

# Project 05\_Emphatic Mobilty Ecosystems

# Table of Contents

Project Brief

Interviews, Research Analysis, and  
User Evaluations

Ideation

Storyboard

Presentation

Link to Video

03

04

13

15

22

40

# Project Brief

Existing technology within transportation has largely neglected the opportunities for human connections. As a team, we were tasked with exploring what a train system of the future (2025-2030) might look like in a city such as San Francisco.

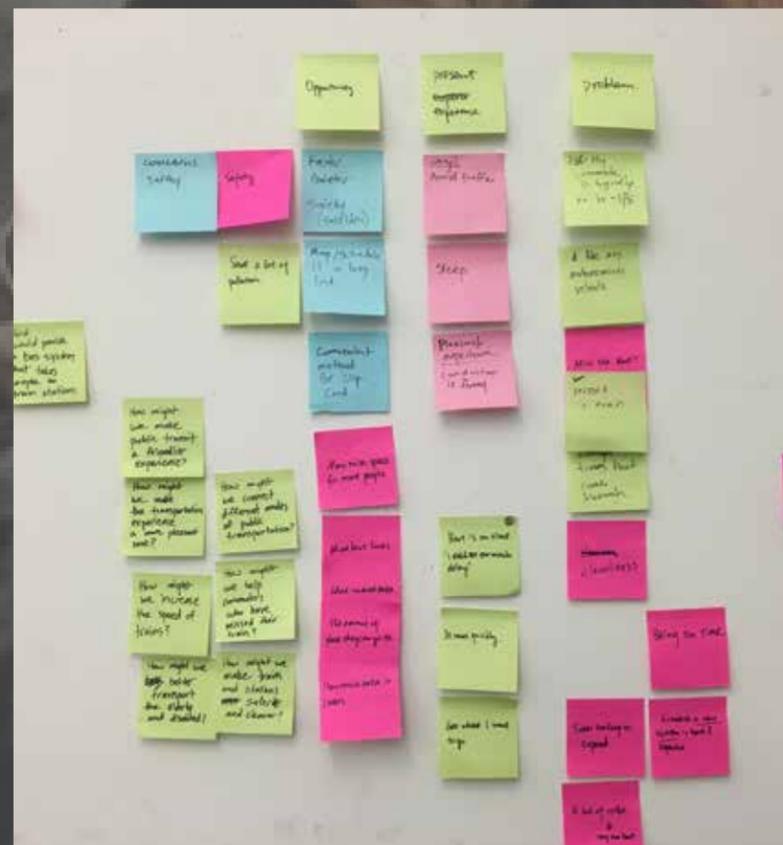
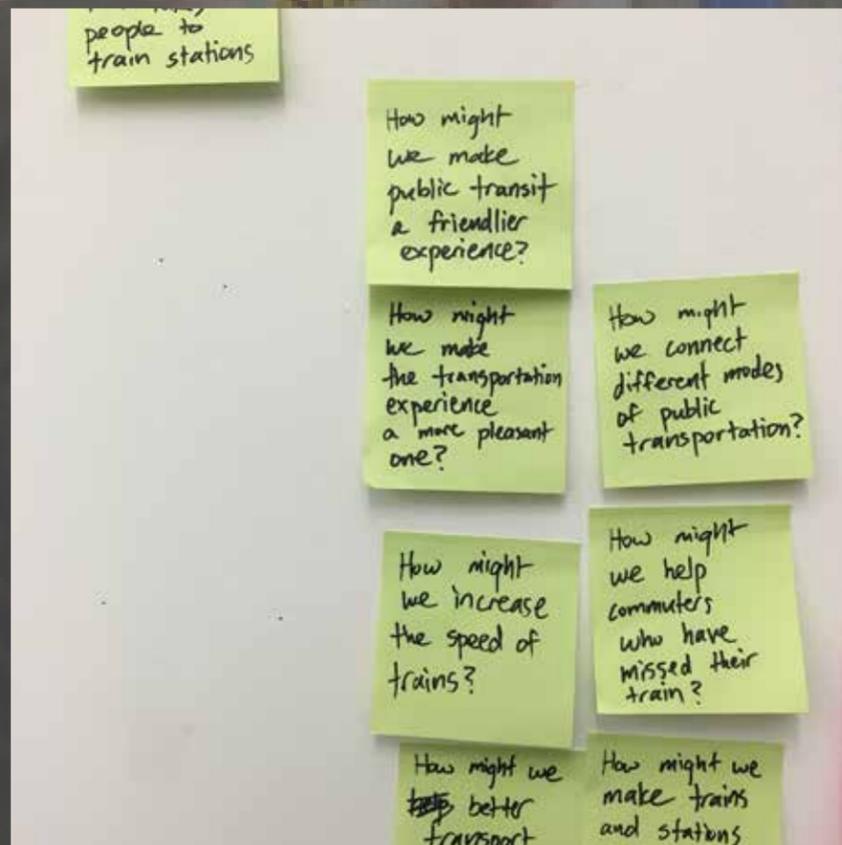
This project allowed us creative freedom for what a future urban environment and its technology might look like in next few years. After painting the picture of what our future might look like, we also wanted to focus in on how the train of the future fits in, how does it facilitate daily life, while changing behavior and routine.

Partnering with Ford Motor Company, we sought answers for problems beyond the realm of day-to-day transportation. We looked deep into how transportation by trains could be branded mobility ecosystems that fostered a sense of compassion and empathy, while being a memorable experience.

# Interviews, Research Analysis, and User Evaluations

**W**e interviewed a total of 33 people who all took some form of a train. These interview participants were comprised of strangers we met on the street, at train stations, as well as students and faculty members at the California College of the Arts.

With the exception of 1 student and 2 faculty members at CCA, the rest of our participants were either BART commuters or Muni Metro commuters. To make our interview sessions brief, we asked our participants 13 questions.



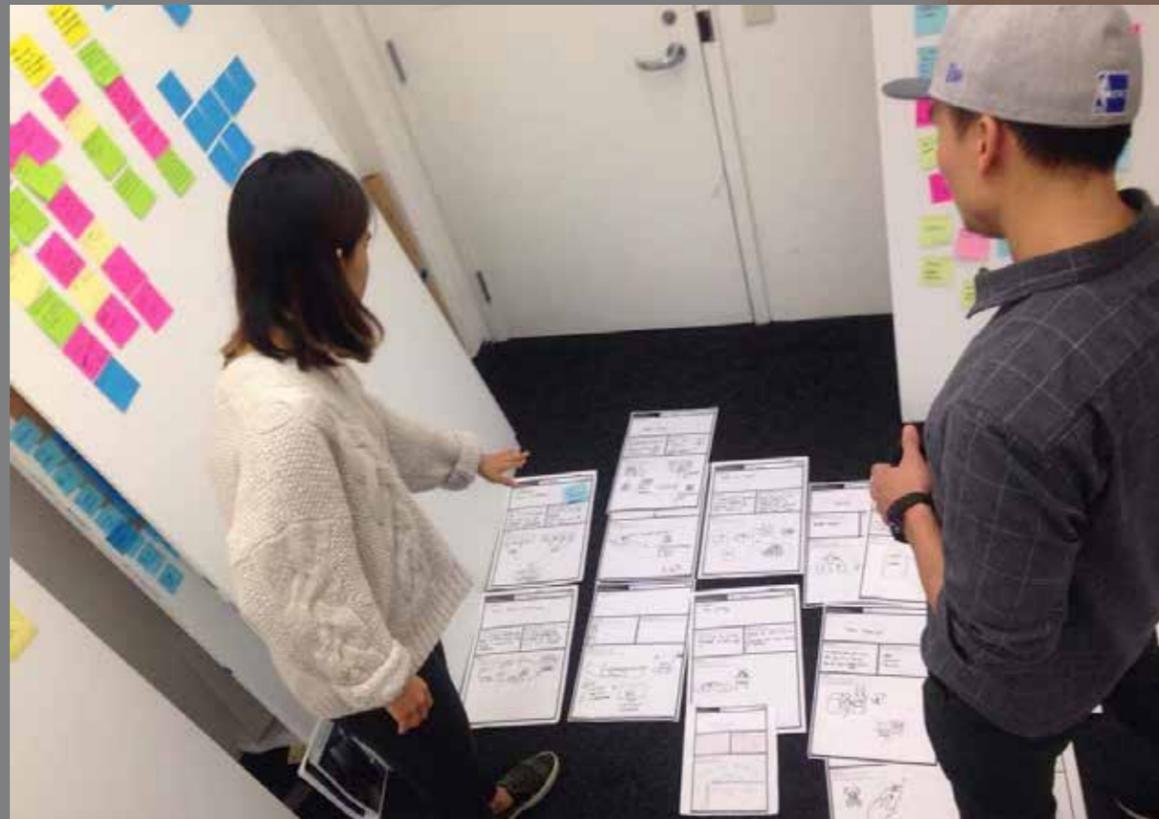
# Interviews Questions

1. How often do you ride the train?
2. How long is your average train ride?
3. Why do you ride the train as opposed to other forms of transportation?
4. Where do you commute to/from when you take the train?
5. What do you dislike about riding on trains?
6. What do you like/enjoy about riding on trains?
7. What are the most important issues to you regarding train ridership?
8. Please describe a pleasant experience you've had on the train or at your train station.
9. Please describe a negative experience you've had on the train or at your train station.
10. What changes (if any) would you like to see on trains, their stations, their system (routine) or infrastructure?
11. Is there a particular mode of public transportation you prefer more than others? (Removed)
12. What are some of the inconveniences for you when riding a train?
13. What types of services, features, or improvements would increase your overall satisfaction with taking a train?

