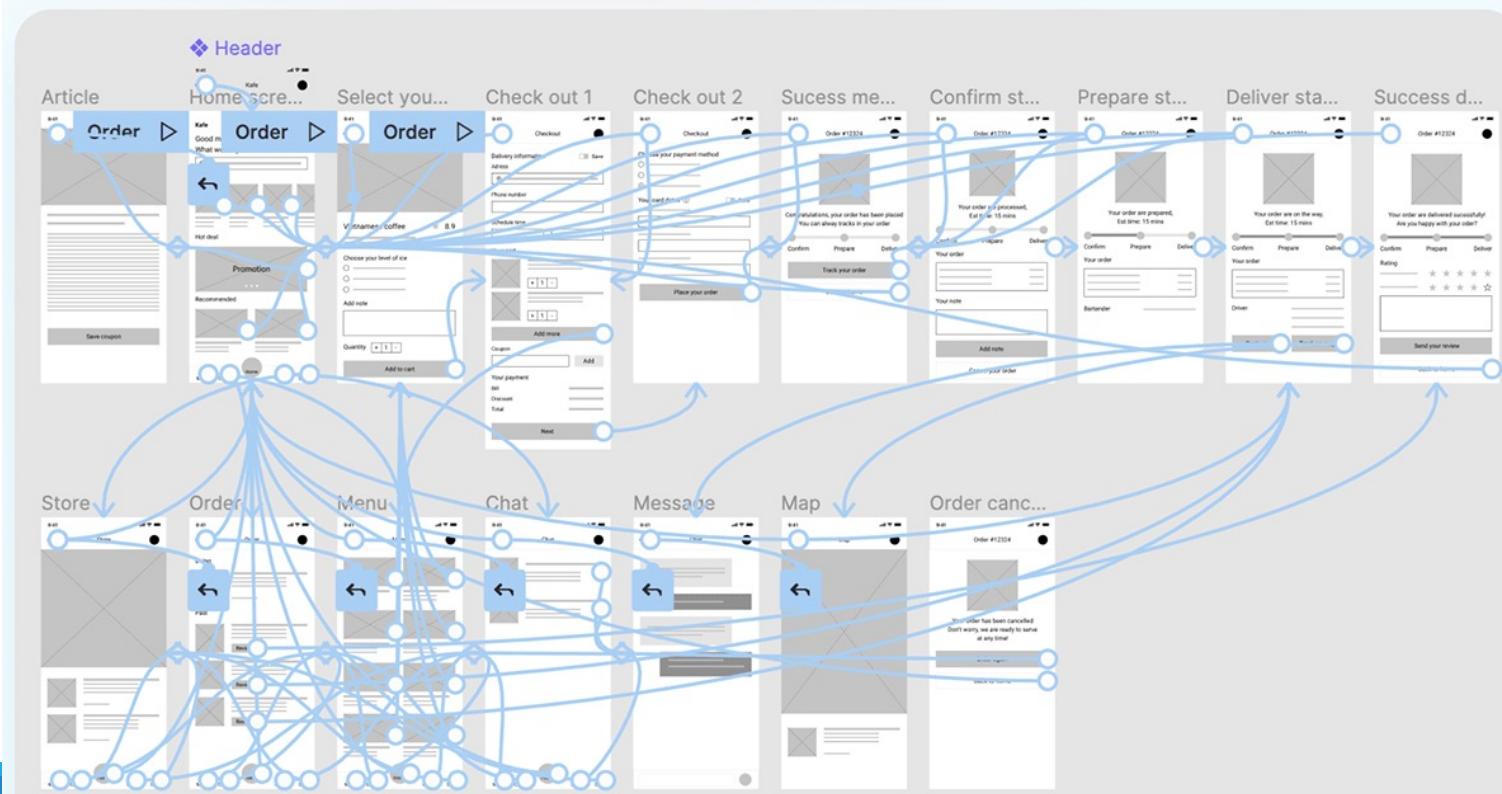
# Example of User Flow (Task Flow)



