

THE OHIO STATE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

HONDA

Honda Glide: Unloading the Process

Initial Brief:

Research current conditions for customers and service workers involved with Grocery pre-order and curbside pick-up and development concept to improve user experience (physical as primary, digital as secondary priority) and integrate system process into the vehicle, primarily the rear cargo area. The project will study the current user flow, identify pain points, and create improved user flow with new concepts and prototypes related to Grocery curbside pick-up and customer handling of grocery items from vehicle to home storage.

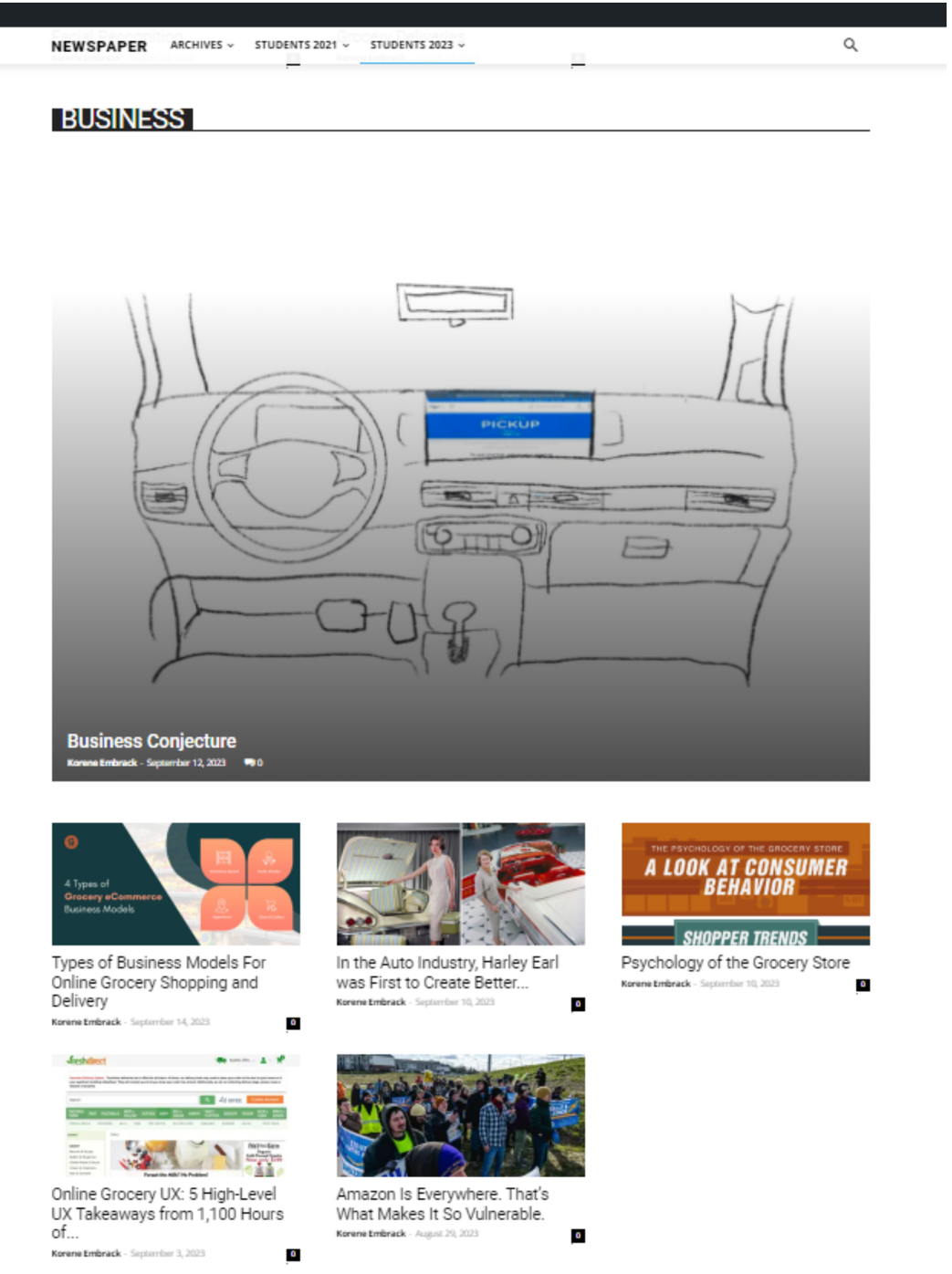
Updated Brief:

Grocery store users express taking heavy groceries from the car to your home to be difficult. It seems to show that there is an opportunity to design an easier way to unload groceries. Given that there are physical strains to lifting heavy groceries, how can I design for reducing strain when unloading groceries?

Phase 1: Topic Research

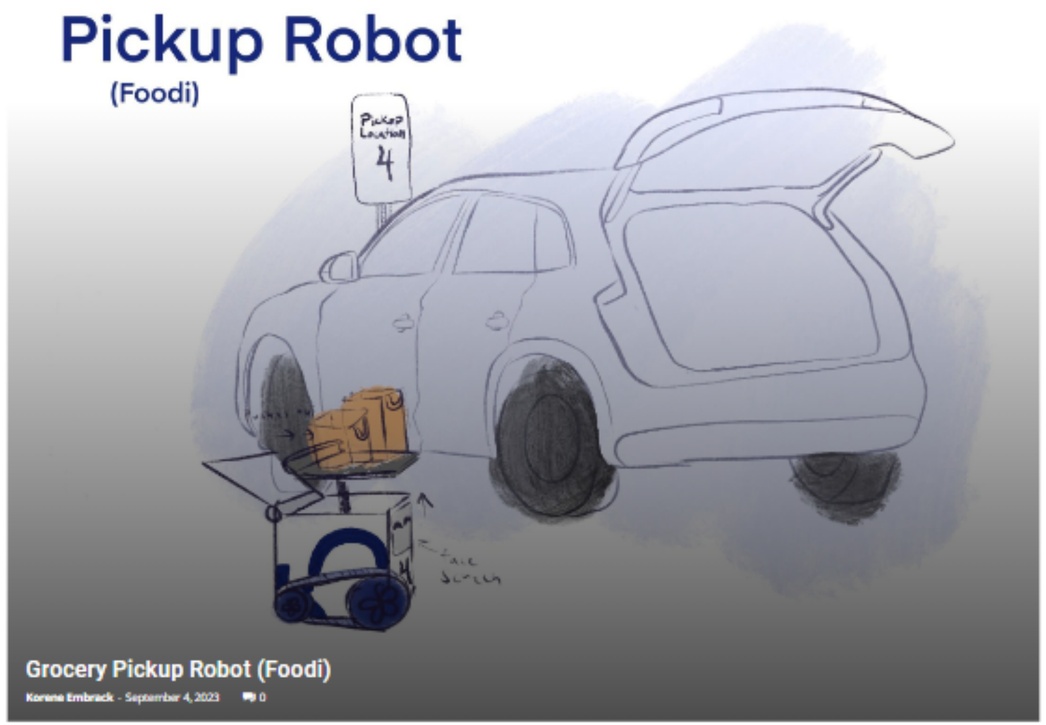
To begin research I read at least 20 different articles related in some way or another to grocery shopping and food. After reading those articles I came up with some ideas on how to solve solutions relating to the topic of the category/articles that I read. This was an initial exercise to get some ideas flowing relating to our brief topic. You can find the summary of each article as well as the ideas by following this QR code.

The website will also include a summary of the Quantitative Data collected as well as a poster of that outlines the data I collected as well as outside data.



For the business section. I thought that having curbside apps as part of the car's system would be a good idea. Since it was built in it could include a self notification system so users didn't have to state if they were in the vicinity, or what number parking spot they were in.

SCIENCE & TECH





How AI Technology Will Transform Design

Korene Embrack - September 4, 2023



The Evolution of Grocery Retail Technology

Korene Embrack - September 3, 2023



3D Printed Cars to Hit The Road Next Year

Korene Embrack - August 31, 2023



Barred From Grocery Stores by Facial Recognition

Korene Embrack - August 28, 2023



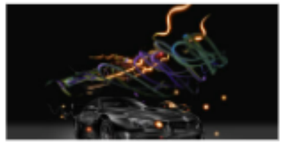
Kroger Tests Driverless Cars for Grocery Deliveries

Korene Embrack - August 28, 2023

For the science and tech section, I designed a little pick-up robot that I call Foodi. this little robot is designed to do curbside for the store. I would be temperature controlled as well so that way workers for just fill the orders and leave the Foodi waiting until the customer came to pick it up. removing the physical strain workers would have to exsert moving items into the vehicle.

ARTS





BMW Art Car reloaded: Chinese multimedia artist Cao Fei takes the...

Korene Embrack - September 7, 2023

Beijing. The future is now. Following the contributions by Jeff Koons and John Baldessari, Cao Fei (b. 1978) is the youngest and first...



Is AI art really art? This California gallery says yes

Korene Embrack - September 6, 2023

At bitforms gallery in San Francisco, the answer is yes. An exhibit called "Artificial Imagination" is on display through late December and...



In Praise of Pockets

Korene Embrack - August 31, 2023

Dua Lipa's vintage Chanel dress at the Met Gala had pockets. And fashion's fan-favorite designer Christopher John Rogers sent chunky knitted sets with enormous...



In Japan's 'Gateway to Asia': Street Food, Night Life and a...

Korene Embrack - August 28, 2023

Fukuoka, known for its outdoor food stalls, is a popular destination for Japanese tourists. Now it's starting to draw more international travelers,...

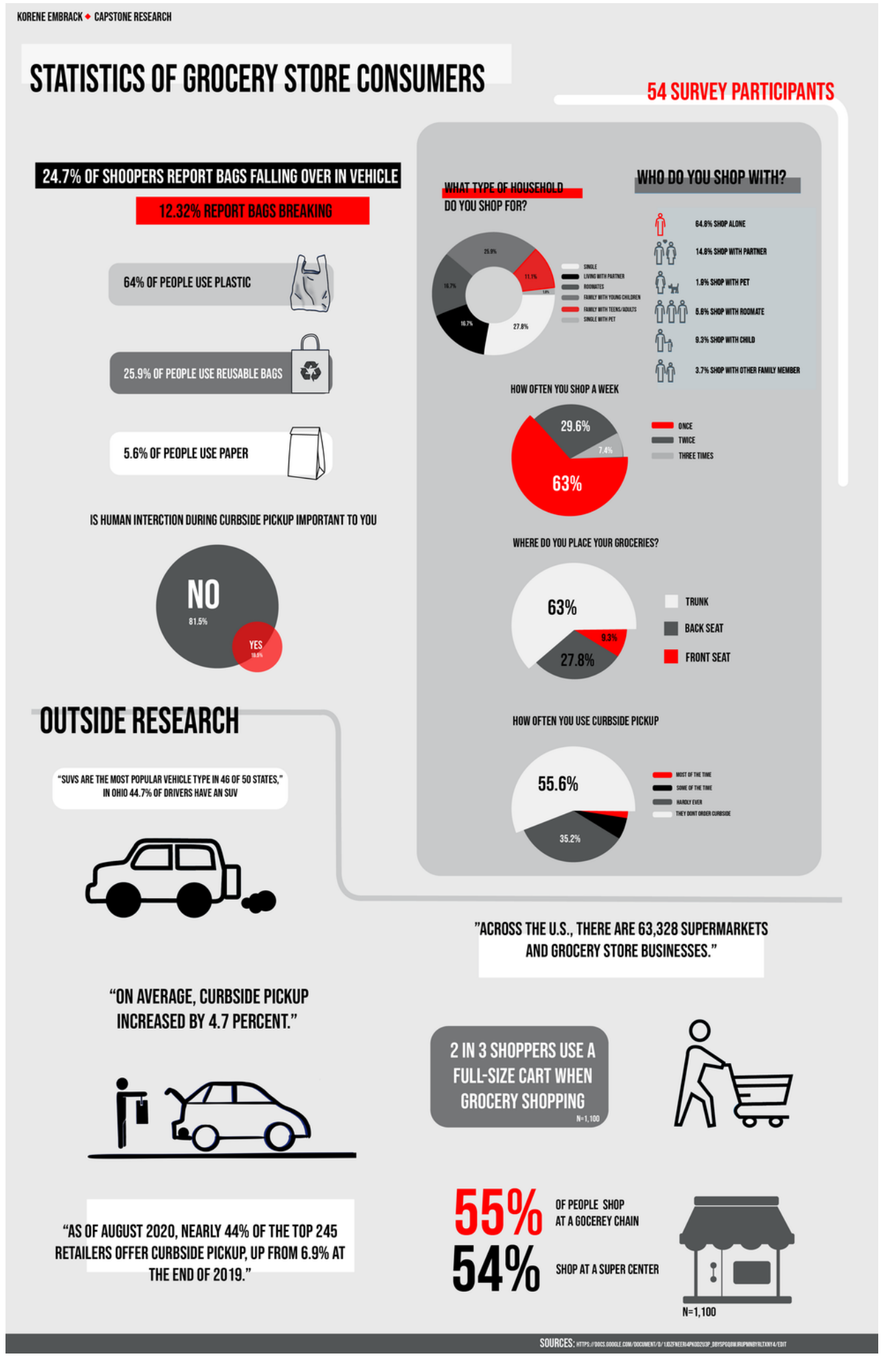


FreshDirect, but Make It Fashion

Korene Embrack - August 28, 2023

When the grocery delivery company stopped taking back its bags during the pandemic, some people used their stashes to make purses, journals...