# Research Analysis

	A	B	C	D	E	F	G	H	I	J	K
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
		How often do you ride the train? (*Optional: include age and gender)	Why do you ride the train as opposed to other forms of transportation?	Where do you commute to/from when you take the train?	What do you dislike about riding on trains?	What do you like/enjoy about riding on trains?	Please describe a pleasant experience you've had on the train or at your train stop/station.	Please describe a negative experience you've had on the train or at your train stop/station.	What changes (if any) would you like to see on trains, their stations, their system (routine) or infrastructure?	What are some of the inconveniences for you when riding a train?	What types of services, features, or improvements would increase your overall satisfaction with taking a train?
3	P1	58 year old female. I ride the train very seldom.	I would ride the train as opposed to driving my car if I could depend on it arriving at my work on time.	I live about two miles from my work.	It is not dependable if you have to be on work on time and not a couple of minutes late.	Smooth, comfortable, relaxing.	I took a train to Iowa! It was one of the best trips I've ever taken. Met a completely different kind of traveler...not rushed. Relaxed. Enjoying the experience.	I will wait for my train to arrive at its assigned time and it simply doesn't arrive OR it is cancelled.	I wish there were more undergrounds.		
4	P2	5 days a week male age 47	can work on the train and get exercise riding my bike to/from the train	4th King to Palo Alto	crowds (particularly on Giants game days) - don't like to stand for an hour, cost, train delays - mechanical, accidents, seats are particularly comfortable, lack of a bar car makes me sad, no wifi	opportunity to read, work, catch up on emails, sleep, socialize, less stressful than driving daily	I've been so engrossed in a good book that the time on the train just flew by	I've been stuck on a horrifically crowded train that, because of an accident, was moving at a crawl and stopped at every damn stop...	I'd love to see more structured organization at the stations to keep waiting passengers out of the way of disembarking passengers. Adding insult to injury, whenever a train is delayed, an enormous crowd (sometimes the entire station), is blocking the exit from the platform making allowing only a small trickle of people and delaying everything. Incredibly annoying. The crowds are there to block our exit pretty much every day, but just significantly more when a train is delayed.	takes considerably more time for me to use the train than drive, so unless I use it productively, it is just wasted. I don't get to spend as much time with my son.	wifi, more structured control over passengers waiting to board, more comfortable seats
5	P3	2-4 times per week	Convenience	Downtown SF	They can be crowded during rush hour	Easy, no parking or traffic involved	Sometimes when the driver sees me running he will wait until I cross the street to board	None	Wife	When the train is crowded	More frequent trains.
6	P4	Only during baseball season, to go from the Sunset to the ballpark	It's faster, and cheaper than parking at the ballpark	Sunset District, Taraval Street	Breakdowns, delays	Cheap, sometimes convenient	Generally people are very nice on the train.	A mentally challenged person who would be aggressive and loud on the streetcar.	More trains on the schedule		
7	P5	Muni: 1-2x/week BART: 1-2x/month	I drive as little as possible. Generally bike in Sunset, Richmond, Cole Valley. I take Muni downtown or to BART.	Inner Sunset - Downtown on N or, when it's having a bad hair day, I take the 44 to Forest Hill and transfer to the K.L.M. I take BART when going to the east bay.	Muni is so unreliable. Often 20min btw trains and then it's packed like sardines. Sometimes the N stops at Church & Duboce and everyone has to get off. Recently, we all sat there for 10min because the driver's voice was unintelligible, so we didn't know we had to get off.	I can read. Also environmentally better than driving.	You're kidding, right?	Muni: 1. Waiting forever 2. Trains that disappear from the next bus map. 3. Trains that smell like piss. 4. Doors that don't work.	Muni: More frequent and more reliable.	Being dumped at Church & Duboce. Being packed in like sardines because the N doesn't ride frequently enough.	Muni: 1. More frequent and more reliable 2. Better trains; these are crap. (Just take a look at the streetcars in, for instance, Amsterdam; they're fast, smooth, quiet.)
8	P6	2 x a week 38, Female	To get to busy areas with no parking	N Judah. Up and down the line from 9th to 48.	Seem good to me.	Quiet. Get to see the views of the city.	Just the walk home after. Good exercise.	Not well lit at sunset and Judah. A little scary at night.	More places to refill clipper cards.	Having to pay for my kids with cash and not just using one card for all of us.	N/A
9	P7	once a month 50 woman	fast way to get downtown...no parking	Sunset District	sometimes dirty or weird people	super fast, not having to park	visiting with people :)	feel sorry for people who are homeless and/or unkept	cleaner and safer	sometimes can be unsafe or if the muni is down that's a huge inconvenience	updated stations, bathrooms, security, public service announcements tell people how lucky we are to have the trains...keep them clean and respect them. We are all in this together!
10	P8	I ride muni trains regularly Monday - Friday. There are occasional weekend rides as well.	Easier than driving and parking	West Portal to Civic Center M-F	When there are not enough and the trains are overcrowded.	That I do not have to drive and can read during my commute. Also, that I do not have to worry about parking. It is also better for the environment.	I had the same happy driver on three consecutive mornings. She was very cheerful and had nice words of wisdom for us all. It was refreshing to have a happy driver.	People shoving to get onto an over-packed train before allowing people to get off. Lack of politeness or consideration for other passengers.	Cleaner, more reliable, more consistent, more trains during peak hours.	Delays, trains going out of service mid-trip and being kicked off	
11	P9	2 times per week average	Convenient if going to downtown, Castro, Hayes valley, etc. No parking needed. Convenience-when I know driving and parking would take longer and cost more. And when I know I won't have a lot to carry.	Sunset and taraval to areas described above	Too crowded sometimes. Undesirable people on train	Fast to downtown. No parking required. Lots of diversity amongst fellow passengers	Caltrain baby bullet is fast and efficient. If you get on early enough, you can get a seat and get some work done.	On muni? Too many to tell. Usually something to do with a mentality of person who is yelling, smells terrible, scares people, etc.	Too many people just walk on without paying. Enforcement of fare cheaters. Better and safer platforms along taraval. It is dangerous currently	Slow during commute hours	Safer boarding along taraval
12	P10	F, 34 a couple times/year	I don't use the train for commute.	I don't use the train for commute.	Dirty, takes too long, crowded, uncomfortable, does not get me close enough to my destination	Can read, listen to music, do other work	Caltrain baby bullet is fast and efficient. If you get on early enough, you can get a seat and get some work done.	not on time, harassment by angry drunks	More stations. More trains. Better service. Cleaner. On time.	Not close to my destination. Takes longer than driving.	Be on time/more efficient and faster.
13	P11	4x a year, 27 yr old female	It's a really easy to use if I want to go downtown	I commute from home to go downtown to do shopping or other entertainment	I don't have a train near my house so I have to drive up to West Portal first	It's so easy to get downtown without the hassle of parking. The trains come frequently and are fast	Walking into West Portal station and a train being only 2 to 5 minutes away	the trains can get really busy and crowded. I've seen lots of nasty things happen on the trains including people dipping their toenails, eating gross smelling food, or people having sex.	I think too many people get away with not paying. I would like to see more officers policing the trains and making sure people are paying	Sometimes there are infrequent amounts of m or k trains to where when they do come they are so crowded I cannot get on.	I would be happy with more trains and or longer trains for M and K. Also more police checking to make sure people are not cheating the system without paying
14	P12	1-2 times a week. I am 65 and semi-retired. I take the train or bus to work, occasionally use it other times.	Convenience-faster to get downtown often; and cheaper than parking downtown and other busy areas of SF	Downtown. UCSF Parnassus	Unpredictability of schedules sometimes, occasional breakdowns or other things that interrupt smooth travel plans. Crowded during evening commute hours especially	Convenience and ease of getting certain places (I live on the "L," like, so it is easy for me). Not having to drive! Time to read, meditate, think, daydream instead of driving.	Witnessing several riders who may have been familiar with each other from riding the bus often, but from very different backgrounds, talking and joking together, and supporting each other's needs (e.g. giving up a seat for one another). Unfortunately I haven't seen this much!	Loud, disrespectful riders, usually a few together swearing and cursing and being inconsiderate of other riders' needs to not want to hear that kind of language.	Working people especially rely on the trains being on time. While some things are impossible to predict and correct immediately, I would be helpful if the online (B11 or NextBus.com or others) were truly accurate! And though I support unions very much, it annoys me that if a bus is delayed the driver still takes his/her mandatory break at the end of the line, leaving people standing at bus or train stops even longer than they actually were! That doesn't happen in my work and I am a professional-the "customer" or patient comes first usually.	see #4 above	See #5-more reliable "next train" predictions. So many times we go down to the stop because train or bus is due in 1-2 minutes and it doesn't come for 5-10! Or vice versa...it suddenly comes sooner than app said and you haven't made it to the stop!
15	P13	52 year old female. Only when I go downtown or airport	Avoid traffic and especially parking nightmares	I commute daily in my car 16 miles south of SF because taking the train would be twice as long and involve a change from muni to caltrain	Rude passengers talking on phones but biggest issue is convenience	No parking no traffic	See neighbors and chat	fifty stations, disrupted service (over one hour), no announcements, rude drivers, rude passengers using foul language when I travel with my young daughter	Get 1 together like the Japanese system. I lived there for 5 years and NEVER had a late train	Mentioned above	Use the budget wisely.
16	P14	4 days a week, to and from downtown SF	cheaper and more relaxing than driving	between home and work in downtown SF	sometimes the trains are very crowded. Sometimes too crowded to board the train.	I can do something else while being driven	I catch up on my reading	when train service is disrupted, and the train operator has little or no info to share, or what they do share is not communicated well over the loudspeaker	I would like their loudspeaker system to be better - as in more easily understandable	No wifi! Crowding. Sometimes an unpredictable schedule	add wifi!
17	P15	Once a week 32 Female	Local shopping	Home to businesses	Slow. Not enough trains. Doesn't run 24/7. Doesn't go to all the areas I'd prefer. Fabric seats.	I don't have to park.	Transportation is a necessity. Not pleasant and not pleasant.	Train late by 40 minutes. Harassing passengers sometimes.	BART has CLOTH SEATS. This is the dumbest thing ever. Always dirty. Muni trains need to be faster and there needs to be more. Trains need to run 24/7.	Not enough seats during peak hours.	Digital maps showing current location. Digital sign reading upcoming stop. Verbal cues are never clear or audible.
18	P16	Rarely. I'm a 58 year old mother.	Convenience.	Usually from home in Outer Sunset to downtown.	Don't like if there are lots of stops and if there are no seats or room to stand.	I enjoy not having to drive; not having to be stressed by traffic.	Some people are nice and let you know when the train is coming or if you need help getting a ticket.	When I ask the train driver where to get off to get to the place I want to go and she isn't helpful or pleasant.	More trains in service during heavy commute times. Being able to get change.	Not having exact change.	Being able to get change when I pay.
19	P17	Make 44 years	Commute to Oakland	Oakland/Outer Sunset	Crowded and slow	Not driving, reading	Conversations with the driver	Another passenger complained about those conversations	Move to underground for speed and efficacy and more of them	Crowded and slow. Nauseating drive	See #8
20	P18	muni - 4 to 5 times a week	It's convenient and it costs too much to park downtown	outer sunset to embarcadero	they are dirty and there are a lot of sick people coughing and sneezing	I like that I can read and get where I need to go	I had a person smoking some substance on the train and then yelling at the top of their lungs	I had a person smoking some substance on the train and then yelling at the top of their lungs	I would like to see them go faster. I would like them to be on time and more reliable. I would like them to not break down.	they are crowded, they break down. they don't always go to the final destination.	cleaner trains, on time, less crowds
21	P19	3-5 times/month 44, female	Avoid parking hassles	Home to downtown	Crowds	Ease of not having to look for parking and pay for it	Talking to other riders who don't have their face in a screen	Urine all over the floor at a stop	I would like to see cleaner stations	Delays beyond my control	Cleanliness, increased security in stations
		5 times/week		West portal to downtown, Castro and mission district Or west portal to sf state					More frequent, more cars added. The more people who take public transportation, the less cars and congestion on roads.		More frequent, more cars