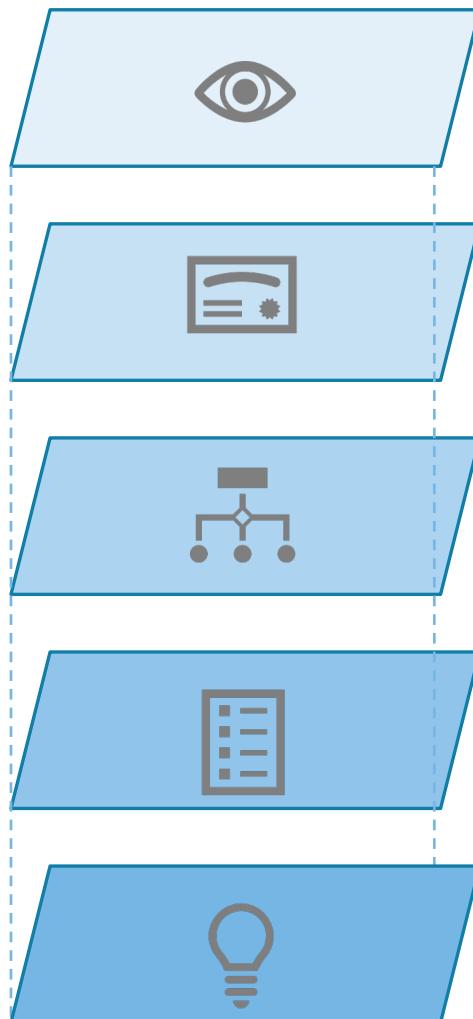
# Example of User Flow (Low-fidelity -Wireframes)

## Low-fidelity prototype

Using the completed set of digital wireframes, I created a low-fidelity prototype. The primary user flow I connected involves making group order and scheduling, so the prototype could be used in a usability study.



# 5 Elements of UX



## 5. Surface

Visual Design

Visual

## 4. Skeleton

Interface and Navigation Design  
Information Design

Layout

## 3. Structure

Information Architecture  
UX Design

Interaction

## 2. Scope

Content Requirements  
Feature Requirement

Content Solution

## 1. Strategy

Business Objective  
User Needs

User & Business



# ຄວດຮັສ UX “ຕູ້ເຕ່າບີນ”

ດ້ວຍ 5 Elements of UX



## 1. User & Business

ຂໍວຍແກ້ປັບປຸງທາງລຸ່ມ User ຍຸກໃໝ່ ທີ່ເຮັດວຽກ ໄຟ້ນິວລາແຕ່  
ອຍາກໄດ້ເຄື່ອງດື່ມທີ່ຮສຫາຕິດ ປັບແຕ່ງໄດ້ຕາມບັດຈຸດ  
ຈິງນໍາ AI ມາຊື່ເປັນຈຸດດັ່ນນີ້ຂ້ອງໄດ້ເປັນໃນເທິ່ງການ  
ເຄລື່ອນບ້າຍແລະໄປ່ເຕືອນເສື່ອງກັບຄວາມພິດພາດຈາກຄົນ



## 2. Content & Solution

ໃຫ້ AI ແລະ UX Design ສ້າງປະສົບຄາຣນີ້ໃໝ່ໃຫ້ອຸກຄ້າ  
| ໃໃຈງານບ່າຍ | Customize ເມຸນໄດ້ | ຮາຄາໄປ່ແພັງ |  
ຊ້ອໄດ້ຕ່ອລອດ 24 ຫຼັວໂມງ



## 3. Interaction

- ✓ ໃຊ້ຈອສັບຜັສ ແຍກປະເກດເຄື່ອງດື່ມບັດເຈນ
- ✓ ແຈ້ງຮະຍະເວລາກໍາເຄື່ອງດື່ມ
- ✓ ອຸກຄ້າຄະຄັດໄປກົດສິ່ງເມຸນອອໄດ້ ຮະຫວ່າງທີ່ອຸກຄ້າ  
ຄົນແຮກຮອເຄື່ອງດື່ມຂອງຍູ້



## 4. Layout

- ✓ ລົດກາຣົດຂອງສນອງ : ແບ່ງຂ້ອມມູລເປັນກຸ່ມ ຖ້າ  
ກໍາໄກຜູ້ຮູ້ວ່າຕ່ອງກຳວະໄໂ ເພີ້ນ ເລືອກຮະດັບຄວາມຫວານ
- ✓ ບຸນ Call to Action : ພາດໃຫຍ່ ຜັດເຈນ
- ✓ ໃຫ້ Layout ທີ່ User ຄຸ້ນເຄຍ : ເຮັດວຽກ  
ແບບເດືອຍກັບນື້ອສົ່ວ

