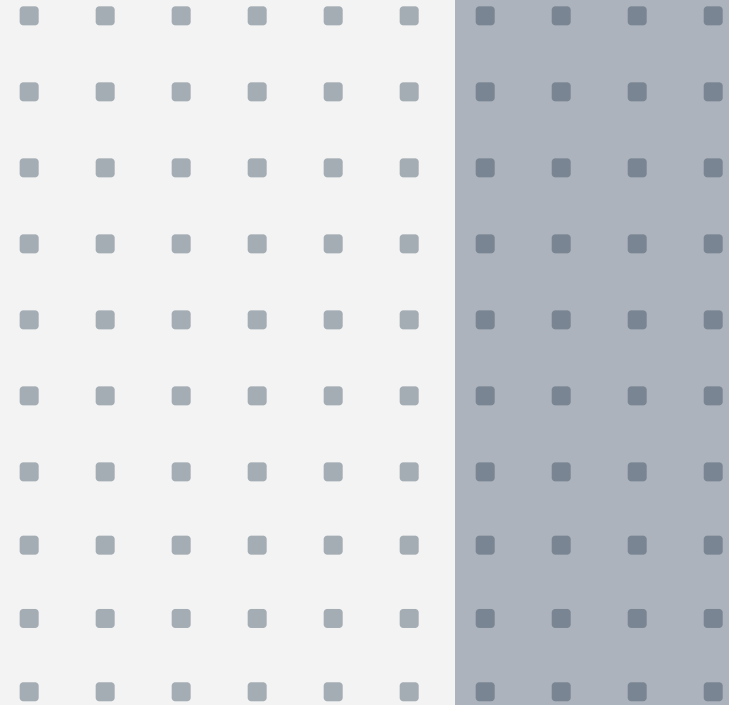


Unit 4 Process Book:

Conversational User Interface (CUI)

[Link to Voice Flow](#) ↗

[Link to Presentation](#) ↗



Evelyn Bang, Edvin Handoko, Jenny Wang

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Overview

Primary User: Kai Ramos

Profession

Food & Grocery Deliverer

Education

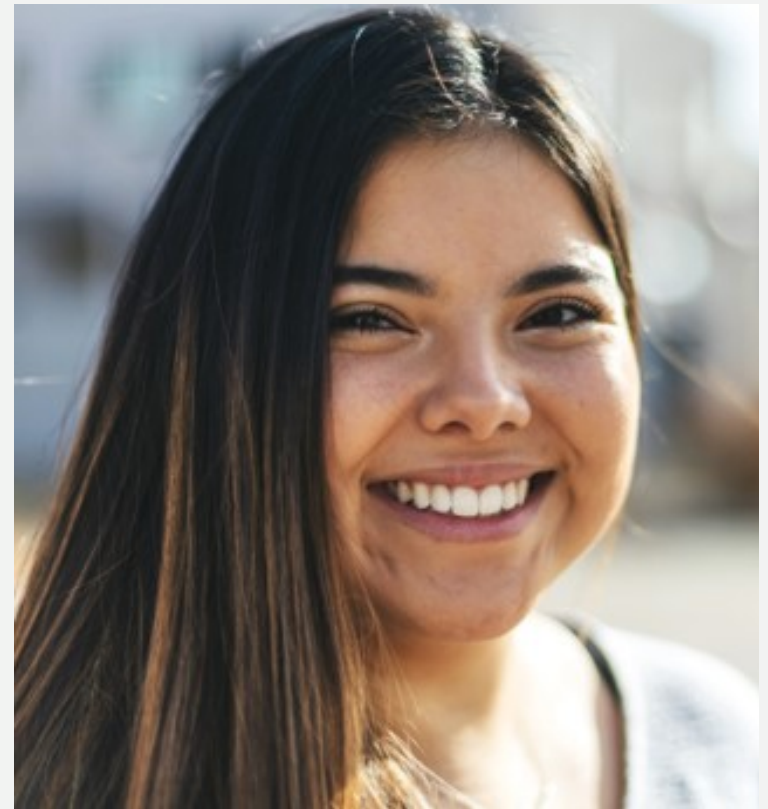
High School Diploma

Age

38

Car

Autonomous SUV named "Sparky"



Goals & Needs Analysis

Goal

- Make the most out of the time she has each day.
- Multi-task: read, watch movies, and make deliveries
- This trip: 45 minutes drive, find other deliveries along the way.

Needs

- Consistent income
- Food delivery platform that is reliable, easy to use, and able to connect with her car
- A way to communicate with her car and help her deliver food