A spreadsheet tracking our interviews



Synthesizing some of our interview information



Getting feedback from Haakon Faste after first pitch presentation

# User Evaluation

1. People take trains to avoid parking issues.



“I do it to avoid traffic and especially parking nightmares.”

“I like the convenience. It’s faster to get to downtown and cheaper than parking out there and other busy areas of San Francisco.”

How might we eliminate the need to park at stations?

2. Trains allow passengers to engage in other activities.



“It offers me the opportunity to read, work, catch up on emails, sleep, socialize... It’s less stressful than driving daily.”

“I get to see views of the city.”

**How might we make riding the train a more enjoyable and memorable experience?**

3. San Francisco trains are constantly late.



“I will wait for my train to arrive at its assigned time and it simply doesn’t arrive or it is canceled.”

“Get it together like the Japanese system. I lived there for 5 years and NEVER had a late train.”

**How might we modify San Francisco trains so that they are reliable for its passengers?**

4. There are just too many people on San Francisco trains.



“I don’t like it when there aren’t enough trains and they’re crowded during rush hour.”

They’re dirty, they take too long, they’re crowded, uncomfortable, and it does not get me close enough to my destination”

**How might we transport train riders more efficiently?**

5. San Francisco trains are disgusting.



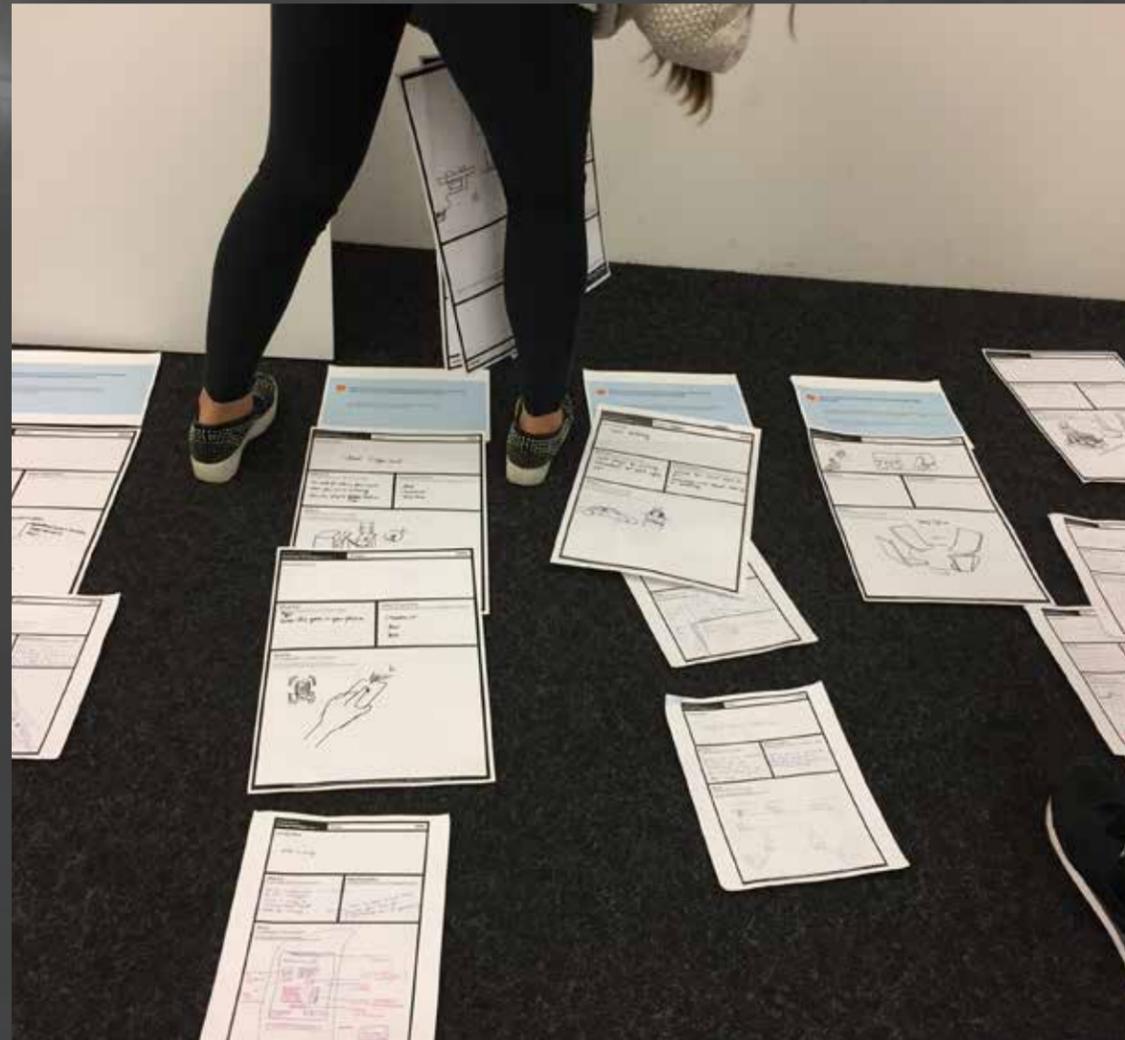
“I’ve been on train cars that smelled like piss.”