The last conjecture that I came up with was for the arts section and was an overhead storage/bag. This design was meant to allow groceries to be stored in a location other than the floor of the trunk. This is for when your trunk is full of other items.



The last section was numbers and from the information I learned from reading and the data I gathered during my own research I created a graphic to display a majority of the stats that I have gathered.

Phase 2: Ethnographic Style Research

Honda Museum



The first trip we took was to the Honda museum in Marysville. During this trip we learned about the history of Honda machinery as well as the processes behind creating the interiors of the vehicles.







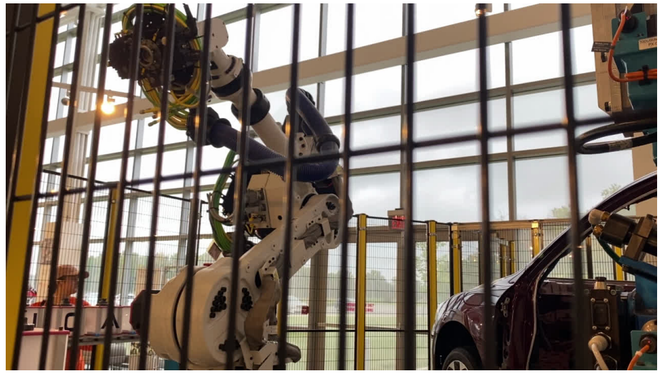


Section view of Honda Acura RDX vehicle





Honda assembly line robot





Honda ASIMO robot



Honda Dealership



When we went to the dealership we looked at 2023 models that were a part of the brief we were given by Honda. More specifically the Acura TLX, Ridgeline, Piolet, and Passport.





We observed some of the features of the new models such as the Ridgeline’s multi-opening truck bed , and folding seats, and their new ventilation style.









Honda Facility

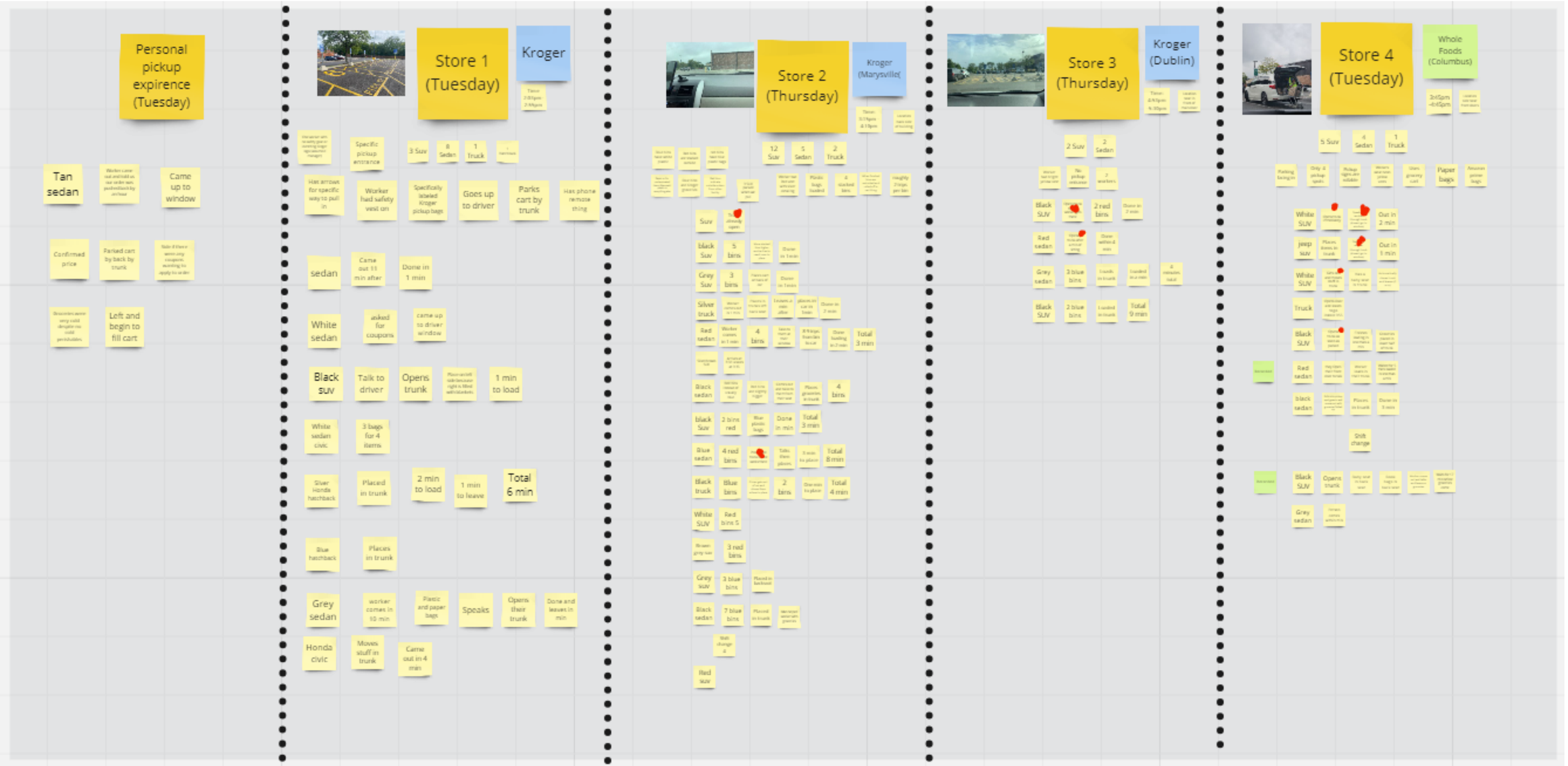


With the OSU engineering team, we were able to tour Hondas facility. We were able to see the offices, prototypes, 3D printing room, crash testing cite, and see the special wraps put on cars that were in progress. Our phones were covered with special tape to avoid any unauthorized photography.

Curbside Observations



To observe the curbside pickup process we did one Pickup order together and then observed 5 different stores. I went to 3 Krogers and Whole Foods for around an hour each.



The main takeaways from those observations were:

- The types of cars who did pickup
- Location of where groceries were placed
- The time taken for each order to be loaded
- Customer interaction





For some additional research two of my classmates went to observe how cars were used in ways other than grocery shopping, for my product I am able to see how my design would be helpful for unloading when you carry many items in situations like this.











Phase 3: Participatory Research

To begin research I wrote a series of questions to ask in an outgoing survey. I sent out the survey through my social media and in total received 54 answers.

The survey consisted of 10 questions
about their grocery shopping experiences.

Then one of the final questions was to ask participants who were willing, to send me their emails to follow up for an interview. In the end I interviewed 10 people for a more in-depth conversation about their experiences.

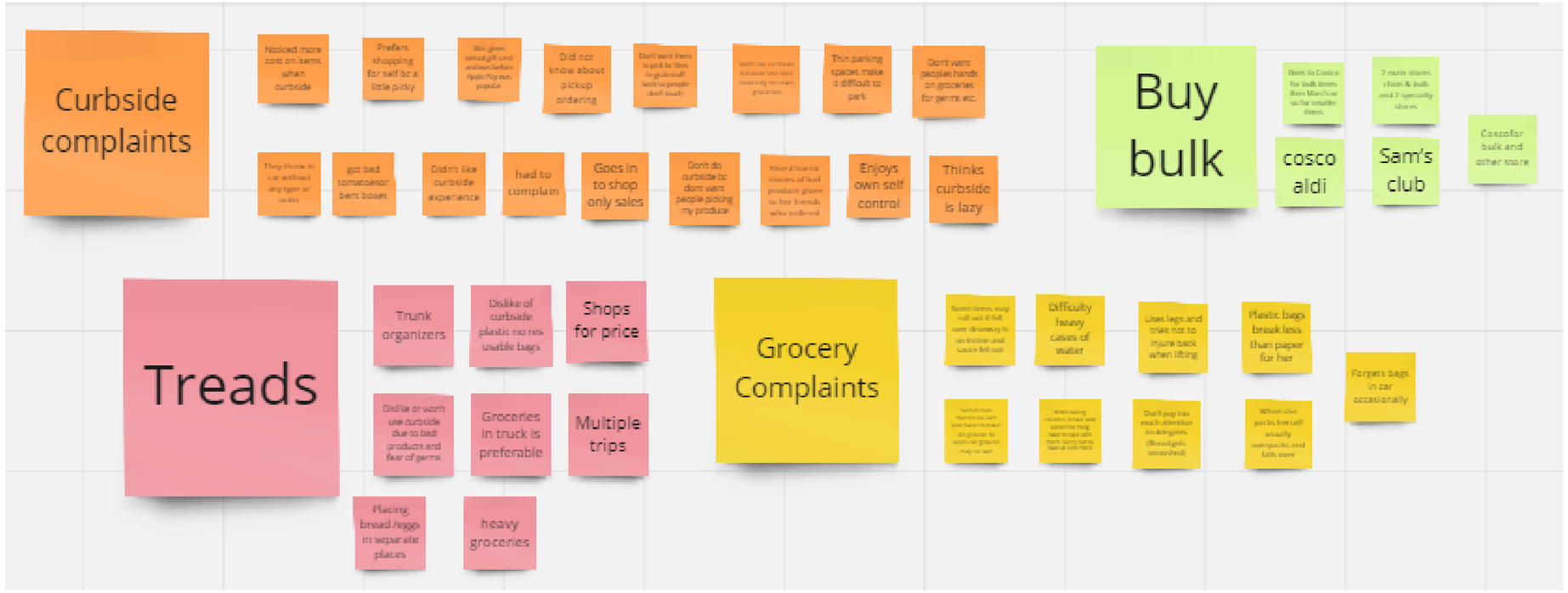


Survey link





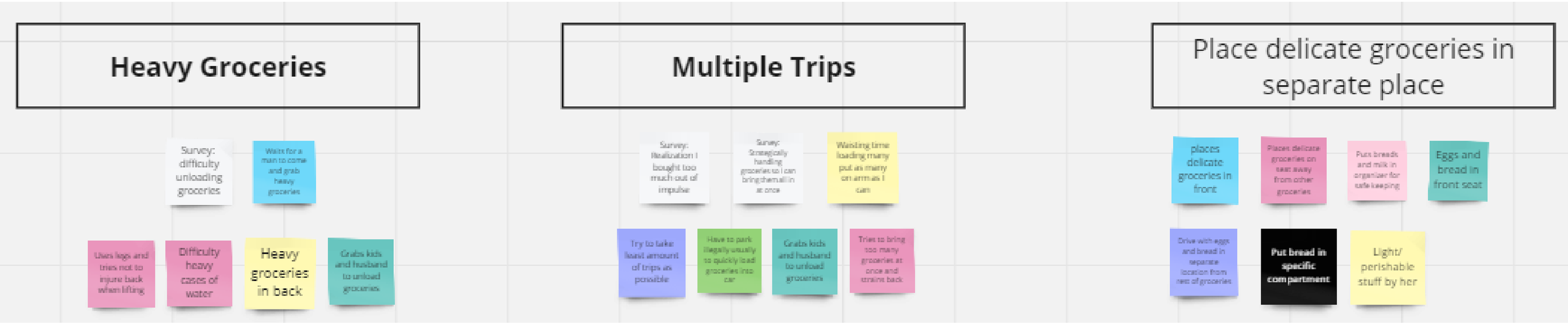
These are the following results and notes from the interview and survey.





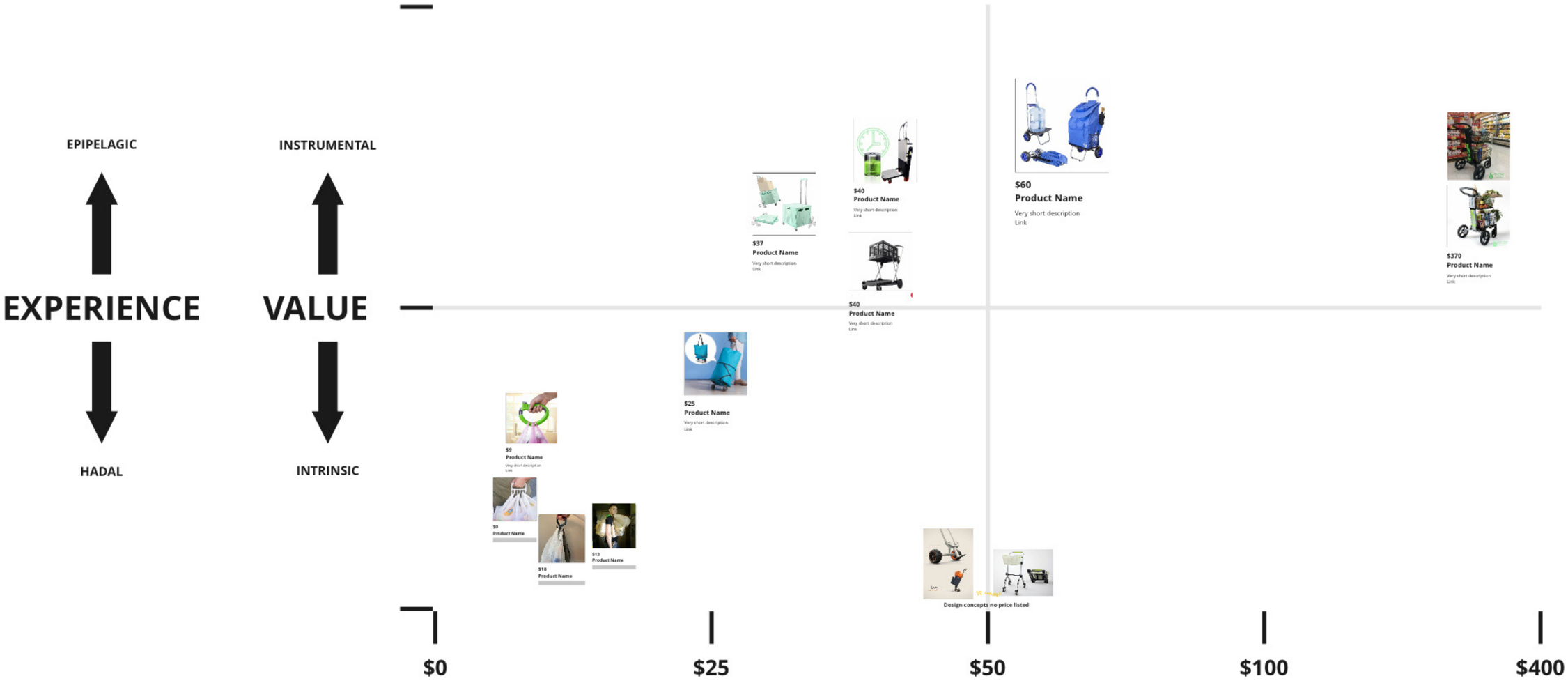
From there I started grouping the content so see where there were similarities across the data.