**Journey Mapping:
Context & Scope of CUI**

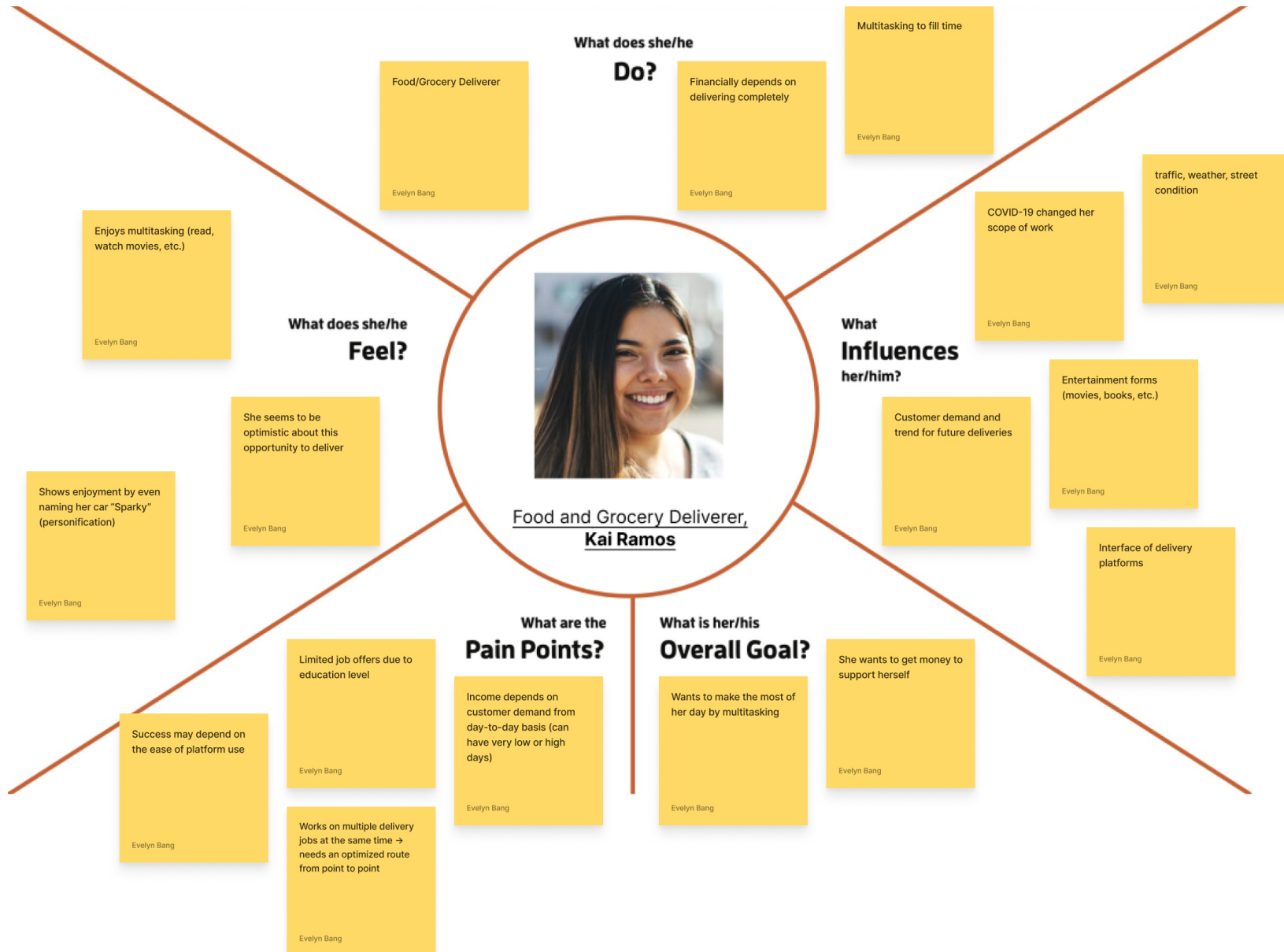
Empathy Map Of Kai Ramos

Focus: Lay Out Different Aspects Of Persona To...

- Discover *what we can improve* for a better experience
- Find different ways to *integrate personal interests*
- Relieve *stress* and improve *efficiency*
- Make interactions more *human-like* (non-robot-like)