“I’ve seen lots of nasty things happen on the trains including people clipping their toenails, eating gross smelling food, or people having sex.”

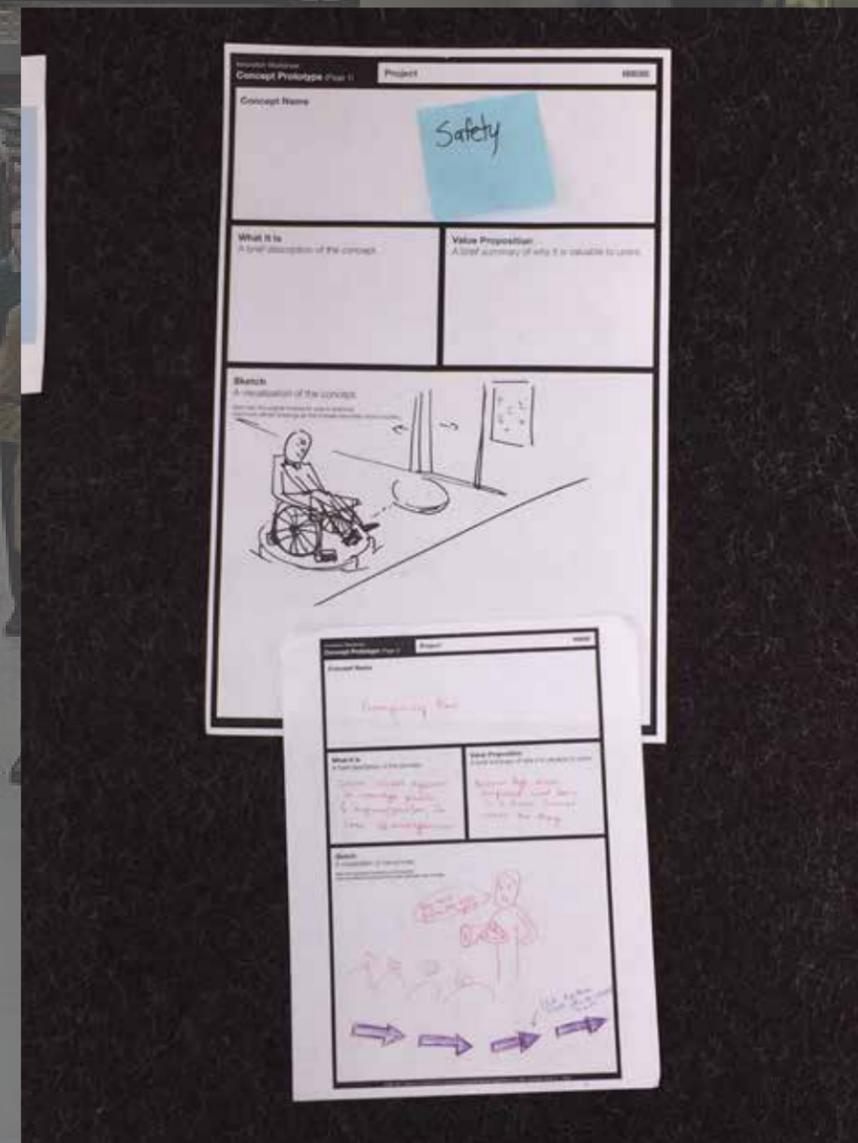
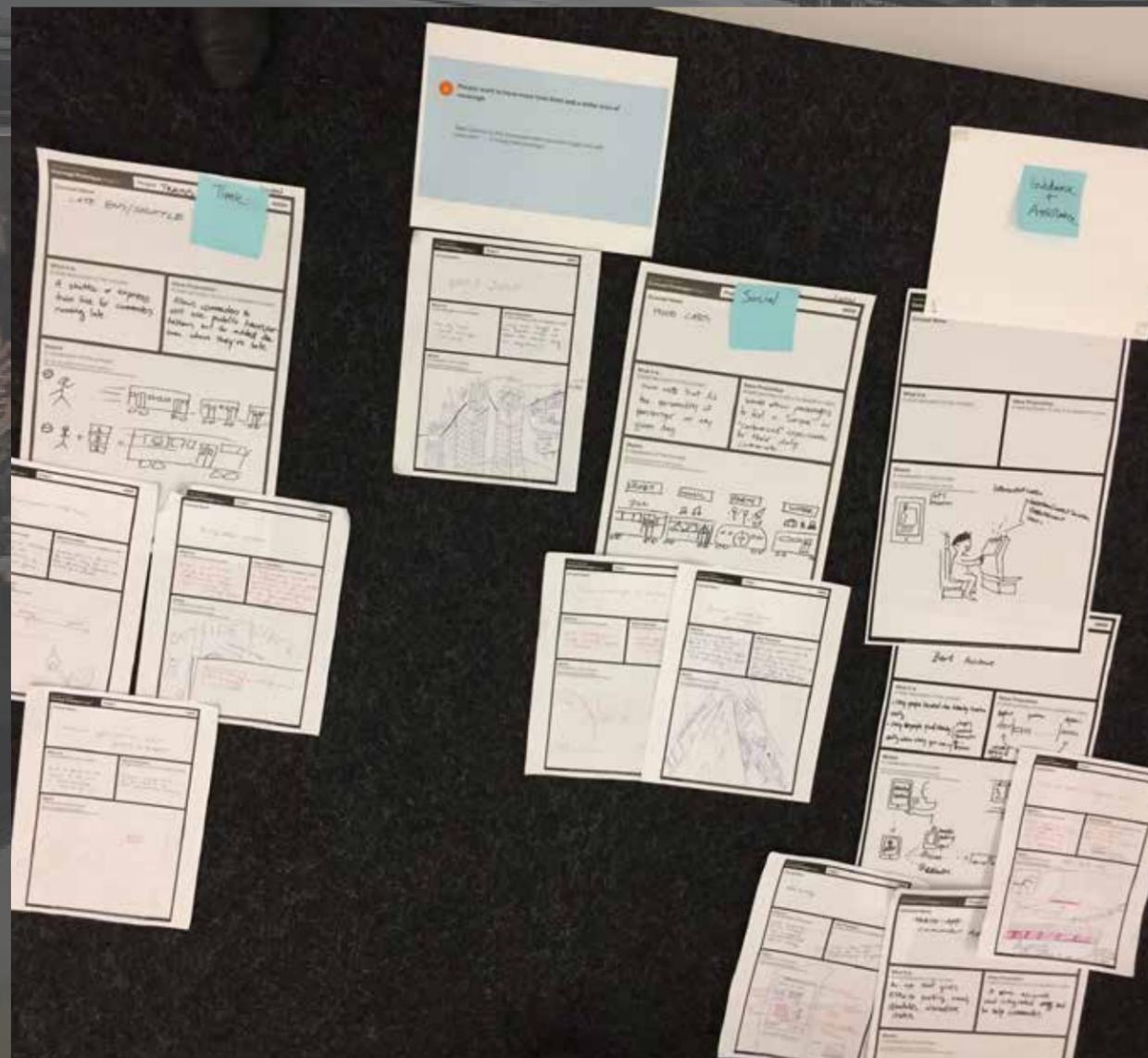
**How might we foster a sense of civic pride or etiquette on San Francisco trains?**