Particularly, I noted that people complained about heavy items, damaged groceries and having to take multiple trips to unload everything.

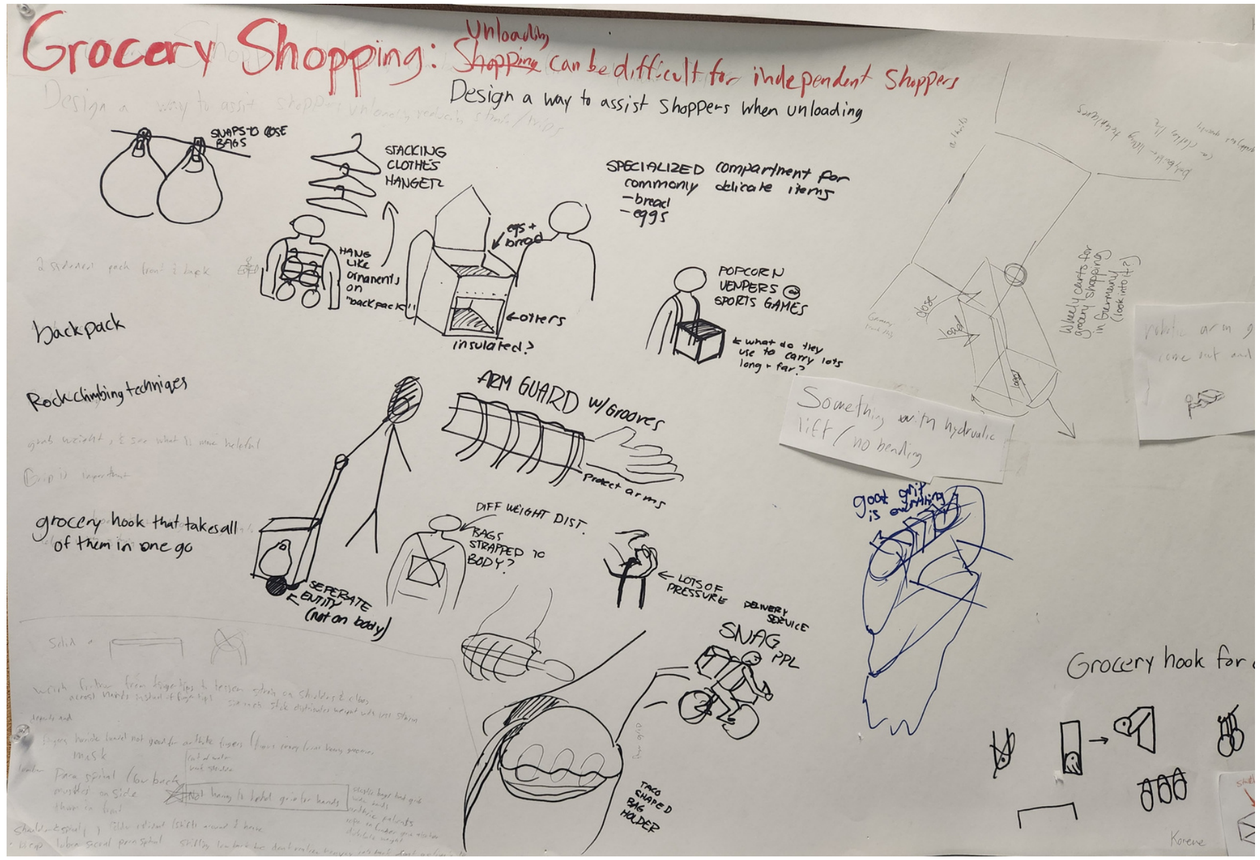


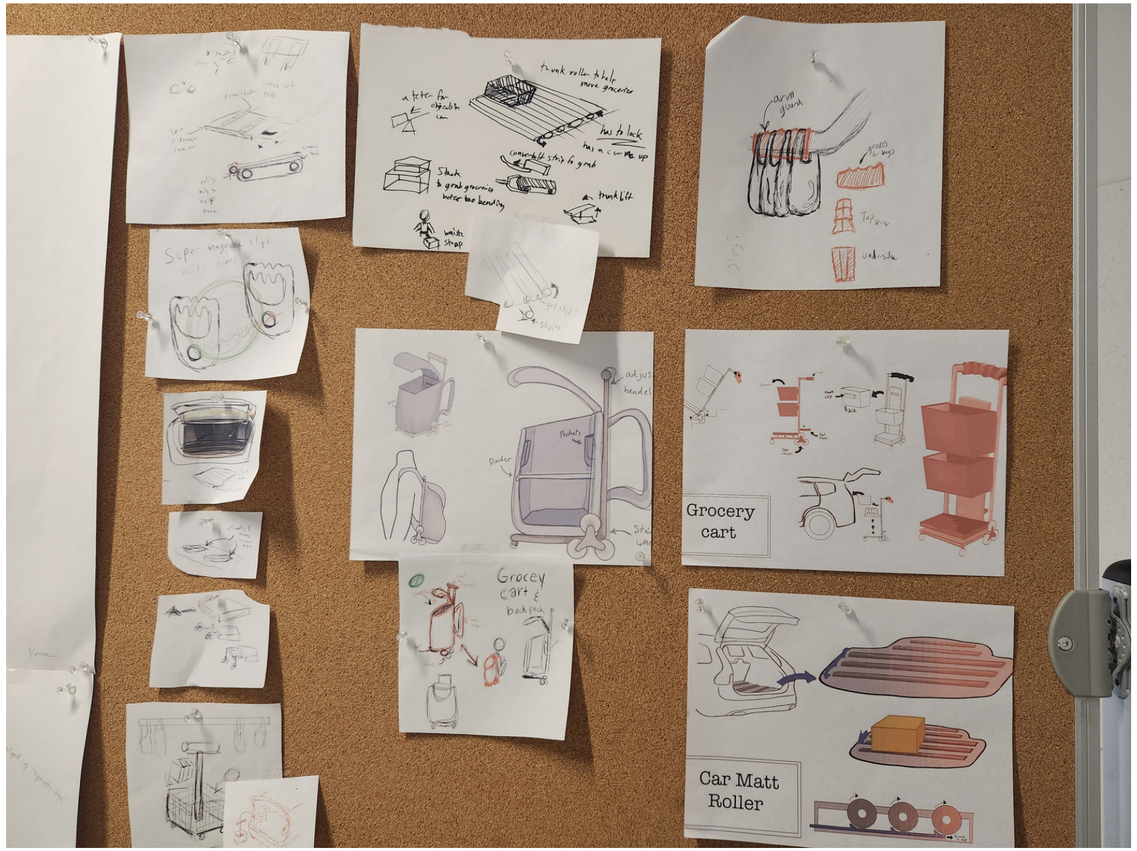
Phase 4: Ideation

When beginning to ideate for this project I though a useful tool would be creating a market analysis to see what was out there and what I could build from or find a hole to design for.

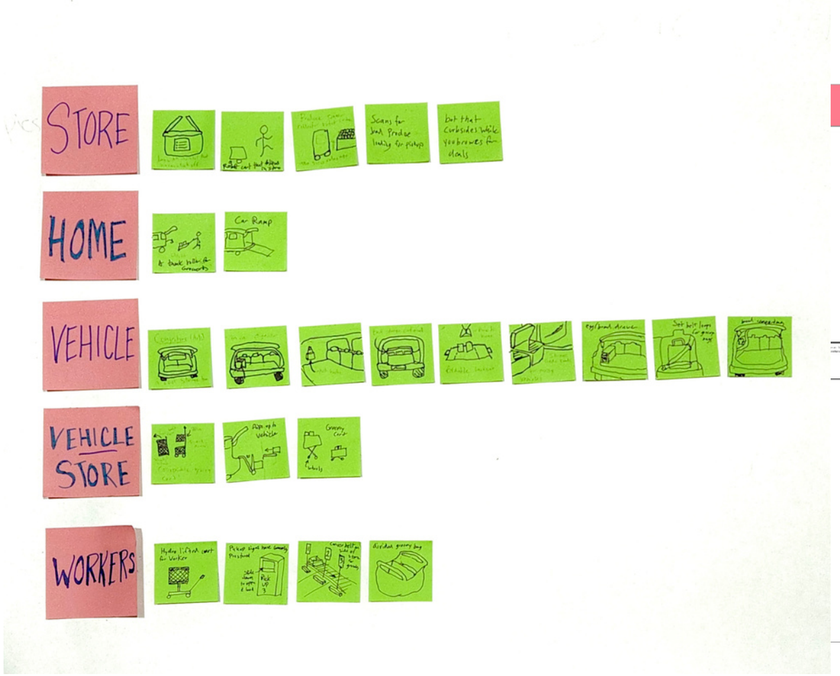


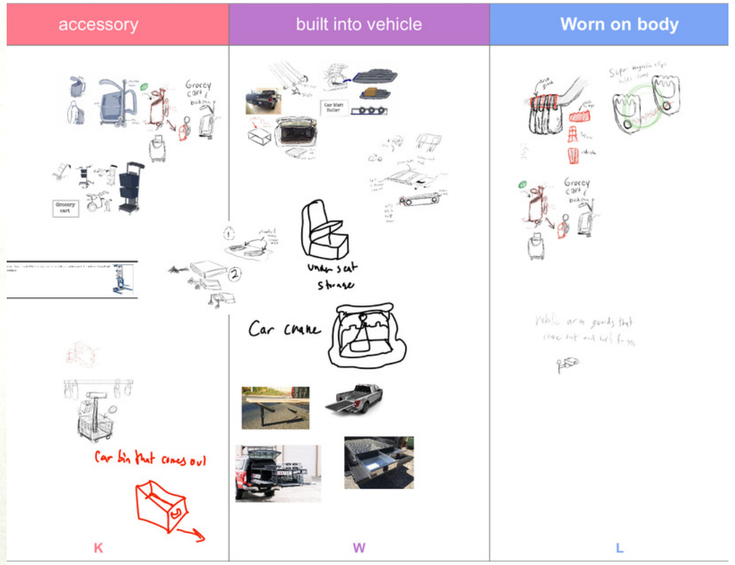
I also did some group ideating to and came out with around 50 ideas.





From there I looked for similarities and categorized the ideas.

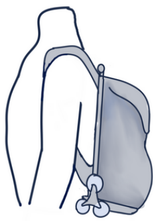


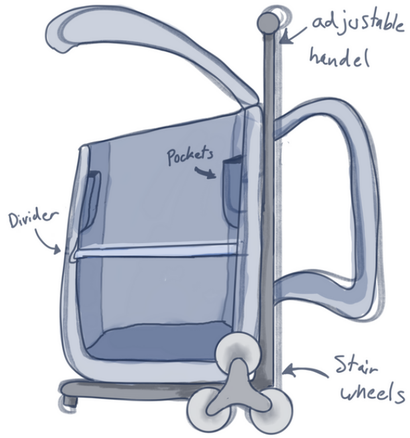


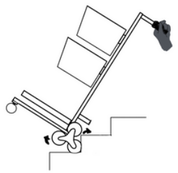


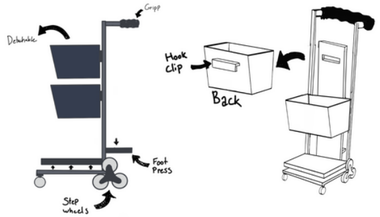
I then narrowed down the ideas to three main ones. Two carts one as a backpack and one with a lifting mechanism for heavy groceries . Both including a special wheel designed to go up stairs and the last one that I continued to develop is a car mat with rollers.