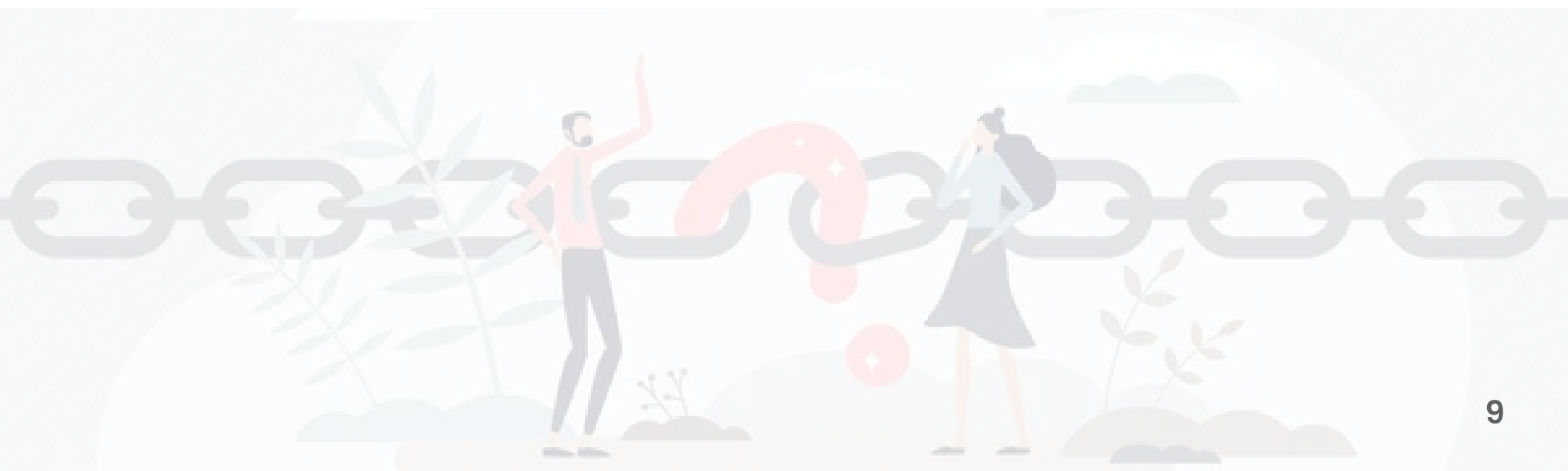
Empathy Map Of Kai Ramos



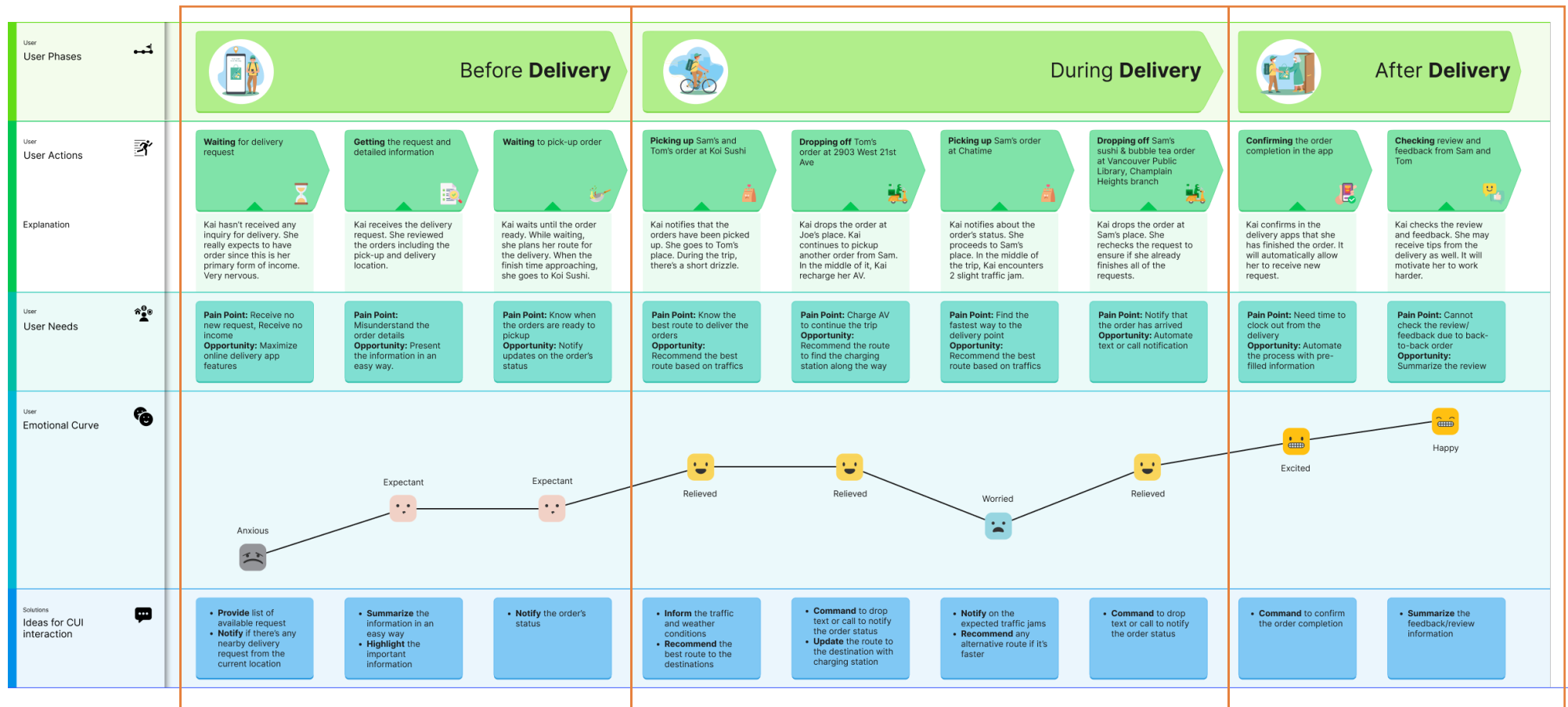
Pain Points

USER needs...

- An easy way to get from one location to the other during delivery
- Some form of *consistency* in money and journey
- A clear way to *communicate to CUI*
- A smart AI to *capture all/most possible commands*



Customer Journey Map



This part of the journeys depicts **the anxiety and expectant feelings** from Kai when working on the delivery. As mentioned in the persona, the team design this stage to elaborate how the delivery is part of a consistent income source so she wait with a mixed feelings..

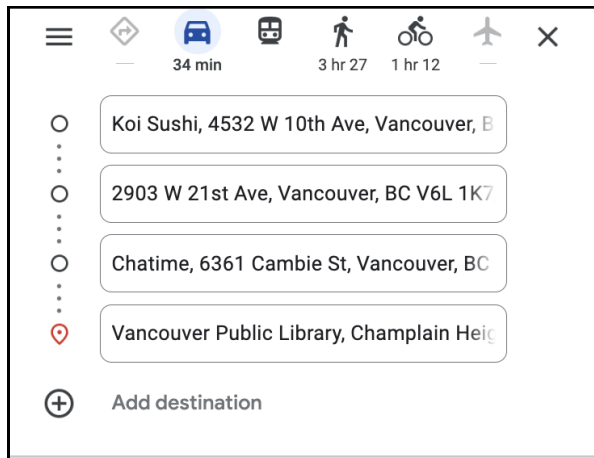
As the journey progress, the delivery should bring relief to Kai. During the delivery, Kai encounters moments which may include Kai's internal state or external state. We design the journey to accommodate **the context** of her journey.

We design this part to show that the delivery can be reached successfully and create an **excitement** toward Kai. This part can be Kai's resolution about journey as she reaches her goal.

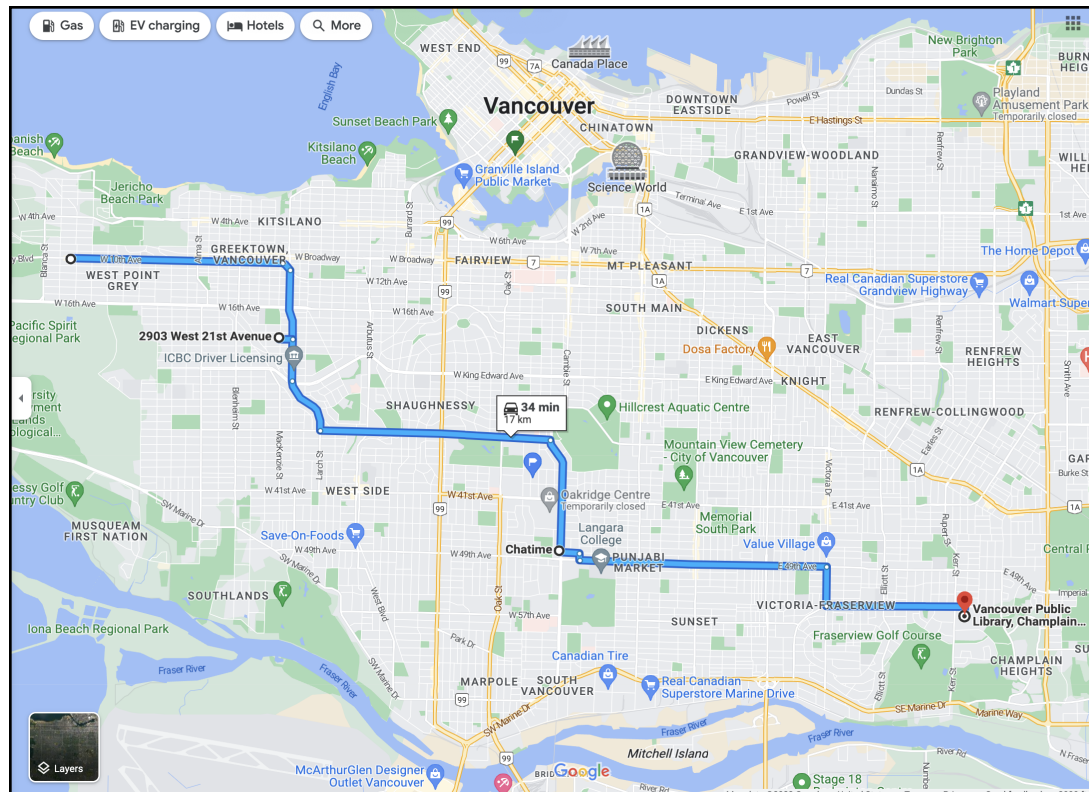


Delivery Route

Delivery Route



We plot Kai's journey into the route on a map with a specific **starting point and destination**. The settings part elaborates the **external context** that Kai encounters. During this journey, she will pass through **three main milestones** for the delivery purposes.