# Ideation

## IDEO Idea Generation Worksheets

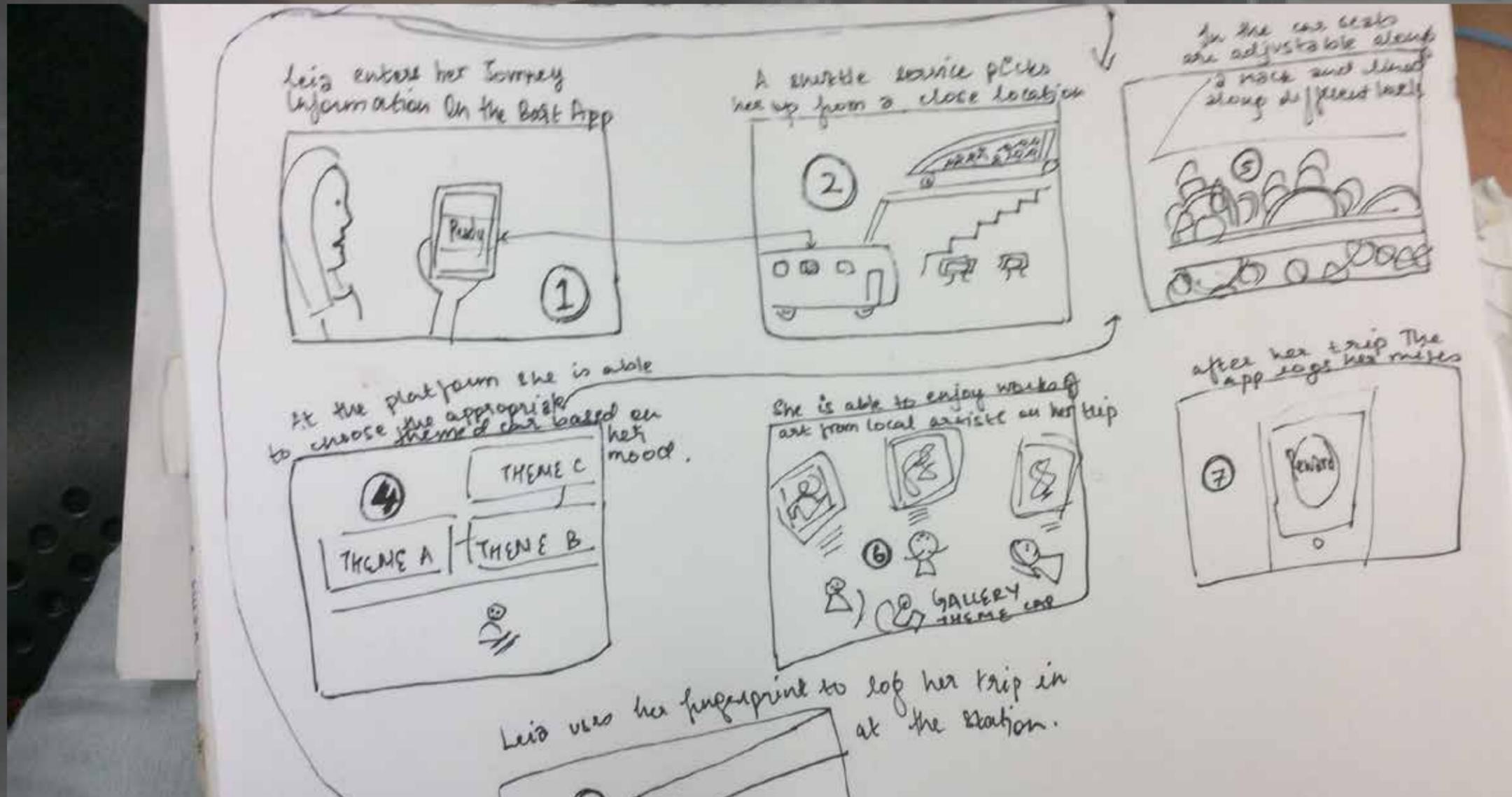


These worksheets helped us in quickly documenting any initial ideas we had. It allowed for freedom and creativity.



# Storyboard

These are the storyboard ideas we came up for our video.



## How Emely and Micheal take the train from Oakland to SFMOEA ?



### 1. Determine where to go

Emely locates her place in app. She call the door-step shuttle to pick her up to nearby bart station.



### 2. Pick up

She call the door-step shuttle to pick her up to nearby bart station.



### 3. Park the car

Driver of door-step shuttle get the notification of available parking spot and park the car directly.



### 4. Check in

Check in the app to get bart schedule, time and lines. Emely checked-in the ticket in app and find which train she need to take.



### 5. Choose the theme

She find there are different theme of the train, so he pick the art gallery one.



### 4. Make a payment

However, his friends Micheal gets the new keychain from bart, so he can go through the bart directly. The data sync to phone, so that he can pay it later.



### 5. Get into platform

While Emely and Micheal are walking towards the elevator, the keychain lights on and vibrates to remind them the bart is coming. Emely get the notification in her app as well.



### 6. Train comes very quickly

They notice that the train comes only within one minutes because more that 40 people vote for this station as the same time. Train system add more line during commuting hours.



### 7. Experience

Emely and Micheal enter the "art gallery" train and seat on the seats to talk with each other. There are the VR glasses



### 7. Interact with people

Each of them in the same table have a conversation with other passengers about their art interpretation and



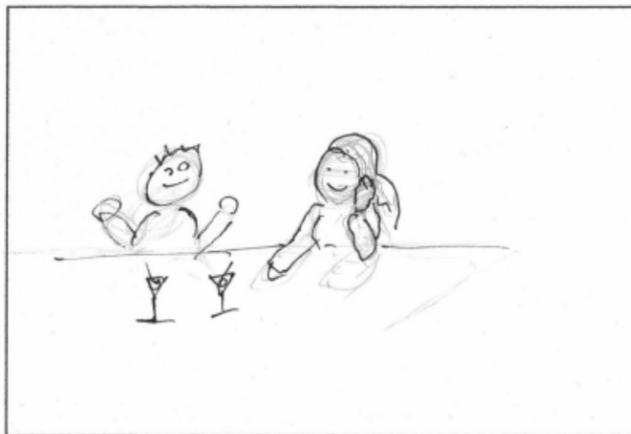
### 8. Look for signal and knowing which station should get out



### 9. Get out of train

They leave the bart and find the door-step shuttle is waiting outside the bart station to pick them up

# Mobility Storyboard



*It's Friday evening. Jenny just got off work and is having drinks with a friend. She has plans to meet other friends for dinner in one hour.*



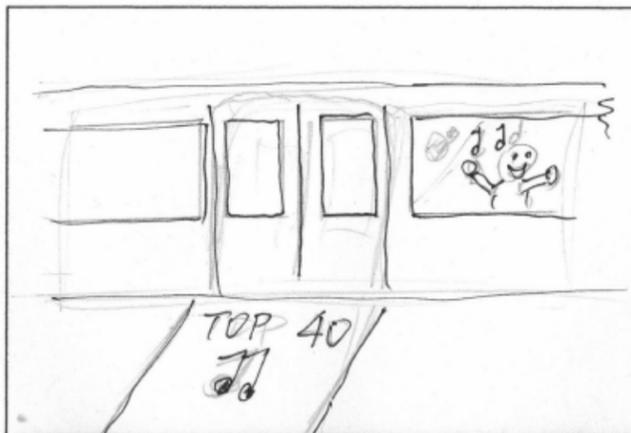
*She needs to catch her train within 35 minutes if she wants to make it on time. An alert simulates a slow steady heart beat letting her know she needs to leave soon.*



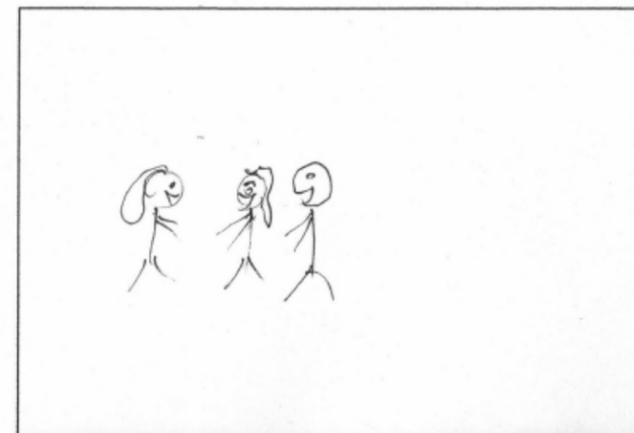
*As the heartbeat increases, Jenny decides it's time to her train app to call for a driverless car to take her to her nearest train station.*