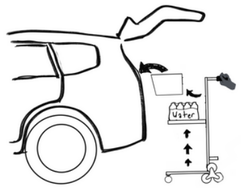


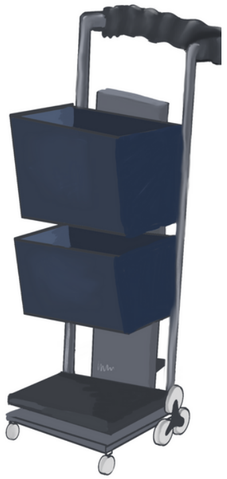




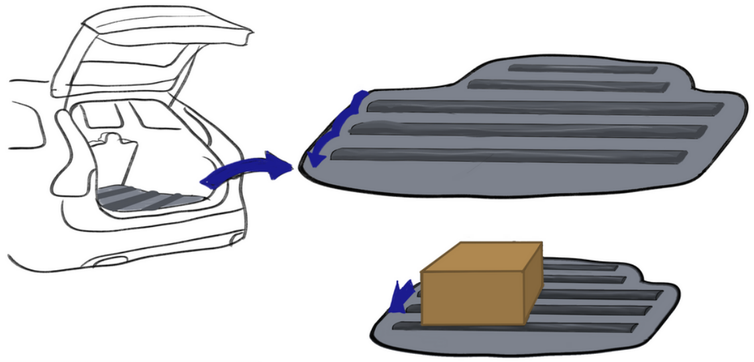


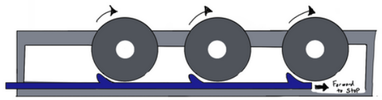






Grocery cart





Car Matt Roller

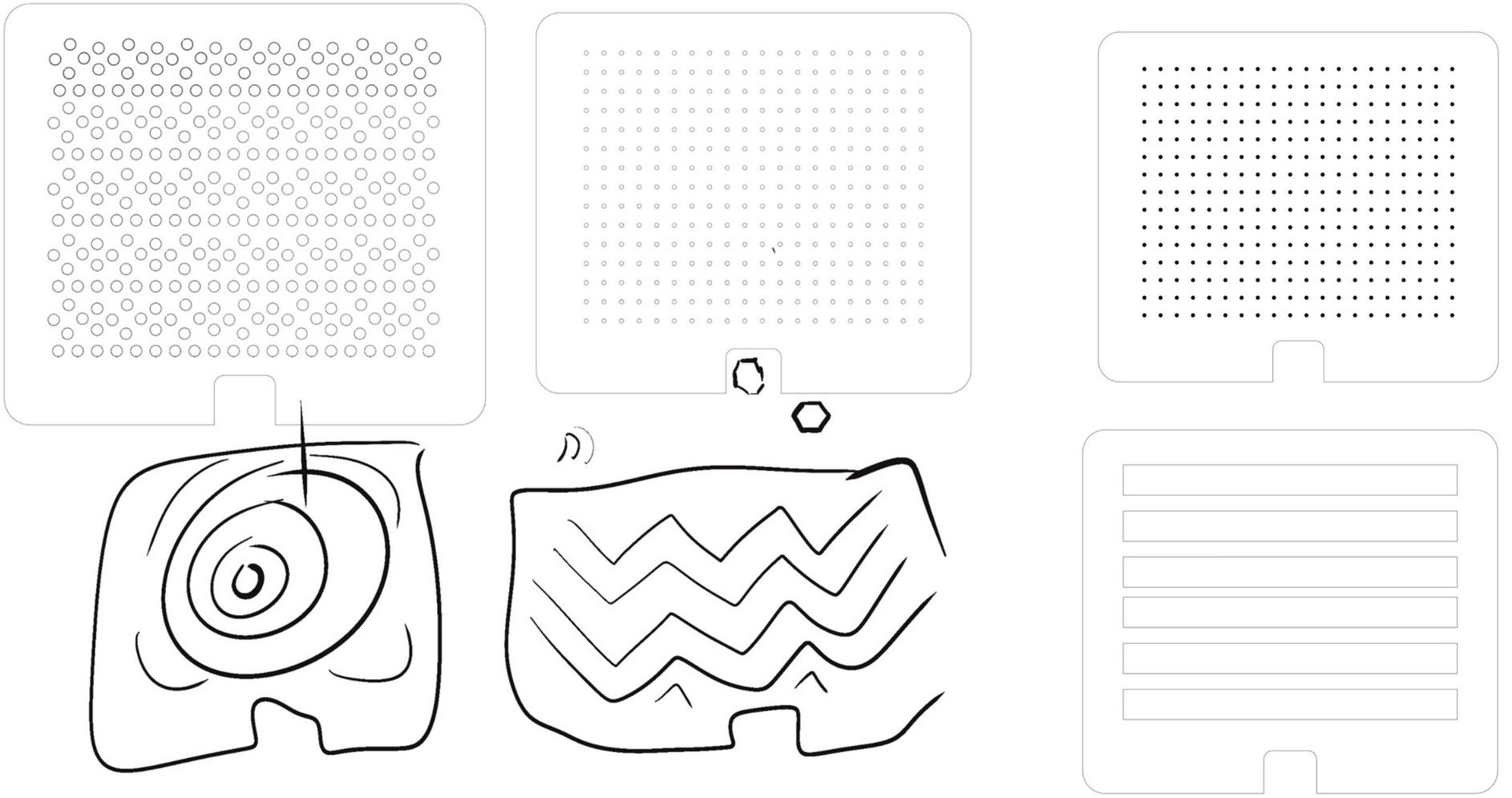
Phase 5: Iteration

After I had the concept nailed down, and after talking to my group mates I decided that the Honda Passport would be the best vehicle to design this product for, given its large trunk space that we observed from our dealership visit.





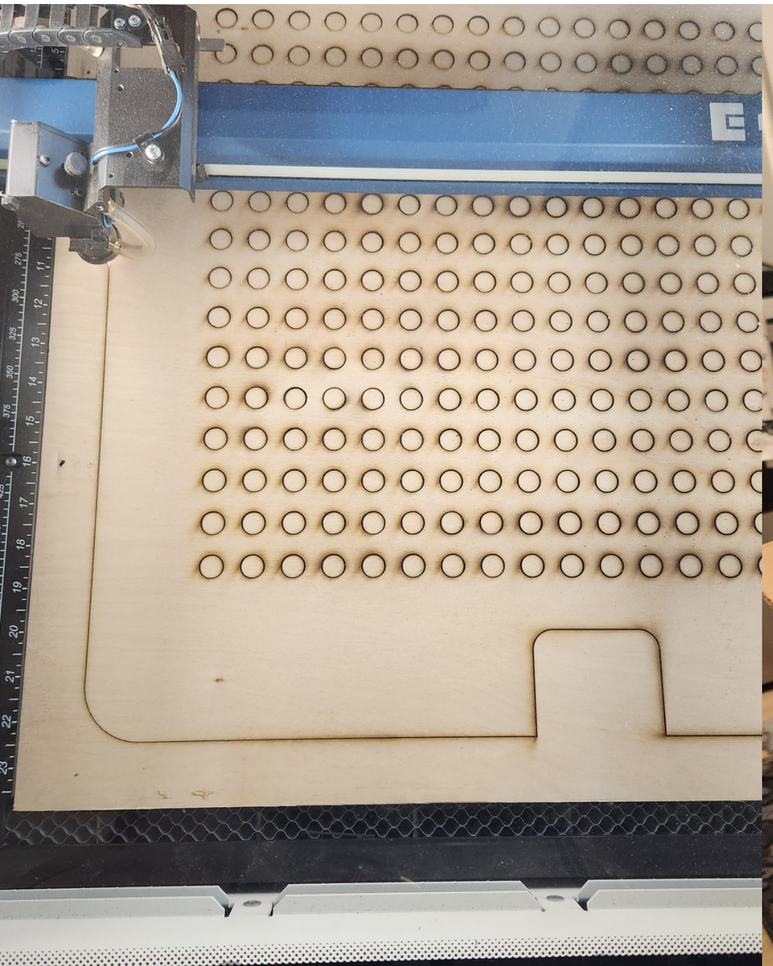
Taking the current passport liner form as a base I started to make iterations of what this concept might look like.



Phase 6: Prototyping

For my prototypes I created an illustrator file using a 1:2 scale of the Honda passport trunk to create the models. I added different sizing and spacings between the designs to see if that made an impact.

Then using the laser cutter I created these models to test with. A few were cardboard and one was wooden.







During testing we also came up with a standard grocery set and a route to test out protypes with in the car. My tests were not done in the vehicle but I did test with the items from our shared grocery list.

Grocery List

Bag of apples (Gala) 3lb
5 bananas
12 white eggs foam container
4 cans of soup: 2 tomato, 2 chicken soup - 10.75 oz
Party size lays bag - 13 oz
Glass jar of tomato sauce Ragu 24 oz
Glass jar of pickles Kroger brand hamburger dill - 16 fl oz
Romaine hearts - 18 oz bag
6 pack of coca cola - 7.5 oz
Gallon of water instead of milk
Moose tracks ice cream - 48 oz private selection
Frozen waffles - Eggo waffles 10 ct
Hi -c fruit punch - 8 ct 6 fl oz
Tortillas mission flour soft taco - 17.5 oz
24 pack of water
Gallon of water (“milk”)
Cheerios - 10.8 oz
Watermelon
Kraft Mac and cheese - 7.25 oz

Phase 7: Testing

To test my designs I did a few tests, one was to see the current weight/force exerted to move some of the typical heavy groceries, to do this strapped a scale to a pulling system and saw what the current weight was on different surfaces: wood, linoleum, carpet.

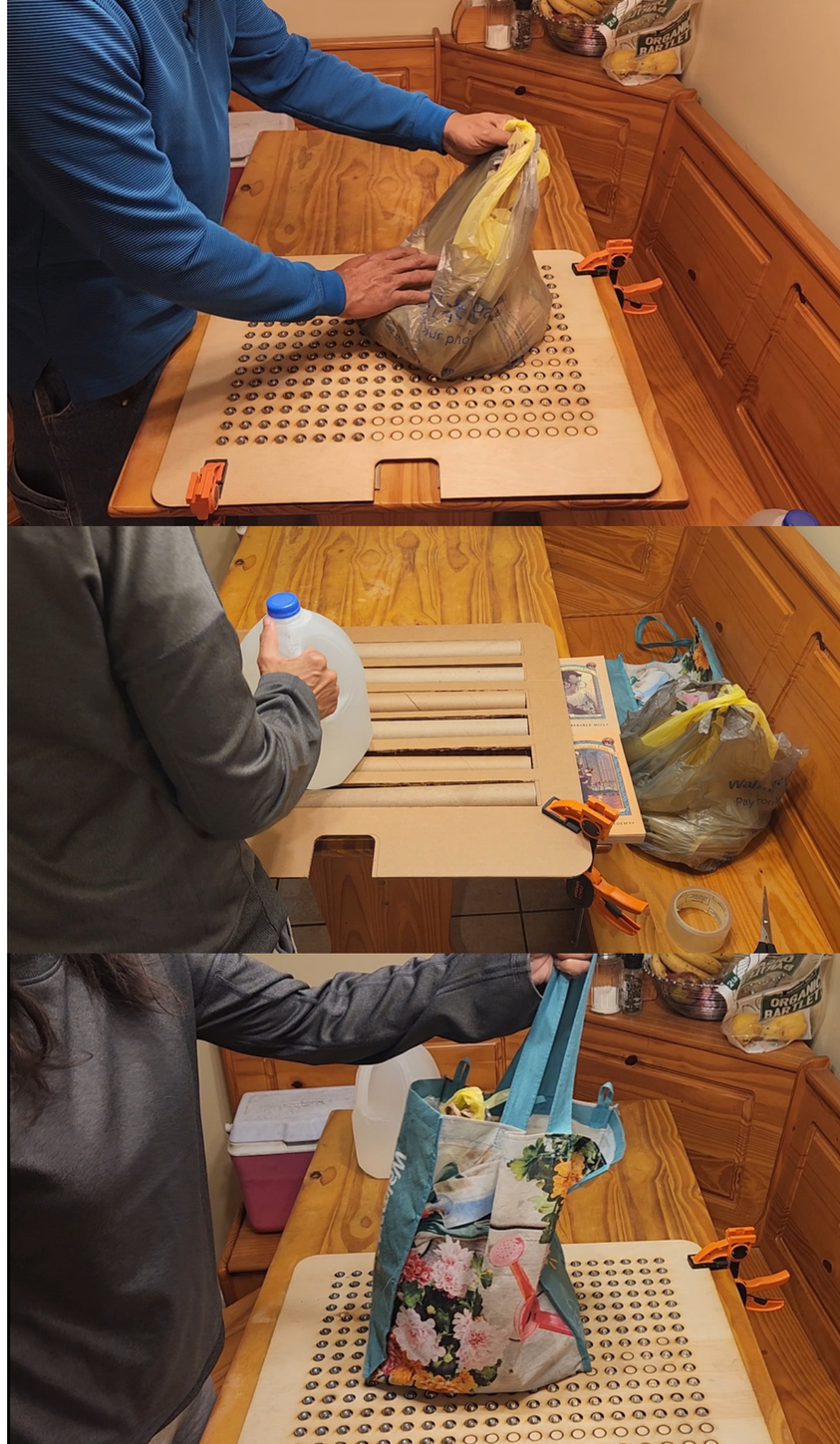




Final findings were:

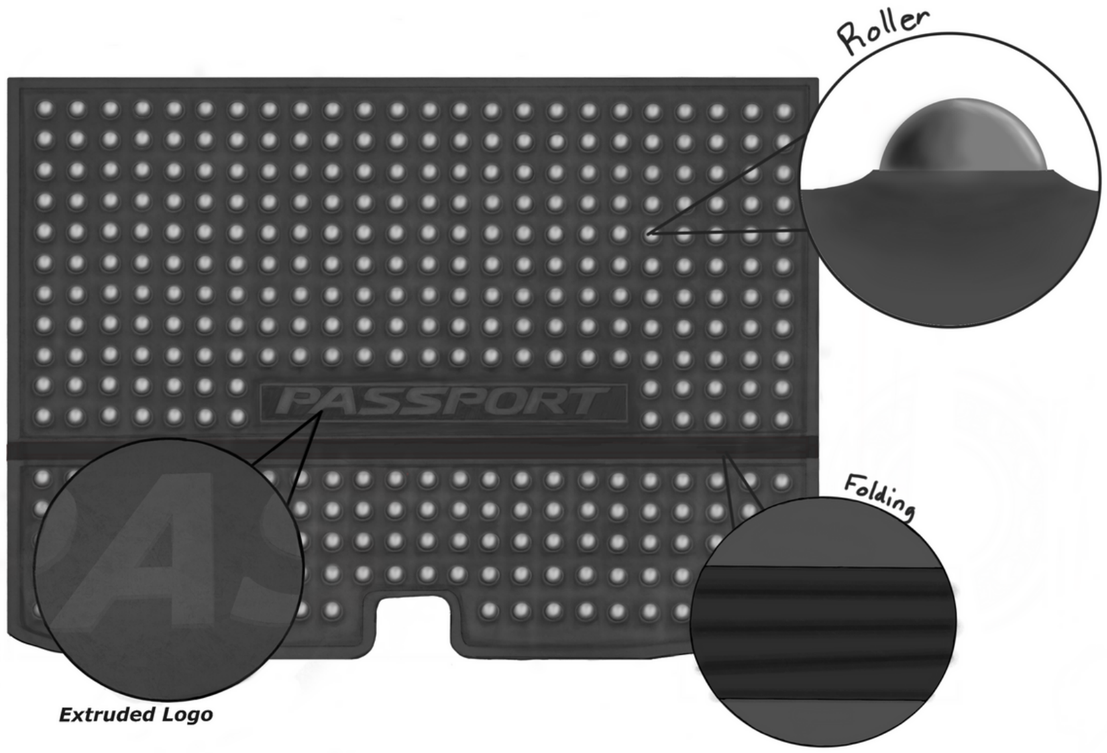
	24 case of water	Water Jug
Base Weight:	27lbs 8oz	8lbs 8oz
Carpet:	8lbs 8.8oz	2lbs 18oz
Linoleum:	6lbs 8oz	1lbs 8oz
Wood:	10lbs 8oz	1lbs 6.5oz
Prototype:	5lbs 8oz	15.8oz

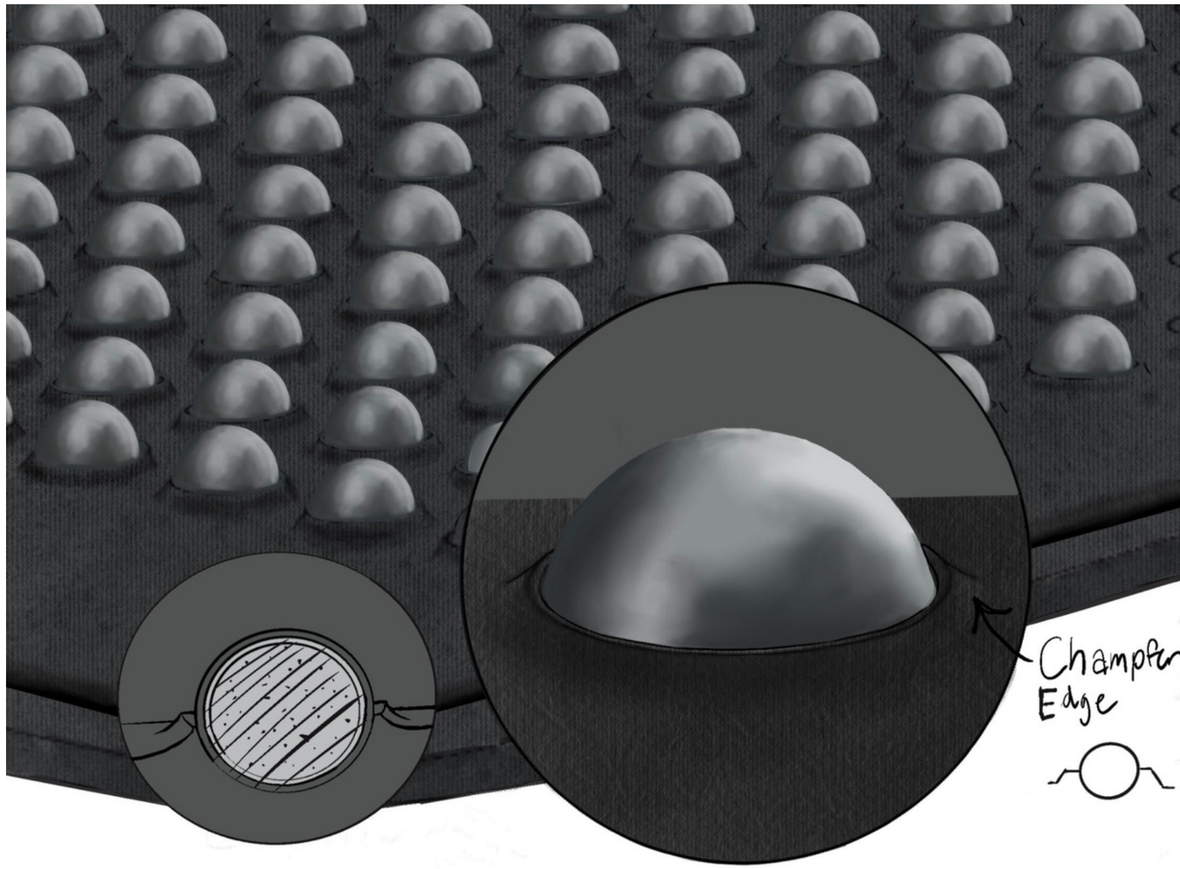
The Second test I did was as participants to compare the two designs and let me know which was more comfortable and which they preferred. Overall all participants stated they enjoyed the spherical rollers the most. On reason stated was because it provided more movement to easily guide groceries towards different parts of the car.



Phase 8: Finalized Iterations

After choosing the final main form of the design I started to create sketches of what it would look like finalized.





Korene Embrack Capstone Prototype Sketch November 2023 HONDA

I gathered some reference images to help guide what my design choices would be. the main features I referenced were the pre-existing Passport mat with the divot, logo and sizing. A well as the chamfers on the car's console/buttons, and the black body with the silver accents.

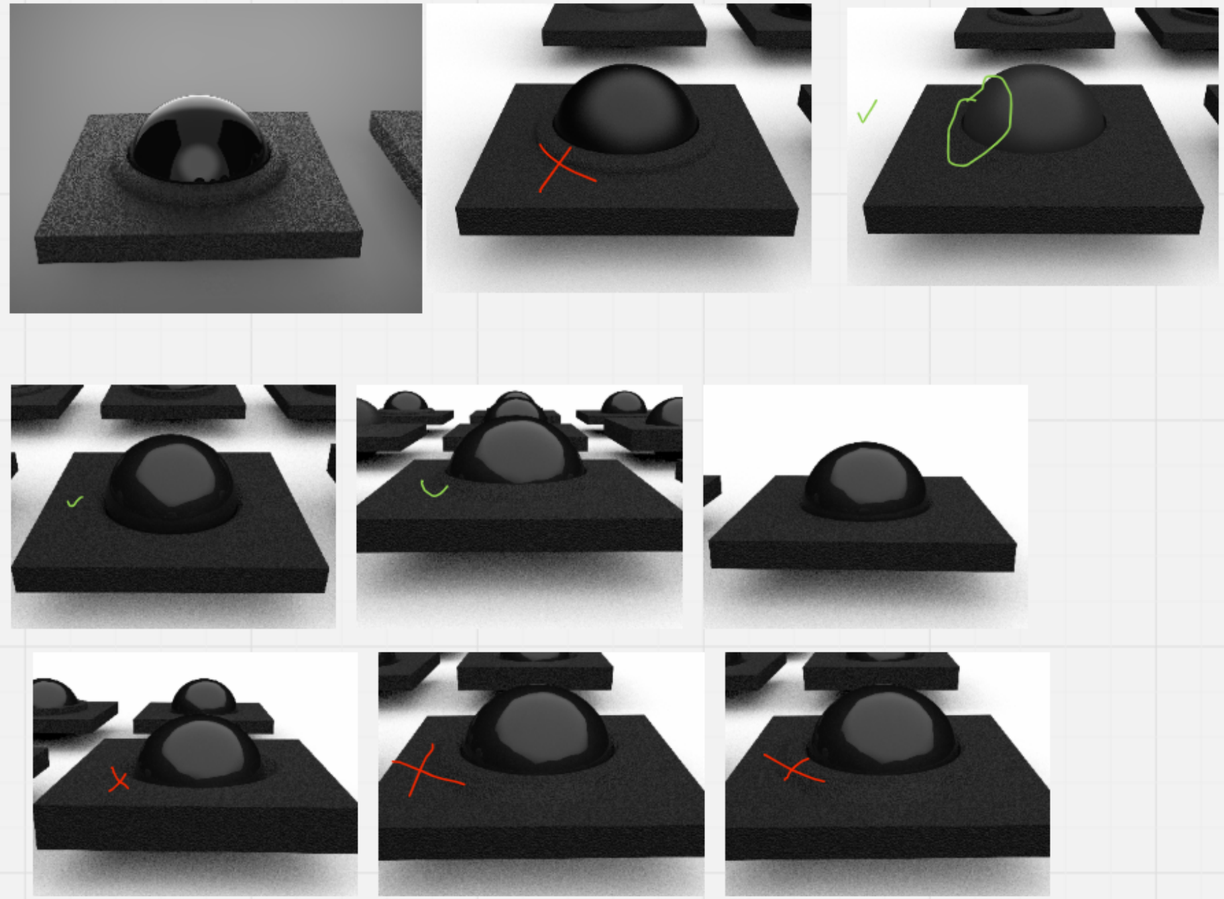


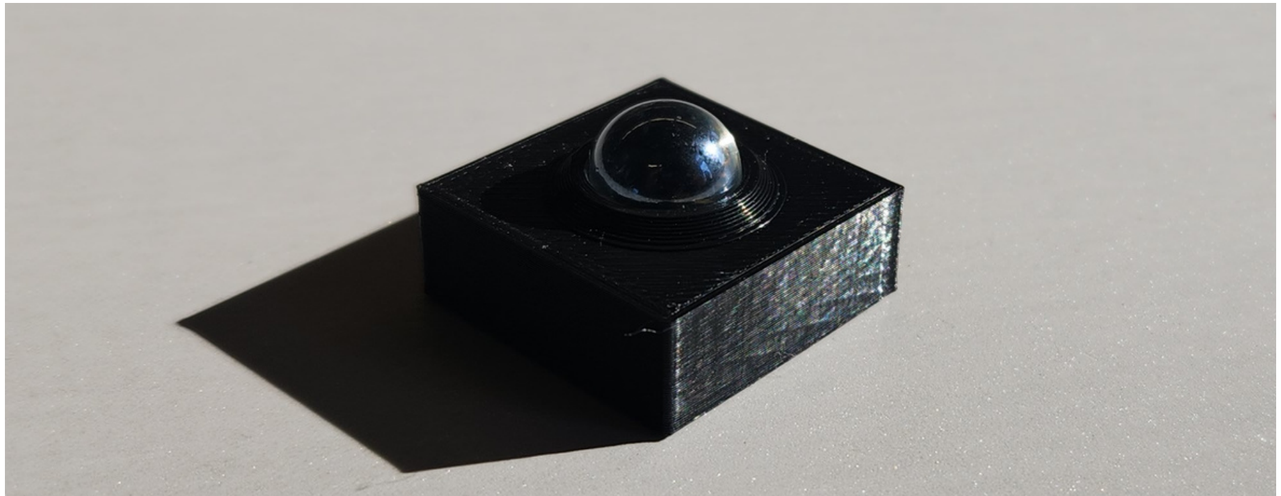


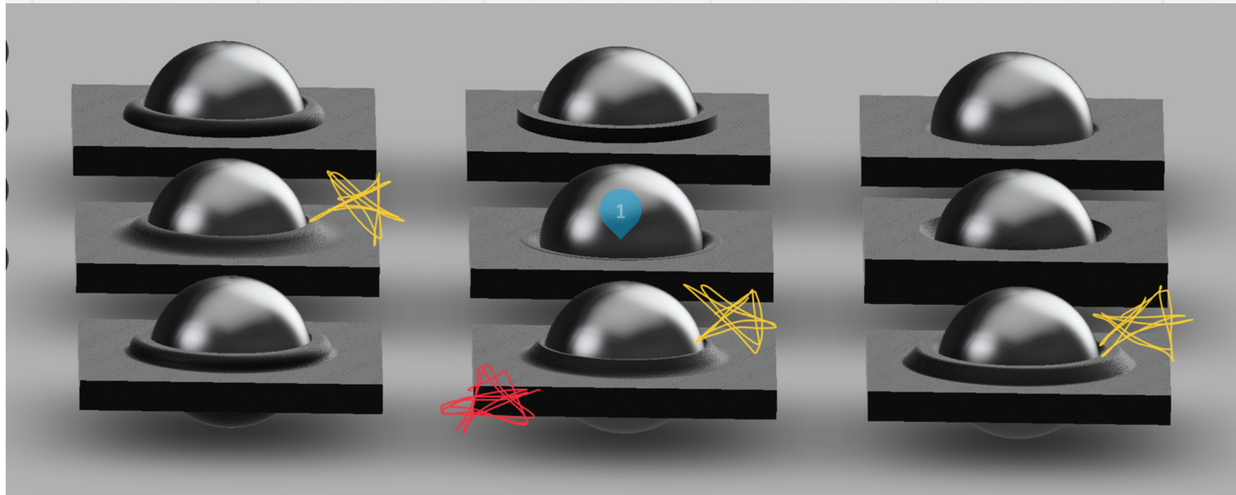


Design References

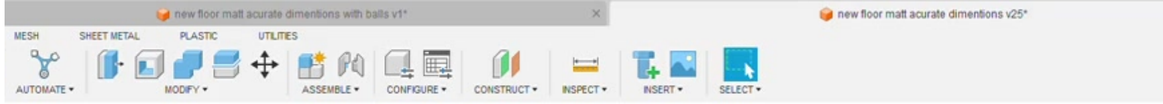
I created some Fusion 360 models of what the casings might look like for the rollers. After choosing one I got the final design printed to see how it fit with the marbles I used from testing.