SETTING

Date: Wednesday April 5th

Time: 6 PM – 6:45 PM

Location: Vancouver, BC

Weather: Slightly Cloudy

Traffic: Normal with 2 spots with slight traffic jam

Others: No public events, no constructions

CHARACTERS

Kai

- Delivering food for two Uber Eats Users, Tom and Sam.
- Knows the city well.
- Has good amount of experience in food delivery

Tom

- Ordering for his family of 5
- Places a regular \$120 order at Koi Sushi.
- Expected delivery : 6:15 PM

Sam

- Employer at Vancouver Public Library
- Ordering for his company's monthly event : Total of 25 people
- Places \$530 catering order at Chatime and \$175 Bubble tea order at Chatime
- Expected delivery time: 6:45 PM

Delivery Route

With 5 mins to spare in case of traffic

Start >>>> **8 min Drive** >>>> **12 min Drive** >>>> **14 min Drive** >>>> **Finish**

6:00PM

Arrive at Koi sushi.
Pick up orders.



6:10 PM

Drop off Tom's order at
2903 West 21st Ave



6:24 PM

Pick up Sam's bubble
tea order at Chatime.



6:40 PM

Drop off Sam's order at
Vancouver Public Library





**CUI Script: First iteration
(Individual)**

Thought Process

- Planned out **specific conversation** by incorporating simple questions or more meaningful interactions
- Added details to simulate **moments during the ride**, improving Kai's experience
 - Smart-Car needing to be charged
 - Watching a short film in between destinations
- Showed details of addressing CUI as **"Sparky"**
- CUI asking for **confirmations** with every important action



6:00PM

Arrive at Koi sushi.
Pick up orders.

A: Drive(8 min) +Drop Off(2 min)

6:10 PM

Drop off Tom's order
at 2903 West 21st Ave

Sparky: Hi Kai! What would you like to do today?

- Choices:
 - Order
 - Deliver
- Intent: to start interaction process, asking Kai what to do

Kai: Hi Sparky, I would like to Deliver today.

- Intent: answer Sparky with what to do today

Sparky: Okay, Deliver. Let's get you set up. How much time do you have today?

- Choice:
 - [time]
- Intent: ask to see what kind of order to assign Kai

Kai: I have about an hour right now.

- Intent: allowing Sparky to know what kind of order to calculate this session

Sparky: Alright Kai, there is a group order for Tom and Sam available from Koi Sushi and Chatime for a total of around 45 minutes. Do you want to deliver from here?

- Choices:
 - Yes (continue)
 - No (redirect to single/group order)
- Intent: ask to confirm before committing to choice

Kai: Yeah

- Intent: confirm action to continue to next step

Sparky: Okay, calculating. Your navigation is now set to go to Koi Sushi at 4532 W 10th Ave in Vancouver. You need to pick up 2 orders. It is 5 minutes away.

- Intent: set up navigation to start driving to first order stop

[After picking up food from Koi Sushi]

Kai: Okay, Sparky. I just got the order.

- Intent: prompt Sparky to move onto next step

Sparky: Please confirm you received the orders for Tom and Sam.

- Choices:
 - Confirm (continue)
 - Reject (then Sparky says "please go and pick up Tom and Sam's orders)
- Intent: make sure the user has the orders before leaving to next stop

Kai: Good to go!

- Intent: confirming that she has both the orders

Sparky: Okay! Now I will set the navigation to Tom at 2903 W 21st Ave in Vancouver. After that, I will direct you to Chatime for the rest of Sam's order.

- Intent: let Kai know where she is going and then show what the next step is ahead of time to prepare

The first part of the CUI focus on **recommending the best route** for delivery to maximize income and experience as aligned with her goal. In this case, the CUI will process the slot from Kai such as activity (Delivery) and time (1 hour). We design this part to ensure that the CUI can improve Kai's experience to achieve **the purpose of the trip**.

6:10 PM

Drop off Tom's order
at 2903 West 21st Ave

B: Drive(12 min) + Pick up(2 min)

6:24 PM

Pick up Sam's bubble
tea order at Chatime.

Human Intent: Continue journey, pickup Chatime

Kai: Hi, Sparky! I want to continue my journey.

Sparky: Welcome back, Kai! Your next destination would be Chatime at 6361 Cambie St. Is that correct?

Kai: Yes.

CUI Intent: Notify for battery status, need to recharge AV

Sparky: Great. The vehicle's battery starts to run low. Do you want to charge the AV along the way?

Kai: That would be great! Can you find the nearest charging station around Chatime?

Sparky: Sure! Do you have any preference for the provider?

Kai: No, anything will work.

Sparky: Okay! ChargePoint Charging Station at 1068 W 37th Ave would be the nearest place to Chatime. Do you want to charge there?

Kai: Yes!

Sparky: Nice. The trip would take 9 minutes long. The estimated time of arrival is at 6:19 PM. Should we start?

Kai: Let's go!

Sparky: Got it! Is there anything else I can assist you with?

Human Intent: Listen to the music while reading during the trip

Kai: Can you play some random calm instrumental playlist? I want to read along the way.

Sparky: Okay! I will play the instrumental playlist that is suitable while reading. Is there anything else I can assist you with?

Kai: Sounds great! That's enough for now.

Sparky: Perfect! Enjoy the ride. If you need further assistance, don't hesitate to ask. You'll arrive in 7 minutes.

6 mins later

Sparky: Hi, Kai! Just a reminder, we'll arrive at the charging station in 1 minutes.

Sparky: You have arrived at ChargePoint Charging Station at 10683 W 37th Ave.

After charging the AV

CUI Intent: Confirm to continue journey, drop off orders

Sparky: Welcome back, Kai. Would you like to proceed to the next destination?

Kai: Yes. Let's go to Chatime immediately. We may run out of time.

Sparky: Okay! Your next destination would be Chatime at 6361 Cambie St. Is that correct?

Kai: Yes!

Sparky: Great! The trip would take 5 minutes long. The estimated time of arrival is at 6:24 PM. Should we start?

Kai: Yes. Proceed to Chatime immediately.

Sparky: Perfect! Relax and enjoy the ride!

In the second part, we add **more meaningful interactions** CUI by handling the need to recharge AV and facilitating Kai's request for music. CUI gives a prompt utterance to Kai for the battery status to let Kai decide whether to charge or not. On the other hand, Kai also initiate conversation with CUI for playlist recommendation. We design this part to ensure that the CUI can improve Kai's experience to handle **her internal state and external context**.