*The vehicle provided by the train company, drops her off at the station. It deducts funds from the same payment card she uses to pay for the train. Her app displays her remaining credits.*

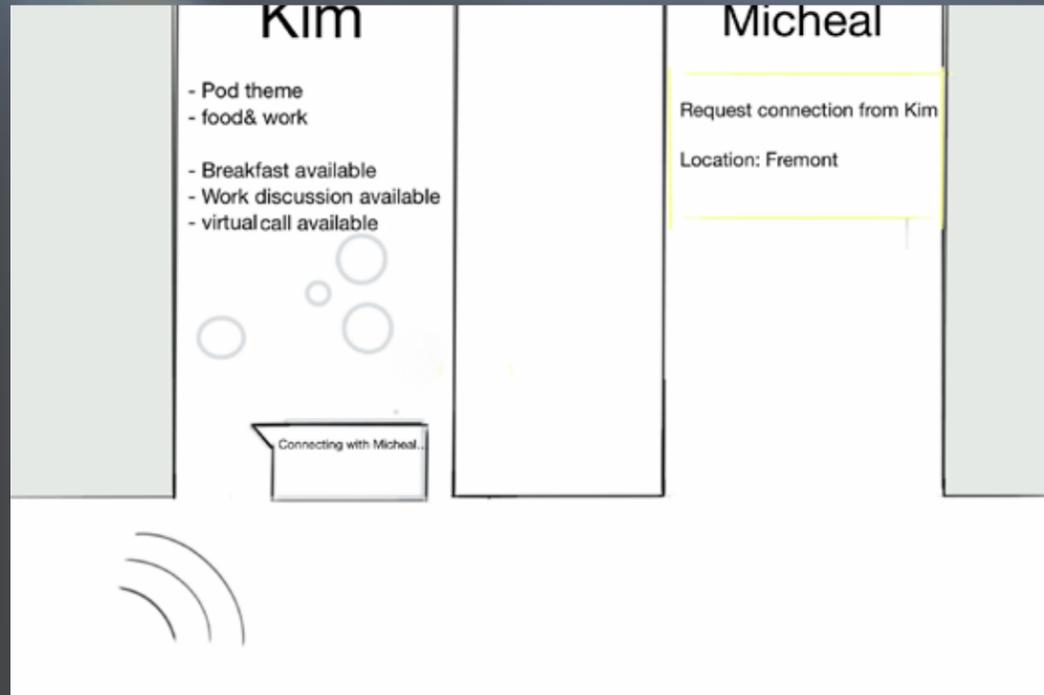
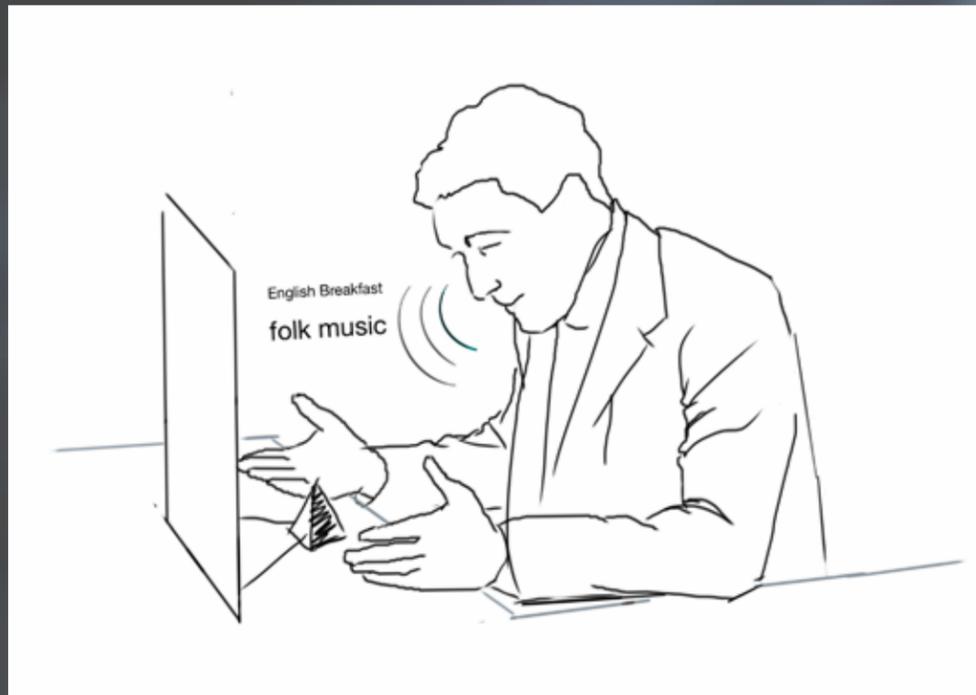