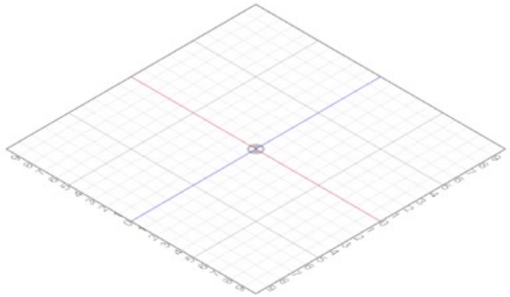


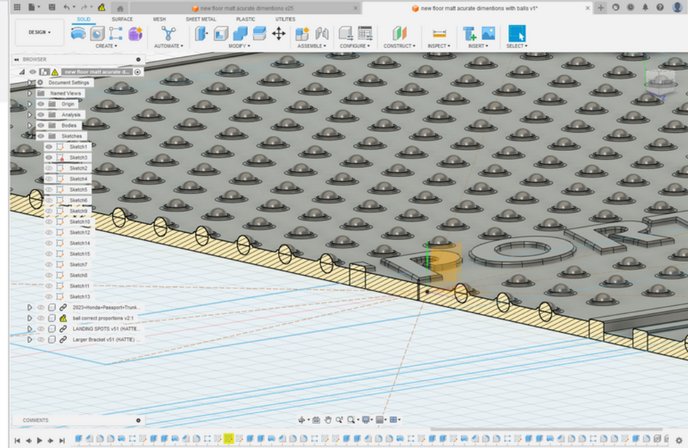


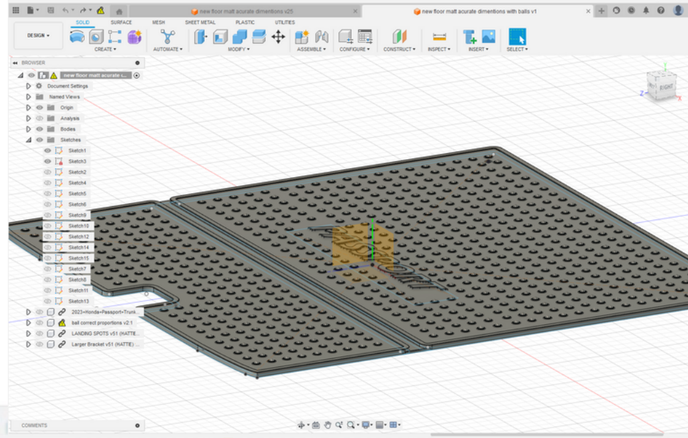


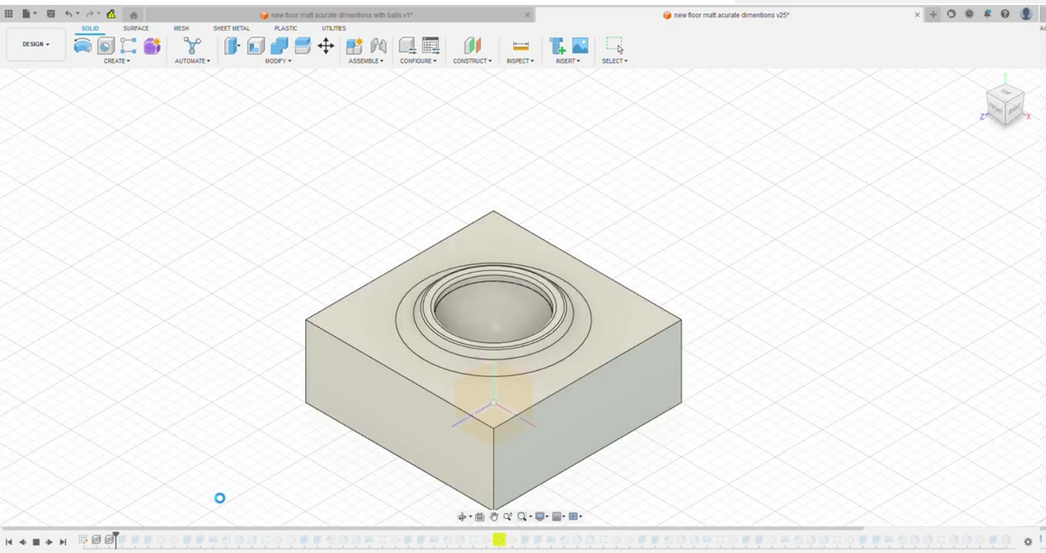
After working out all those details I started on the 3D model.

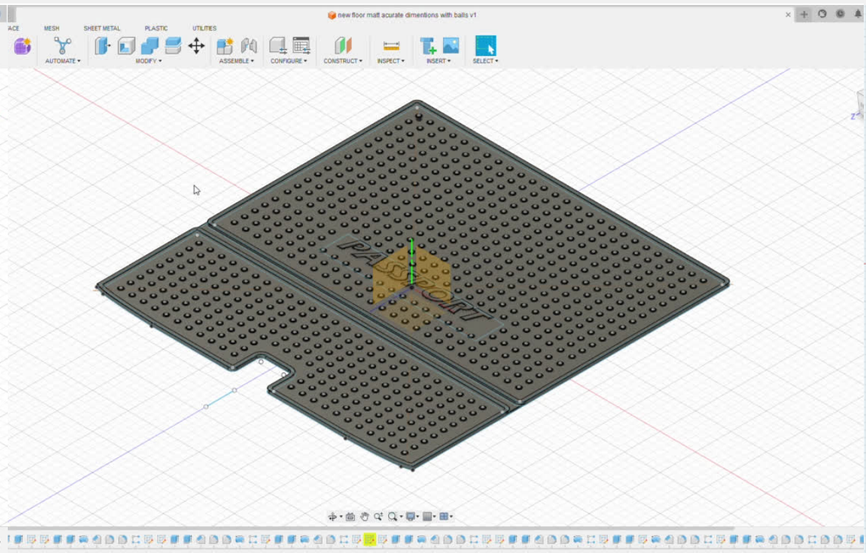


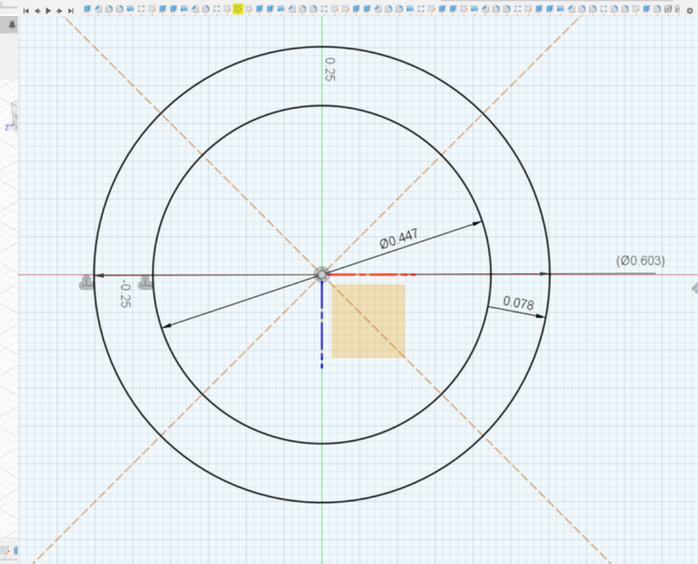




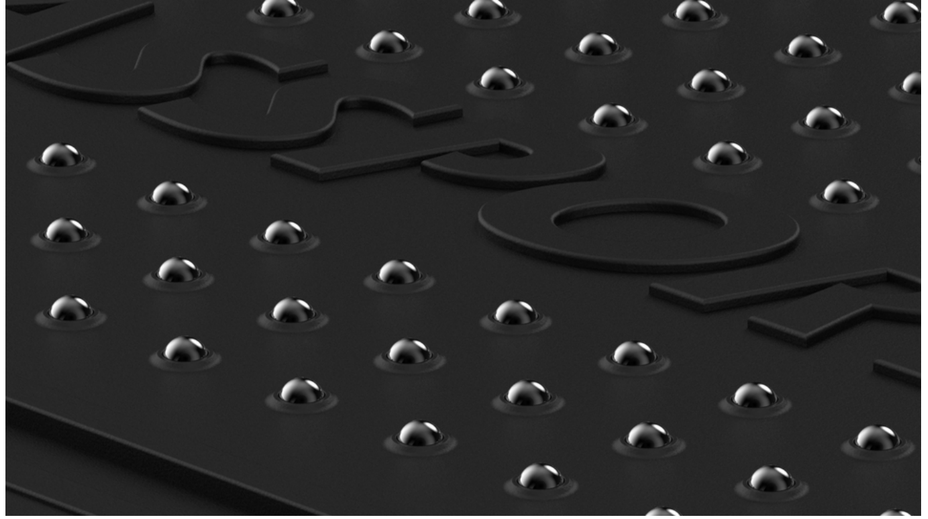


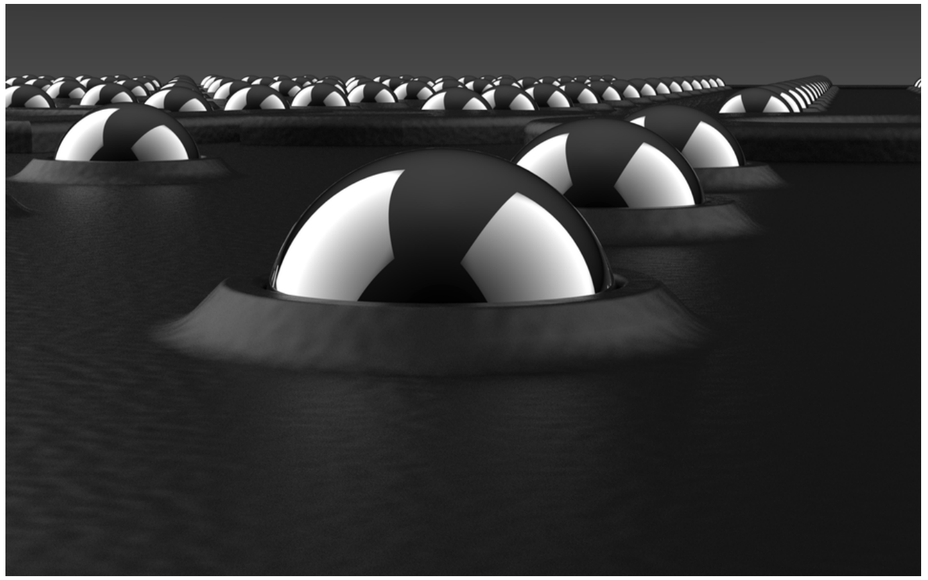




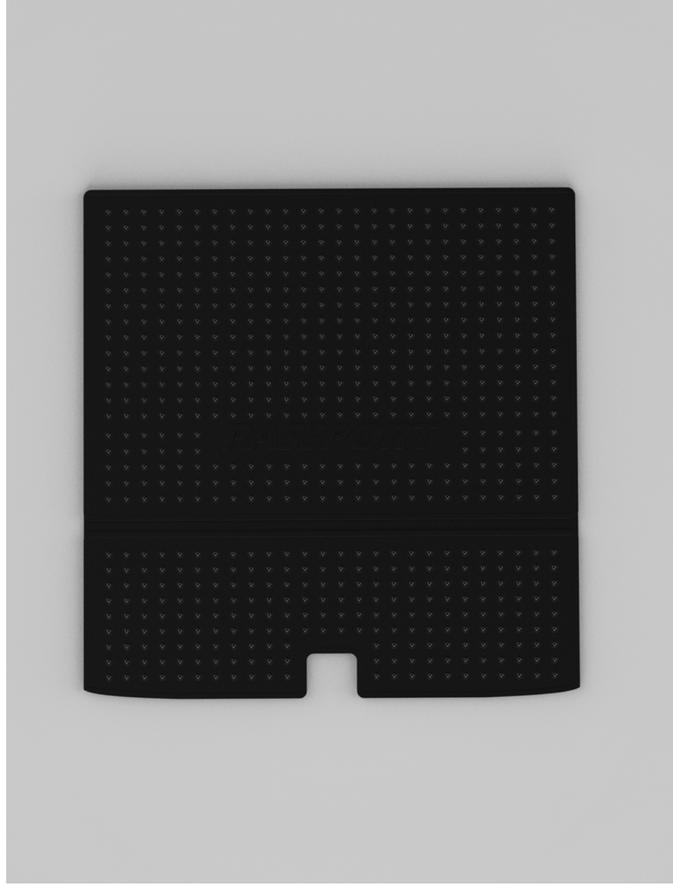


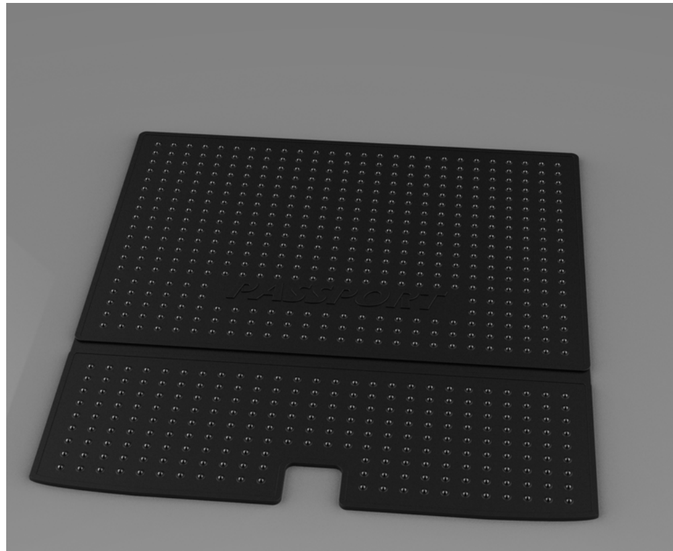
Once completed I took it to Keyshot to render it to the fidelity I wanted.