6:24 PM

Pick up Sam's bubble tea order at Chatime.

C: Drive(14 min) + Delivery(2 min)

6:40 PM

Drop off Sam's suhi & bubble tea order at Vancouver Public Library

Sparky: Welcome back, Kai. Would you like to continue your journey from the previous ride?

Kai: Yea. Head to the final destination now.

Sparky: Great to hear that. Your final destination is set to Vancouver Public library Champlain Heights branch. Is that correct?

Kai: Yes.

Sparky: Great! The journey is 14 minutes long. The estimated time of arrival is 6:40 PM. Should we get started?

Kai: Yea, let's go.

Sparky: Got it Kai. Sit back, relax and enjoy your trip. Is there anything else I can assist you with today?

Kai: Can you recommend a good movie or show for me to watch on my way?

Sparky: Sure thing. How about the Pixar short film "Bao" ? It has a runtime of approximately 9 minutes. Would you like to hear more details of this film?

Kai: Hmm Sounds interesting. Tell me more.

Sparky: Bao is an animated short film about a Chinese-Canadian mother who is struggling with an empty nest until one of her handmade dumplings comes to life and helps her to cope with her feelings of loss and loneliness.

Kai: Sound great! Thanks!

Sparky: My pleasure, Kai. Is there anything else I can assist you with today?

Kai: No, that's all.

Sparky: Enjoy your ride, Kai. If you need any further assistance, don't hesitate to ask. You'll arrive at your destination in 12 minutes.

10 mins later

Sparky: Just a heads up Kai, we are arriving at your final destination in 2 minutes. Would you like me to look for the nearest parking lot?

Kai: No, street parking would be better. Can you check if there's street parking ?

Sparky: Sorry Kai, there's no street parking available near the Vancouver Public library Champlain Heights Branch, but there is a parking lot at the back of the building. Would you like me to navigate us there?

Kai: Yea. Let's do that.

Sparky: You've arrived at your final destination Vancouver Public library Champlain Heights Branch, parking lot. Thank you for riding with me.

As the last part, we explore Kai's hobby in the conversation by having discussion around movie to watch during the trip. Kai ask for any recommendation for movies. CUI intuitively recommend short move, knowing that the next destination will only take 9 minutes. Furthermore, we try to finish the delivery by having the CUI to recommend parking. We design this part to ensure that the CUI can improve Kai's experience to handle both **her internal state and external context**.

Critiques

Too much context

The existing script accommodate too much context, making the script lengthy. The team can try to reduce the context to handle.



Delete “Playlist Recommendation” in the second script.

Clearly Annotate the Intent

There are some intents that hasn't been identified in the conversation. Mapping the intent will help to ensure that each conversation is handling meaningful interaction.



Add description for each group of conversation which falls under the same intent



**CUI Script: Second
Iteration**

Full Journey Summary

Part 1: *SETUP/INTRODUCTION*

You are a delivery driver and you want to make a delivery.
Your CUI's name is Sparky and you are Kai.
You have about an hour to deliver today.

Part 2: *CONTINUE AFTER RETURNING TO CAR*

You just finish to drop off the Tom's order. You plan to continue your journey to pickup the next delivery order for Sam.
In the meantime, you would be notified that the AV need to be recharged.
You want to find the nearest station from the next destination.
After charging the AV, you will be redirected to pickup Sam's Order.

Part 3: *CONTINUE AFTER RETURNING TO CAR*

You just picked up your last order and you are trying to deliver it.
Along the way you would like to watch a movie.
When have almost arrived at the final destination, you want to find street parking.

Full Script Overview

Human Intent: Start up Process

- **Sparky:** Hi Kai! What would you like to do today?
- **Kai:** Hi Sparky, I would like to Deliver today.
- **Sparky:** Okay, Deliver. Let's get you set up. How much time do you have today?
- **Kai:** I have about an hour right now.

CUI Intent: Show Delivery Availability

- **Sparky:** Alright Kai, there is a group order for Tom and Sam available from Koi Sushi and Chatime for a total of around 45 minutes. Do you want to deliver from here?
- **Kai:** Yeah
- **Sparky:** Okay, calculating. Your navigation is now set to go to Koi Sushi at 4532 W 10th Ave in Vancouver. You need to pick up 2 orders. It is 5 minutes away.
- [Picks food up from Koi Sushi]

Human Intent: Go on to the Next Step and Deliver Tom's order

- **Kai:** Okay, Sparky. I just got the order.
- **Sparky:** Please confirm you received the orders for Tom and Sam.
- **Kai:** Good to go!
- **Sparky:** Okay! Now I will set the navigation to Tom. After that, I will direct you to Chatime for the rest of Sam's order.
- [Drops off order at Tom's]

Human Intent: Continue journey, Pickup at Chatime

- **Kai:** Hi, Sparky! I want to continue my journey.
- **Sparky:** Welcome back, Kai! Your next destination would be Chatime at 6361 Cambie St. Is that correct?
- **Kai:** Yes.

CUI Intent: Notify for battery status, Need to recharge AV

- **Sparky:** Great. The vehicle's battery starts to run low. Do you want to charge the AV along the way?
- **Kai:** That would be great! Can you find the nearest charging station around Chatime?
- **Sparky:** Sure! Do you have any preference for the provider?
- **Kai:** No, anything will work.
- **Sparky:** Okay! ChargePoint Charging Station at 1068 W 37th Ave would be the nearest place to Chatime. Do you want to charge there?
- **Kai:** Yes!
- **Sparky:** Nice. The trip is 9 minutes long. The estimated time of arrival is at 6:19 PM. Should we start?
- **Kai:** Let's go!
- **Sparky:** Got it! Is there anything else I can assist you with?
- **Kai:** That's enough for now.
- **Sparky:** Perfect! Enjoy the ride. If you need further assistance, don't hesitate to ask. You'll arrive in 8 minutes.