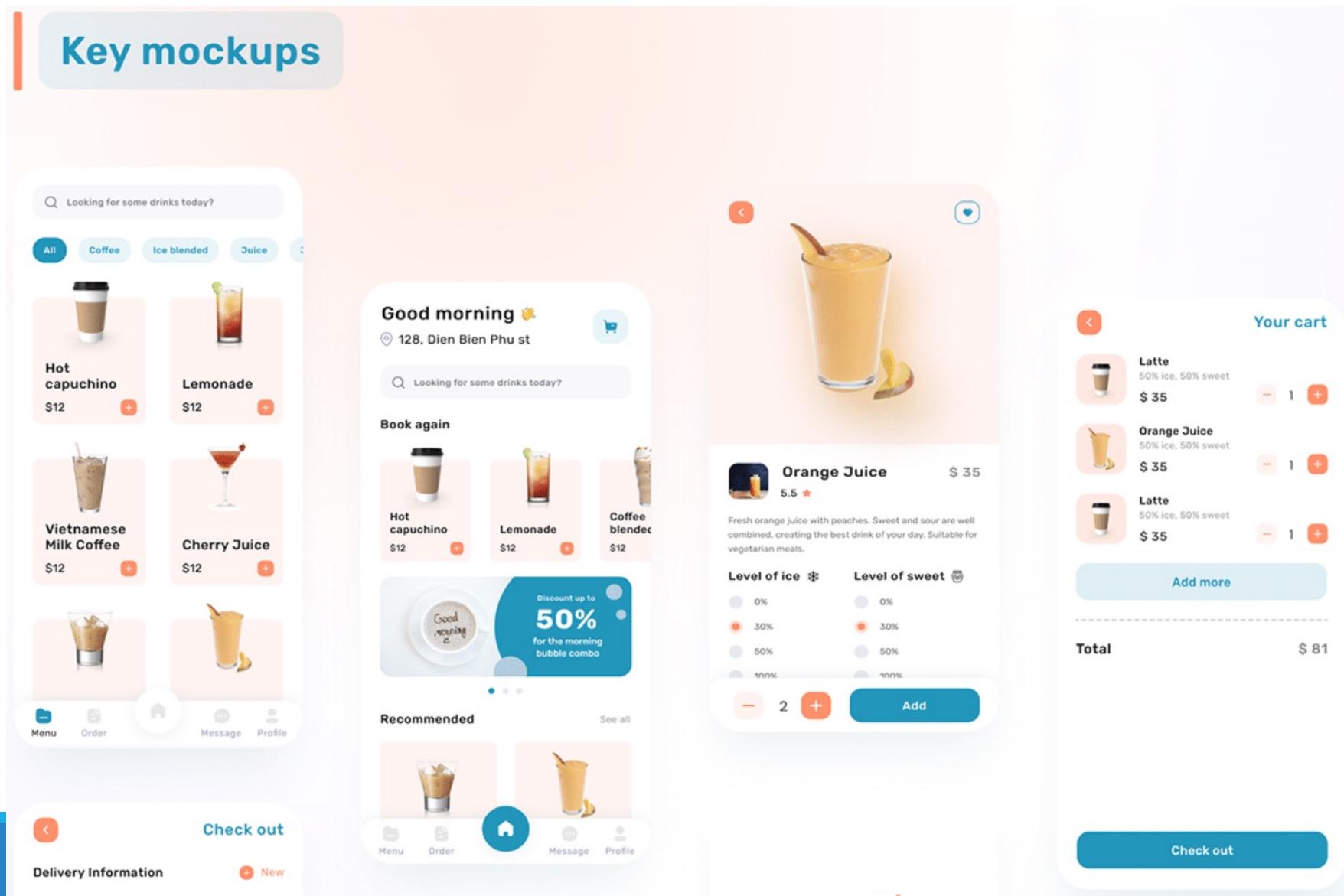


## 5. Visual

- ສີ : ພືບປຸກ ເຮັດວຽກ ສາຍຕາ
- ກາຣົຟ Animation : ແສດຂັ້ນຕອນໜີ  
ເຄື່ອງດື່ມ ບ່ວຍໃກ້ User ເພີດພັບໄດ້ຮະຫວ່າງ  
ຮອແຮງຮູ້ວ່າຄື່ງຂັ້ນຕອນໄທນີ້ແລ້ວ



# Example of User Flow (High-fidelity – Screen flow)



# UX Case Study: Coffee Order App



Example:

<https://www.behance.net/gallery/126260931/Coffee-Order-App-UX-Case-study>

# How to Improve Your UX Design

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- Bring clarity to your design
  - Clear & Simple
  - Don't make user THINK
- Always provide the user feedback if possible
  - Success, Fail!, Error
- Design for the user not for developer
  - Empathy mapping, User persona
- Make your designs digestible
  - It should not have more than 7 items/objects
- Make things scannable
  - Organize or prioritize in 3 levels/steps
- Bring a little bit of delight
  - Make some fun/ gift items/ easter egg to be memorable.

# Reference

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1. Ian Sommerville, Software Engineering 10<sup>th</sup> Edition, Pearson, April 2015

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Any Questions?

:O)

Thank you