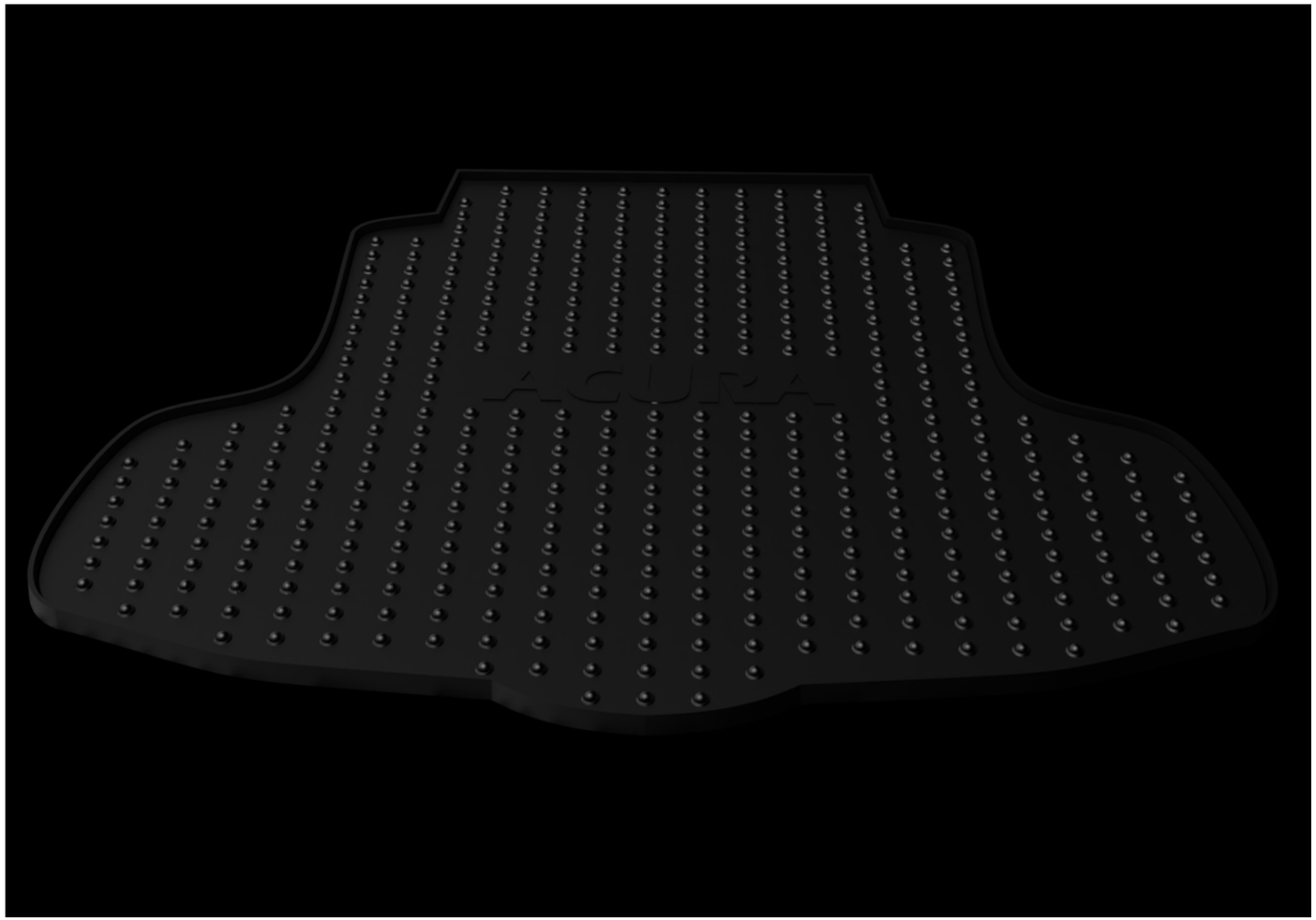


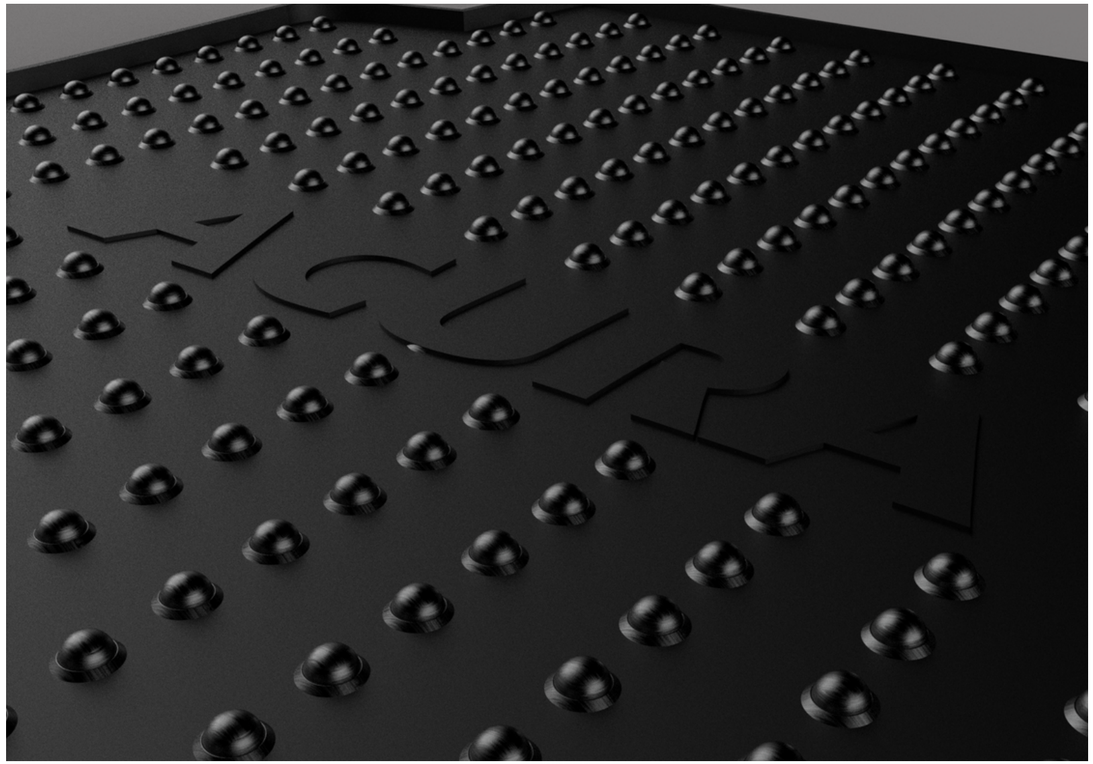


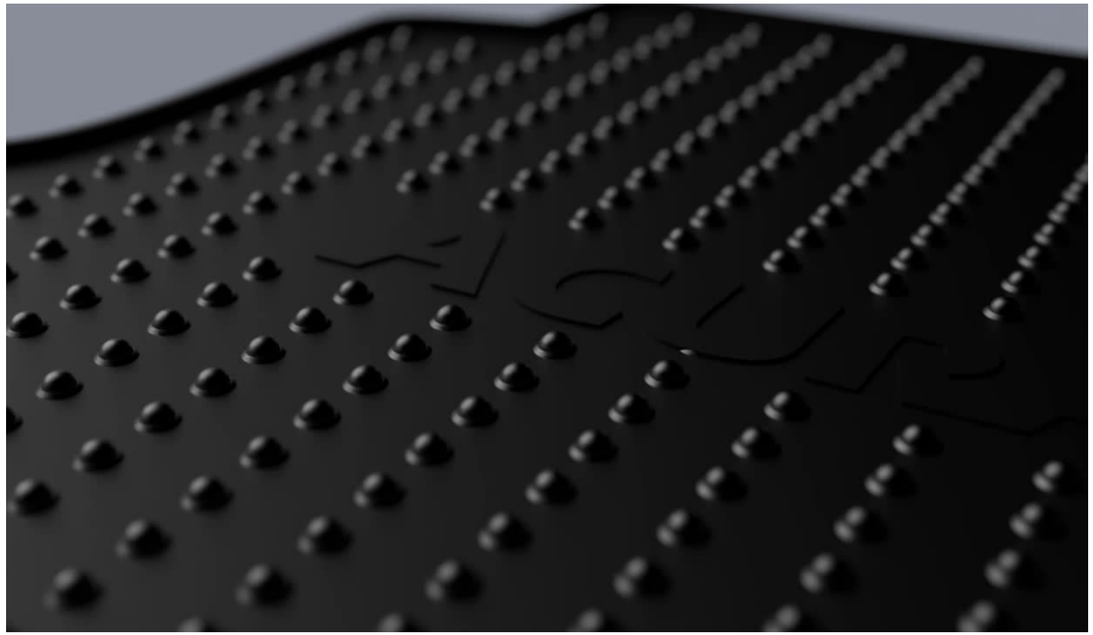


I also created a

Honda Glide Concept in Acura TLX









Honda Grocery Assist

Glide Mat

A car mat designed to make items easier to load and unload from the trunk.

This Capstone initiative was a partnership with Honda to design a new product for their vehicles with the idea of assisting users with grocery shopping. The Honda Glide Mat is one part of the Honda Grocery Assist. This design focuses on the loading and unloading process, the product uses rollers in the body of a trunk liner to make moving items around the car easier. From my initial research and user testing participants noted that heavy items were difficult to load and unload from their vehicles, often noting back or arm strain because of pushing and pulling.

The Glide Mat's roller mechanism is activated with a switch on the left front side. Once activated it will alleviate some of the strain of pushing and pulling items by allowing one to easily move items across the trunk's floor, and place them in a position close to your body in order to ground yourself for easier lifting. To stop items from moving while in transit simply flip the switch off to stop the rollers from moving. This design is multifunctional, being able to be used for not only groceries, but also other heavy items such as when traveling, moving materials for home improvement, tailgating, or even camping. The goal of Honda Grocery Assist products is to help users have an easier grocery shopping experience.

The Glide Mat is created as an accessory that can be placed in multiple Honda vehicles. It currently works with the 2023 Honda Passport, and Acura TLX models.