Full Script Overview

- [7 minutes later]
- **Sparky:** Hi, Kai! Just a reminder, we'll arrive at the charging station in 1 minutes.
- **Sparky:** You have arrived at the charging station.
- [Charges AV]

CUI Intent: Confirm to continue journey and drop off orders

- **Sparky:** Greetings, Kai! Would you like to proceed to the next destination?
- **Kai:** Yes. Let's go to Chatime immediately. We may run out of time.
- **Sparky:** Okay! Your next destination would be Chatime at 6361 Cambie St. Great! The trip would take 5 minutes long. The estimated time of arrival is at 6:24 PM. Should we start?
- **Kai:** Yes. Proceed to Chatime immediately.
- **Sparky:** Perfect! Relax and enjoy the ride!
- [Picks up order from Chatime]

CUI Intent: Deliver Order to Sam

- **Sparky:** Welcome back, Kai. Please confirm you have received the order for Sam from Chatime.
- **Kai:** Yes I got it. Head to the final destination now.
- **Sparky:** Great to hear that. Your final destination is set to Vancouver Public Library Champlain Heights Branch. Is that correct?
- **Kai:** Yes.
- **Sparky:** Great! The journey is 14 minutes long. The estimated time of arrival is 6:40 PM. Should we get started?

- **Kai:** Yes
- **Sparky:** Got it Kai. Sit back, relax and enjoy your trip. Is there anything else I can assist you with today?

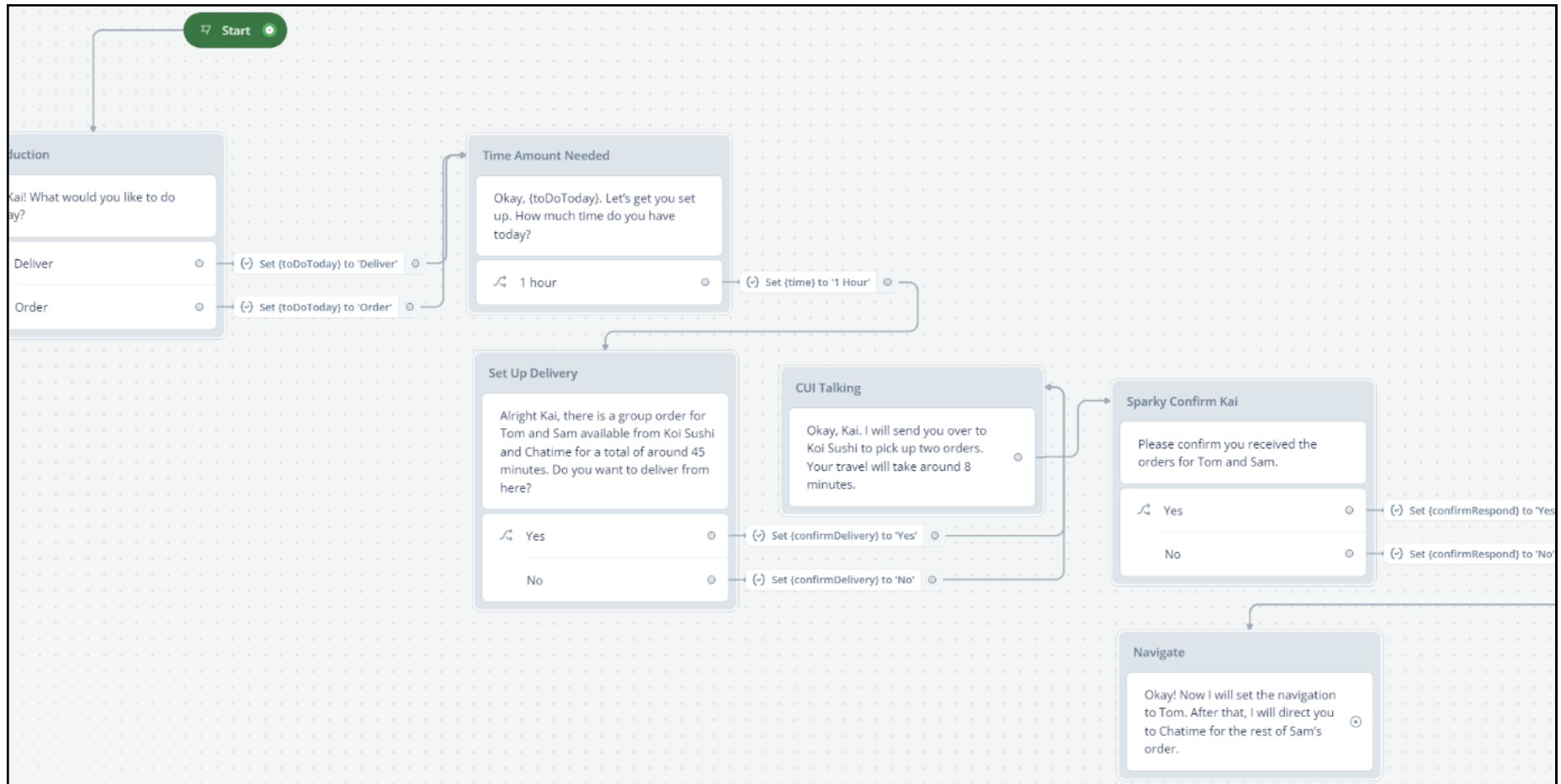
Human Intent: Watch a Movie on the Way

- **Kai:** Can you recommend a good movie or show for me to watch on my way?
- **Sparky:** Sure thing. How about the Pixar short film "Bao" ? It has a runtime of approximately 9 minutes. Would you like to hear more details of this film?
- **Kai:** Hmmm Sounds interesting. Tell me more.
- **Sparky:** Bao is an animated short film about a Chinese-Canadian mother who is struggling with an empty nest until one of her handmade dumplings comes to life and helps her to cope with her feelings of loss and loneliness.
- **Kai:** Sounds great! Thanks!
- **Sparky:** My pleasure, Kai. Is there anything else I can assist you with today?
- **Kai:** No, that's all.
- **Sparky:** Enjoy your ride, Kai. If you need any further assistance, don't hesitate to ask. You'll arrive at your destination in 12 minutes.
- [10 Minutes Later]
- **Sparky:** Just a heads up Kai, we are arriving at your final destination in 2 minutes. Would you like me to look for the nearest parking lot?
- **Kai:** No, street parking would be better. Can you check if there's street parking?
- **Sparky:** Sorry Kai, there's no street parking available near the library, but there is a parking lot at the back of the building. Would you like me to navigate us there?
- **Kai:** Yea. Let's do that.
- **Sparky:** You've arrived at the library's parking lot. Thank you for riding with me.
- **Kai:** Thanks Sparky, you too.
- [Delivers food]