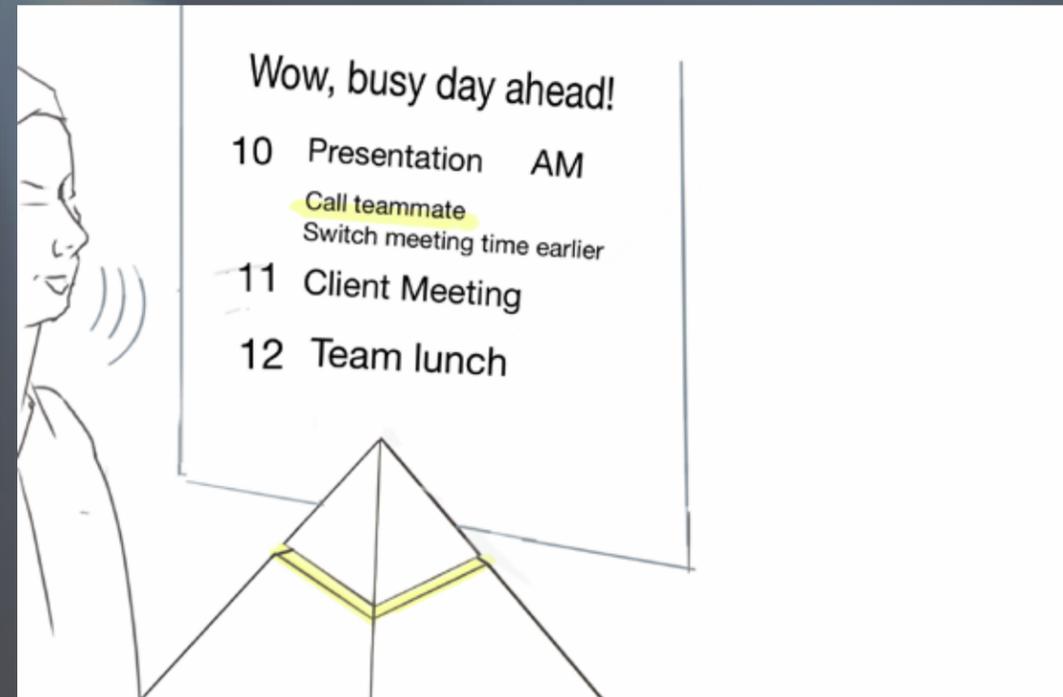
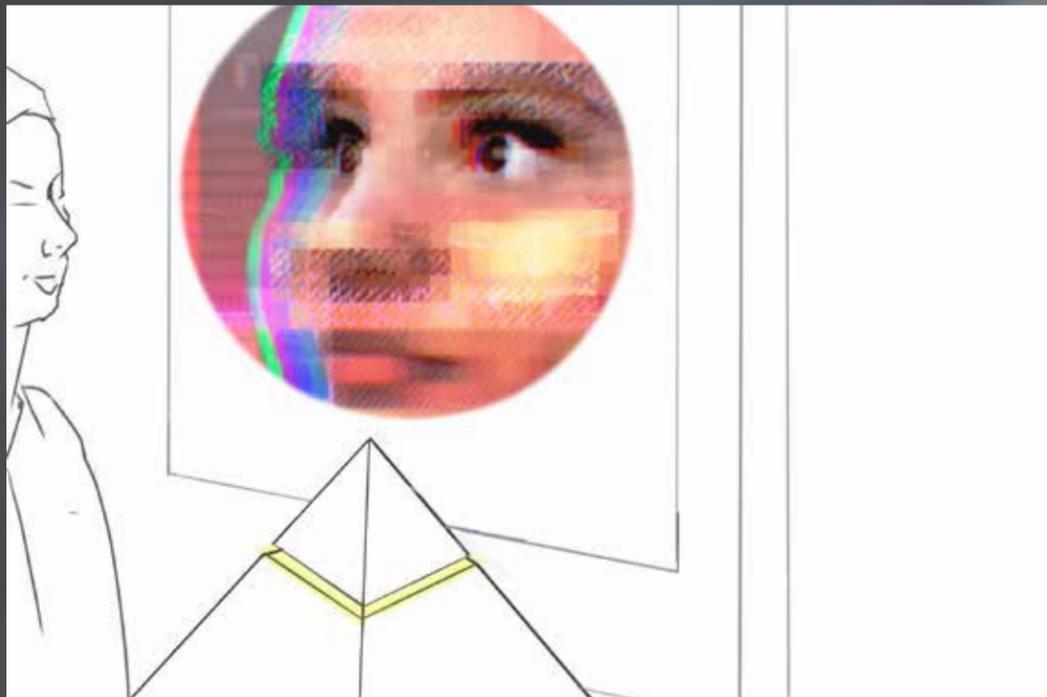
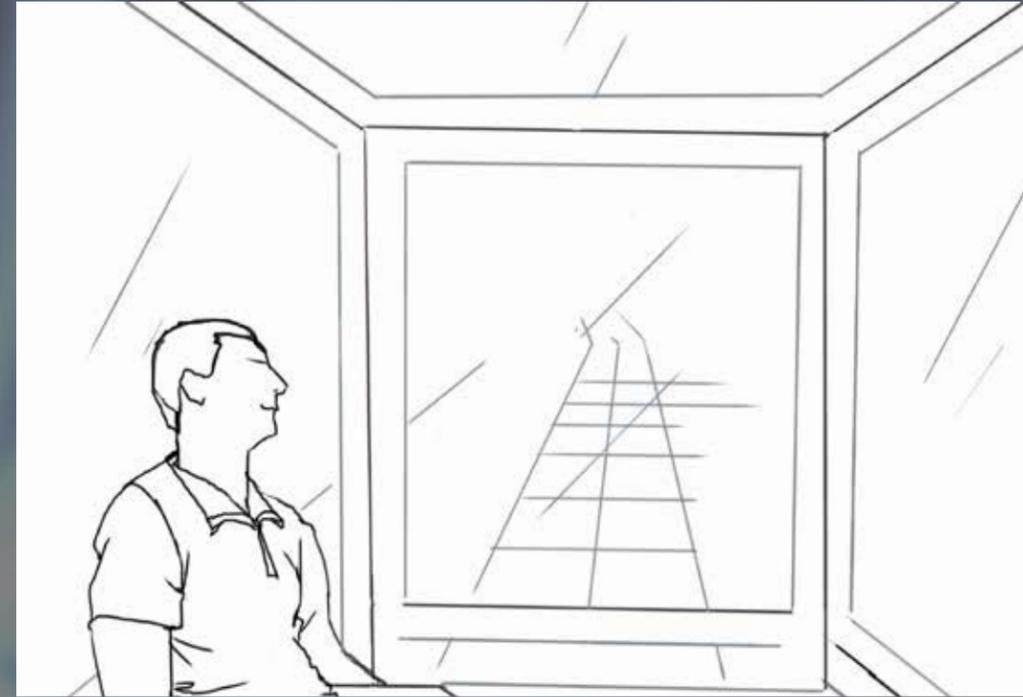
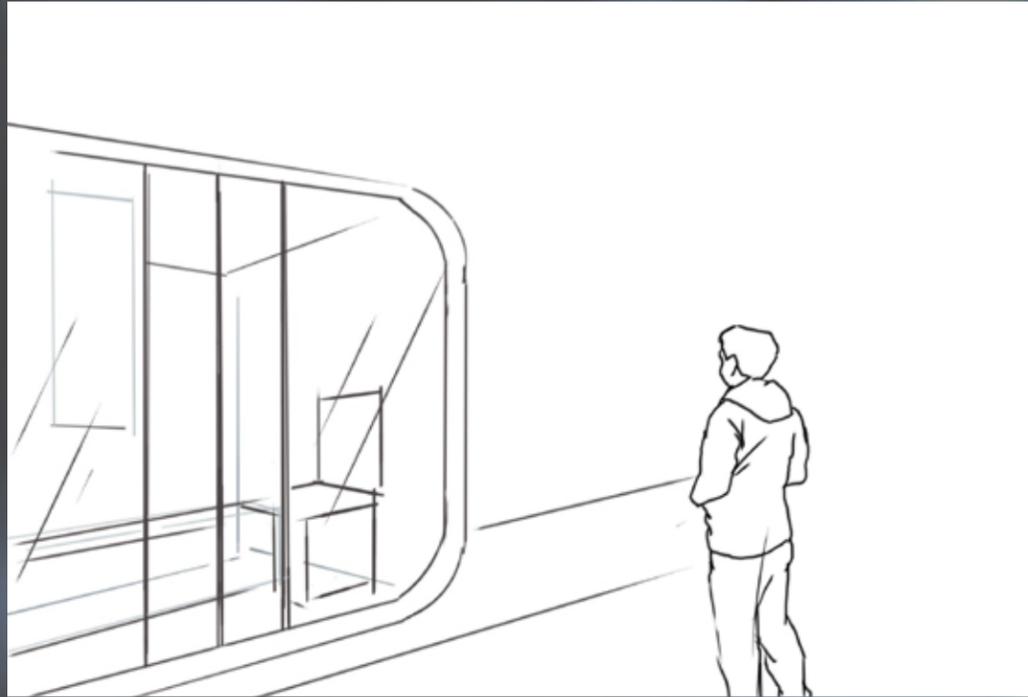
*She chooses to wait in the line for the car which will play her preferred music.*