Implement CUI in Voiceflow

Voiceflow Implementation Part I



6:00PM

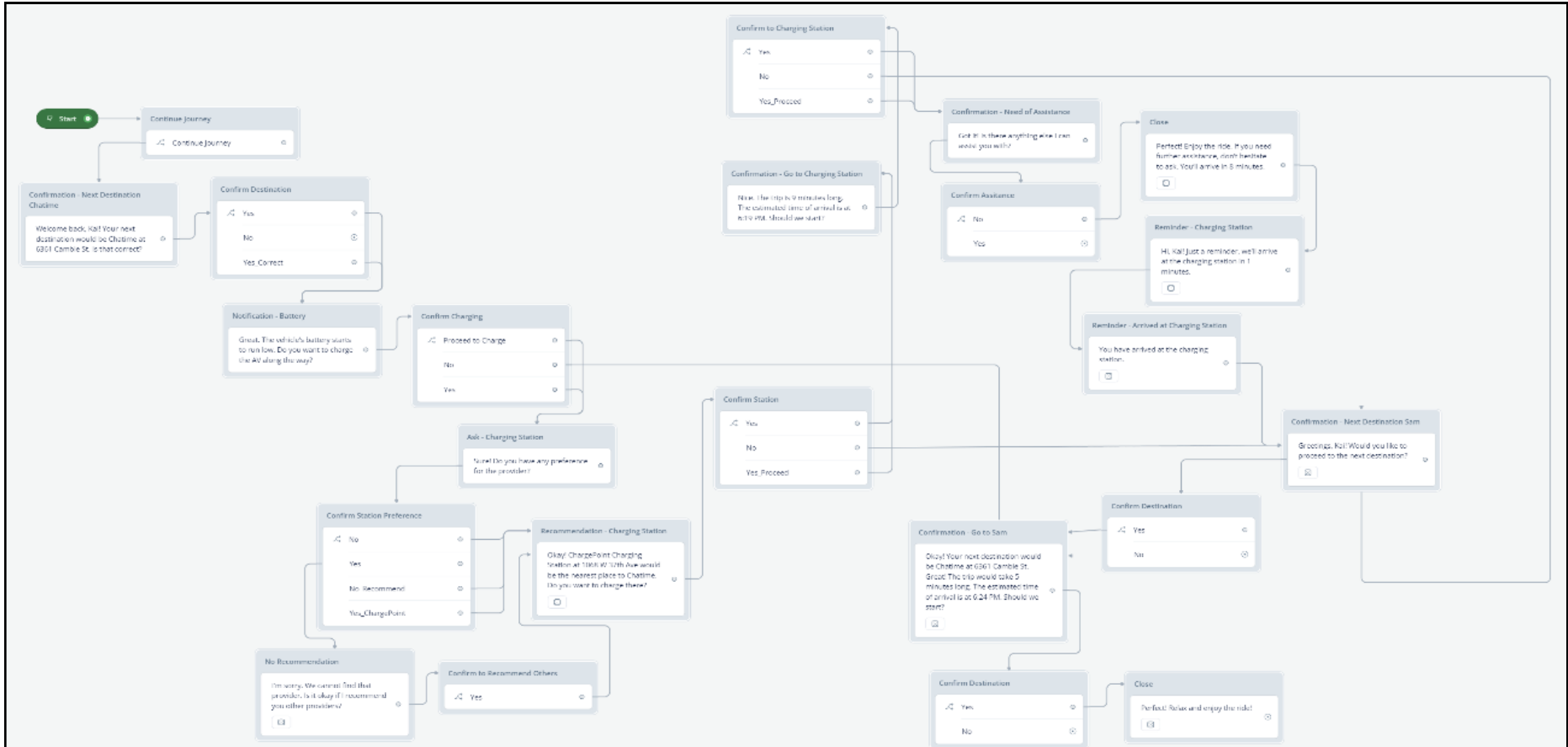
Arrive at Koi sushi.
Pick up orders.

A: Drive(8 min) + Drop Off(2 min)

6:10 PM

Drop off Tom's order
at 2903 West 21st Ave

Voiceflow Implementation Part II



6:10 PM

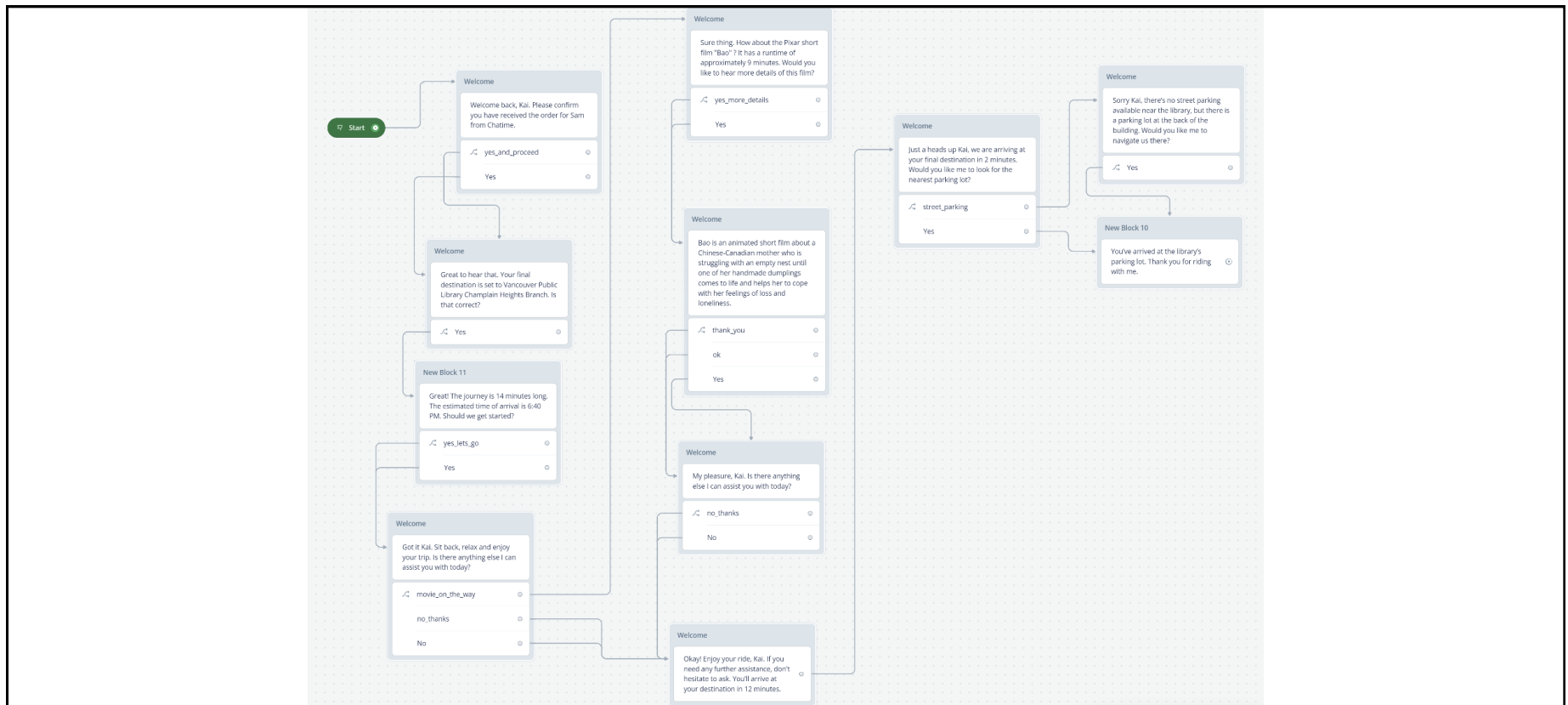
Drop off Tom's order
at 2903 West 21st Ave

B: Drive(12 min) + Pick up(2 min)

6:24 PM

Pick up Sam's bubble
tea order at Chatime.

Voiceflow Implementation Part III



6:24 PM

Pick up Sam's bubble tea order at Chatime.

C: Drive(14 min) + Delivery(2 min)

6:40 PM

Drop off Sam's suhi & bubble tea order at Vancouver Public Library



Usability Testing of CUI

User Testing Results

User 1:

What we noticed

- Got stuck at Evelyn's "1 hour" due to lack of variability in utterances
 - Instructed to just be direct/clear/concise ⇒ breezed through rest by doing this
- Needed extra help on movie part to want to watch movie

What they said

- "What am I supposed to say?"
- "How do I say that?"

Guiding words

- "Try to be more direct"
- "You want to do ___" (indirectly telling user the general idea of intention)
- Gave summary about who Kai is and general intention of user
- Told user that pauses needed to be waited out



User Testing Results

User 2:

What we noticed

- Answered straight forwardly
- Typed out exact utterance surprisingly for asking to watch a movie along the way in the third part of the CUI.

What they said

- N/A (not very talkative)

Guiding words

- Gave summary about who Kai is and general intention of user
- “You want to do ___” (indirectly telling user general idea of intention)
- “Make sure you are being direct”
- “There are some utterances that you can do but try to be simple”
- Told user that there are pauses to wait at
- Said what was happening in between pauses
- Like telling them that they are done picking up an order and need to go to the customer’s address

Other Notes:

- Noticed that we didn’t have many parts where user asks CUI ⇒ Implement that in second section (beginning of Edwin’s)
- Sometimes answer with yes/no when user can say “confirm” or “deny”
- Need more variations of utterances





Reflection

Self Reflection

Jenny

In this project, I had the opportunity to delve into the intricate details of Conversational User Interface (CUI) and the essential elements of user-centered design. Through my research and experimentation, I learned how to design an effective conversation flow and ensure that the user's needs and preferences were met at every step.

One of the most useful tools I discovered during this project was Voiceflow, a platform that allowed me to create a voice interface for my CUI. By using Voiceflow, I was able to test and iterate my design in real-time and make necessary adjustments based on user feedback. This experience gave me a comprehensive understanding of how to implement CUI in practical projects and enhanced my skillset in designing for voice and chat interfaces. For instance, as I embark on my final project for Design System, a UI/UX design project for an AI chatbot that can be customized and interacted with, I anticipate that utilizing this skillset will be ideal for crafting an exceptional chat interface.

If I had more time, I would have liked to explore more advanced techniques and features in Voiceflow, such as incorporating natural language processing (NLP) and machine learning (ML) algorithms into my design. Additionally, I would have liked to conduct further user testing and gather more in-depth feedback to refine my design further. Overall, this project was a valuable learning experience that gave me a strong foundation in CUI and voice interface design and inspired me to explore new avenues in the field.

Self Reflection

Evelyn

Using Voiceflow for the first time was a new experience for me, since I have never done anything like it before. It helped me open my eyes to new forms of UX/UI. In other words, it helped me see that there are unseen interfaces like sounds and potentially movement (like vibrations). Additionally, I opened my eyes up to more ways of how voice interactions are used, like in accommodations for someone with disabilities.

One major thing that I learned through this unit was that it takes a lot of time and effort in order to find a way to cover all grounds of response types. To elaborate, the AI/CUI needs to know what sentences have similar meanings and which key words need to be picked up. That was impossible to code into Voiceflow, which led to hard coding the response types that we created. It also applies to how the USER responds to the CUI. Speaking is very different from writing, which is mainly due to the concision of sentences to say the same things with less words. For example, if one wants to say "I need to get something to eat," they can say "Gonna get food" instead. Even within that, there is a sublayer of concision of the word "gonna" stemming from "going to" and so on.

Something that I would like to improve on in the future is to be able to plan out a better way to find possible response choices. I believe that elaborating on that aspect in itself requires its own specialized team. Since it is a time restricted process with limited resources, we did the best we could by just sitting down and thinking about conversations we have had with others and how they can respond or how we can speak to them.

Overall, working with Voiceflow was eye opening and will definitely help me in the future to consider a variety of aspects about different interfaces.

Self Reflection

Edvin

The unit 4 classes are a brand new experiences for me. I may have an experience which include CUIs as part of the system that I design, but I have never put more thoughts to CUI before. This class broaden my understanding in human-centered design. For the past 3 units, we mainly focus on designing visuals. This unit pushes me hard to apply the concepts that I have got for the context of voices.

I find that Voiceflow is a fascinating tools to practice this topic directly. I have never thought that there'll be "Figma" for the CUIs. Using Voiceflow can help me as a new conversation designer to try the interface that I built right away. During this hands-on activity, I realize on how designing conversations has its own challenge. One of the major challenges that I face which also become my learning points is how we can come up with concise yet meaningful conversation. When I learn information architecture in the previous unit, I already know about how we can structure the information well. However, organizing IA and conversation is slightly different. The definition of concise and meaningful may be different from text and voice. Hence, it's more challenging to come up with the conversation part.

If I got more time, I would love to explore the Voiceflow more. I barely manage to unlock the full potential of this tools. Some of the conversation is still "hard-coded", making the CUI is not flexible enough to accept different phrases with the same meaning. Furthermore, the NLP portion of this tool is worth to study as it offers powerful model.

I'm pretty sure that this is not my last encounters with CUIs. We have entered the phase where conversational technology enhances the user experience and accessibility. I hope I can apply the knowledge that I got from this unit to my future work with CUIs.