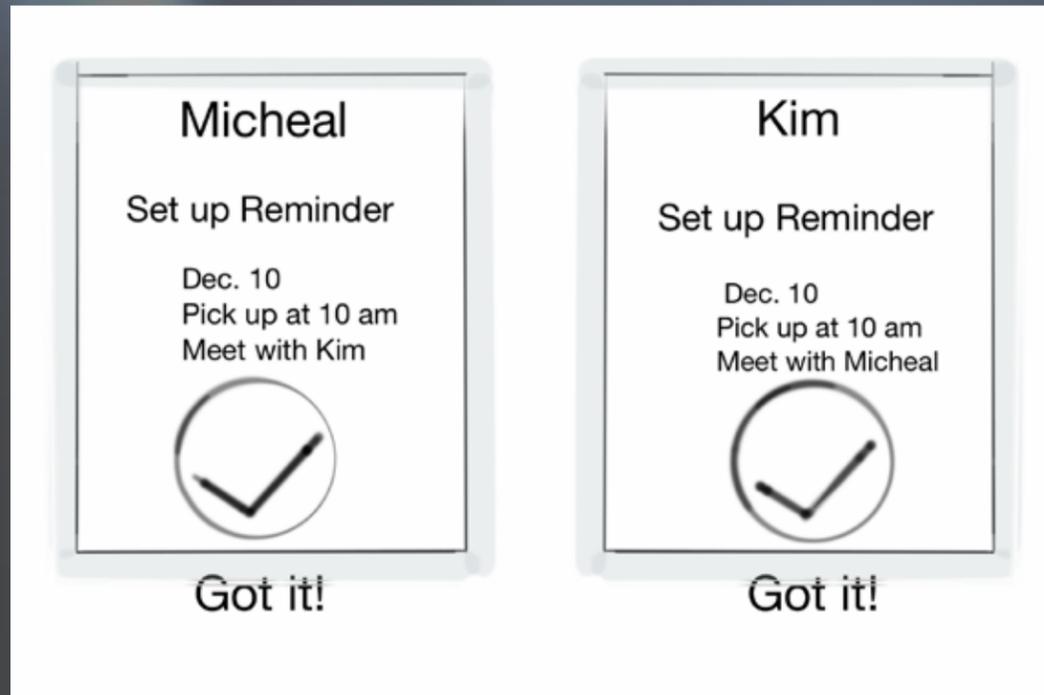
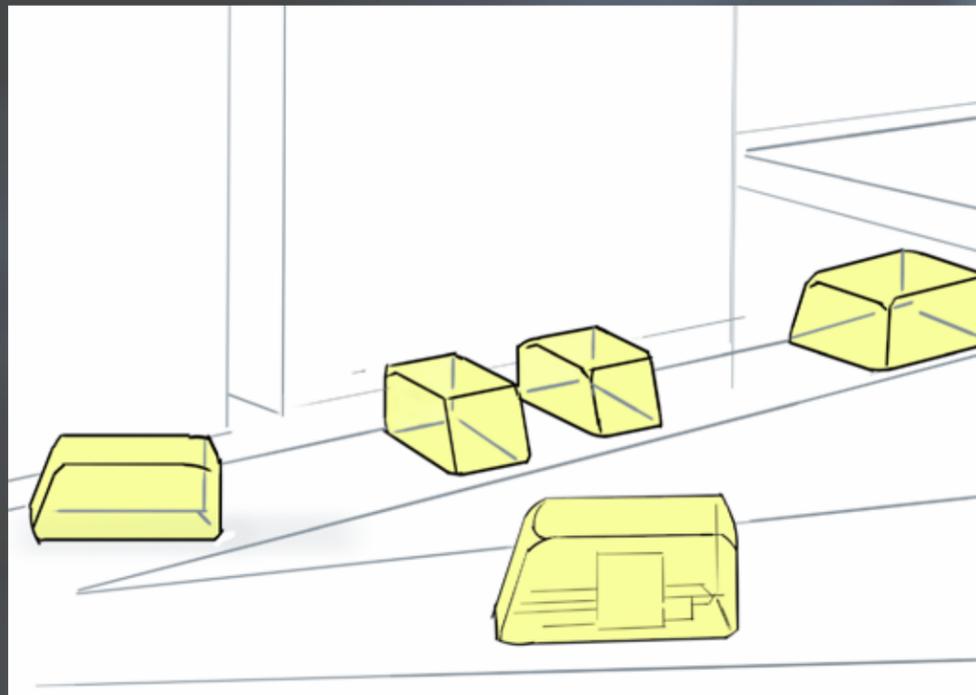
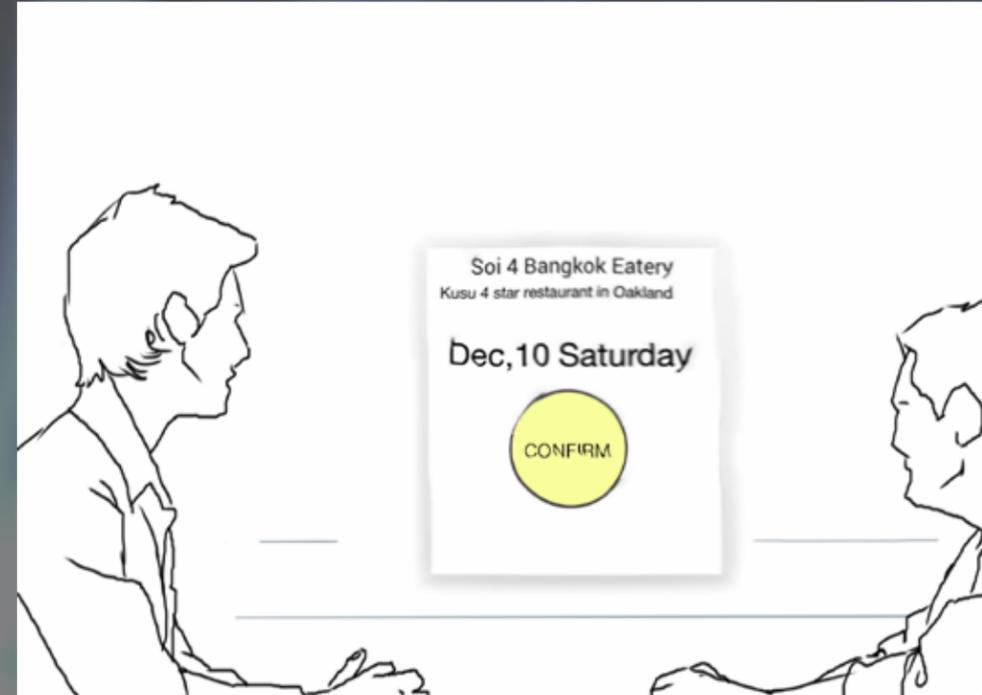
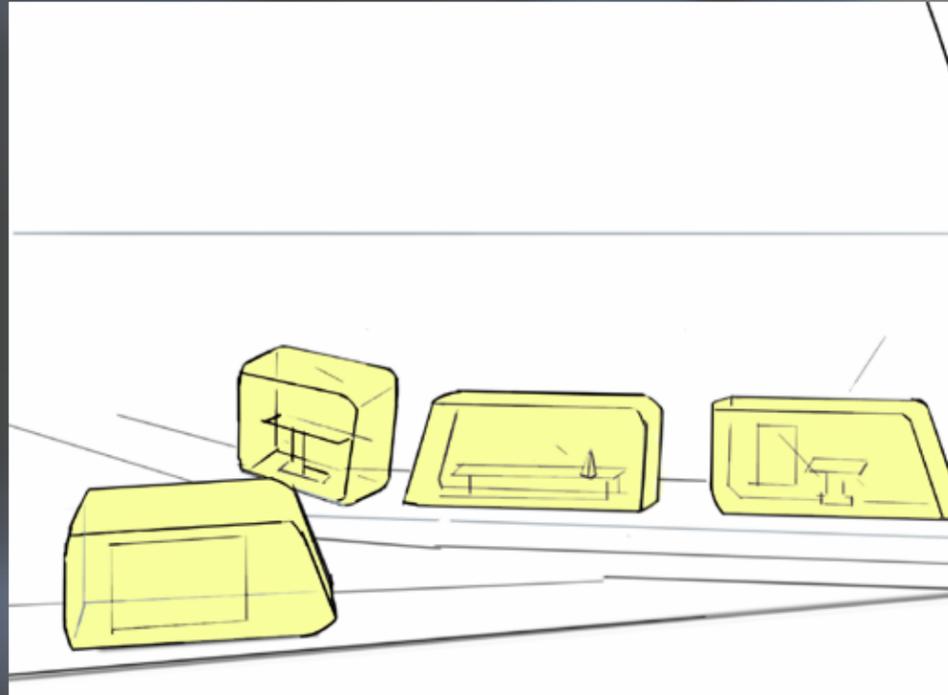


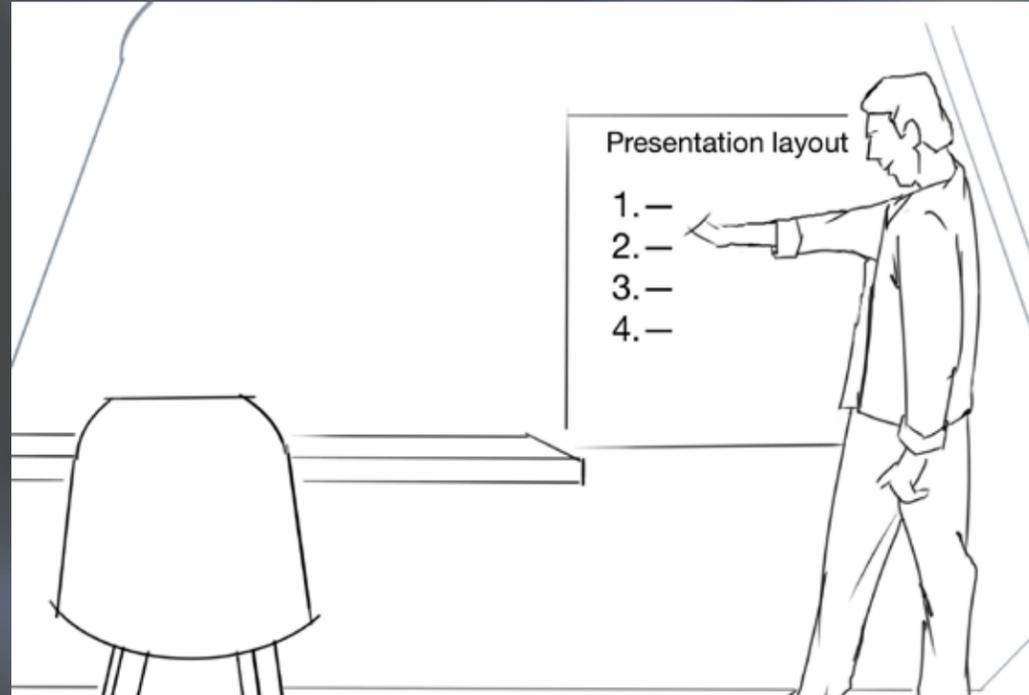
*The music puts her in the mood for a fun night out with friends.*

# Final Storyboard









The End

# Presentation

The following pages are the presentation deck we presented to Ford in Timken Hall

# Link to Video

<https://youtu.be/wbBqWrLalxg>