KORENE
EMBRACK



Final Render Honda Glide Mat

2024 OHIO STATE INDUSTRIAL DESIGN CAPSTONE SHOWCASE

Faculty lead:
Dr. Sébastien Proulx, Associate Professor
William Nickley, Assistant Professor

Industry mentors:
Kai Walhen,
Mitchell McClain

Project realized in partnership with:
HONDA

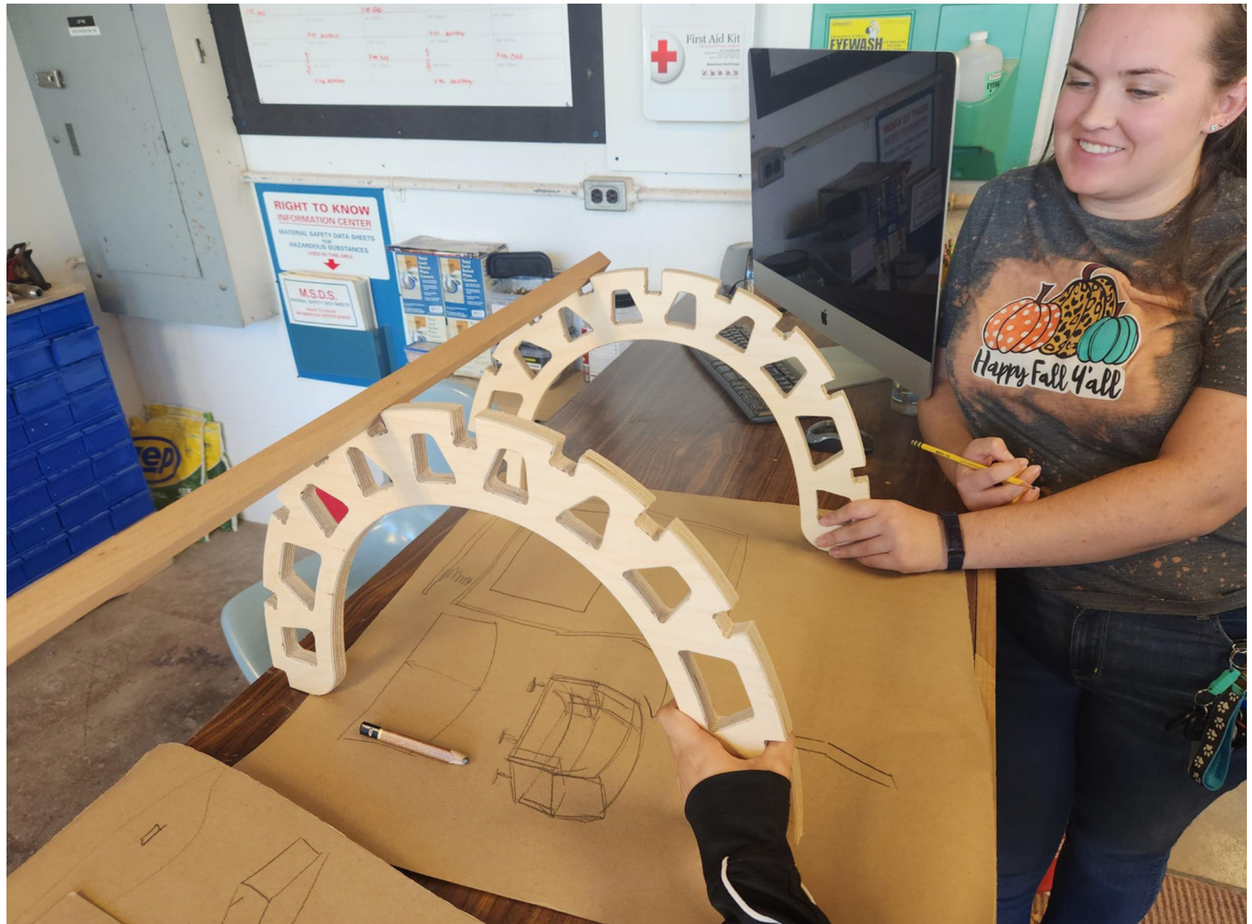
Hero Shot Render and Poster Video



Phase 9: Building the vehicles

To have a place to display our final designs we decided to create a 1:1 scale of the Honda Pilot and Honda Passport vehicles.

We went to Paul the woodshop advisor who gave us several ideas on how to create it.





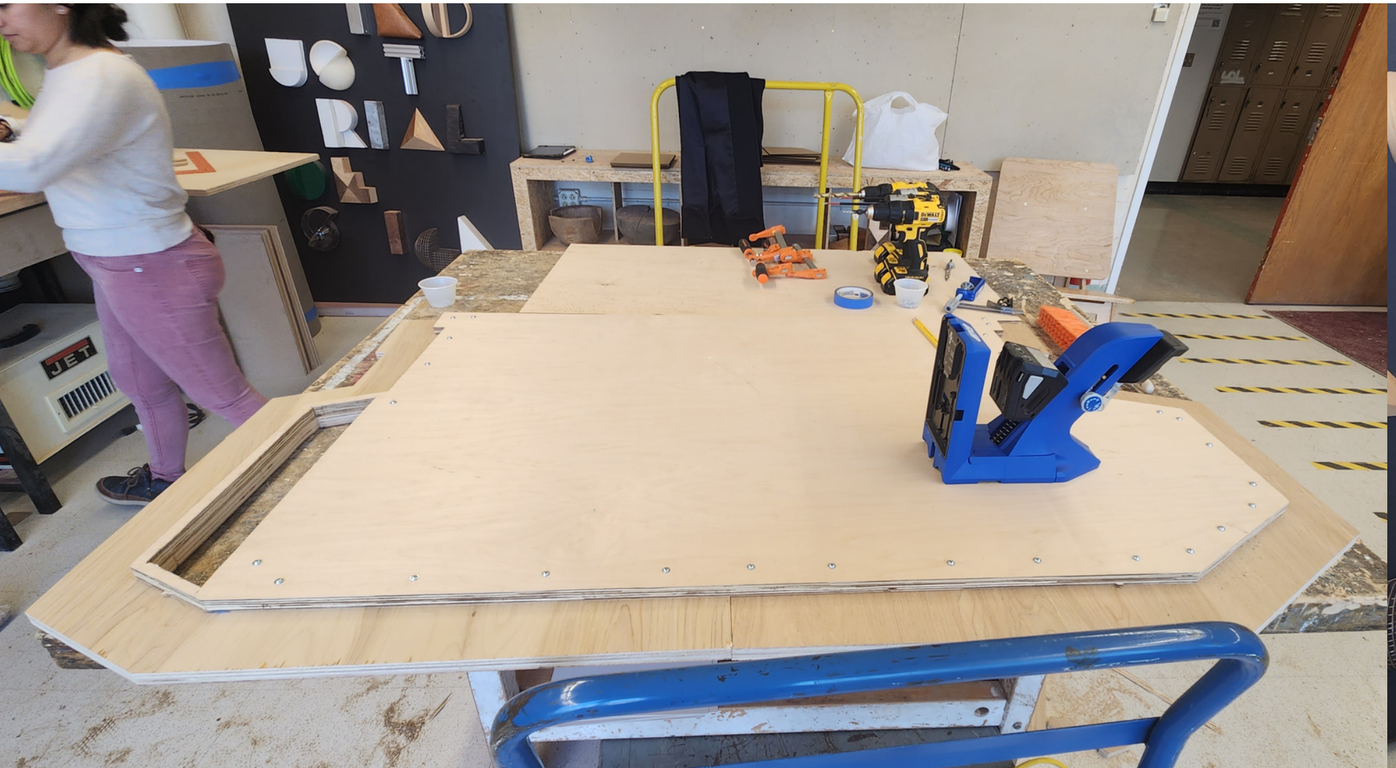
After that we went to the dealership and get the accurate measurements for the interior.







After Grace 3D modeled how it should look and separated the pieces on the model we took the design back to Paul to get it cut on the CNC machine and then began to assemble.





During the assembly process we needed to drill angled holes in the frame to they would have the proper curves like the Pilot. and had to cut out the cubby area for Jackie’s concept.



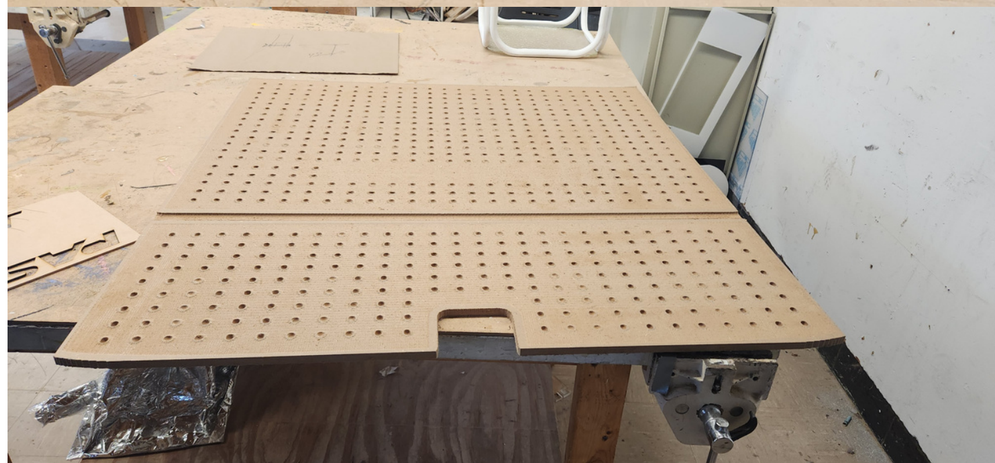




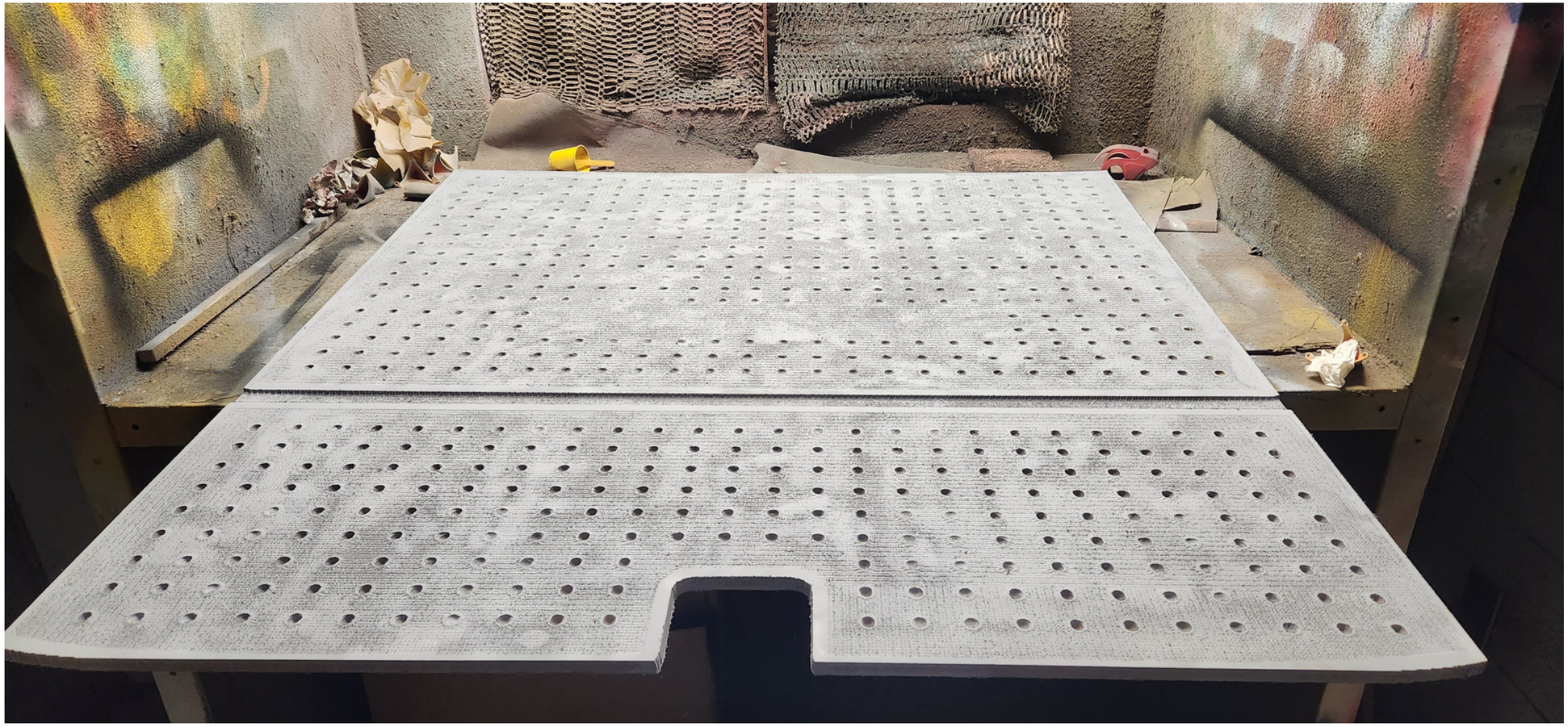
Phase 10: Finalized Physical Prototype

After my design was fully modeled in Fusion I took it to Paul to have it run through the CNC Machine.



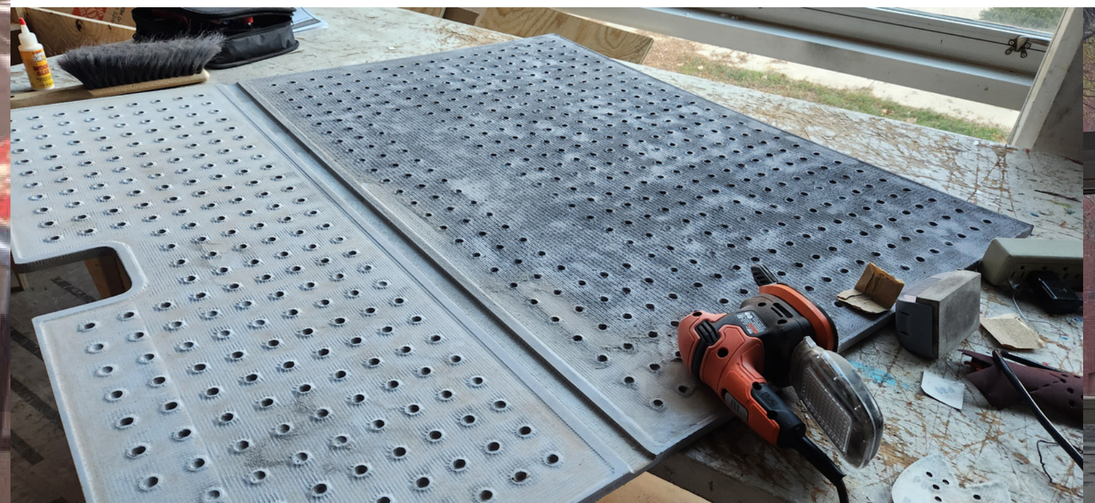


After it was finished being cut I gave it a few coats of a two in one primer and filler.





Then I went on to do some sanding to get some of the remanding CNC texture out.



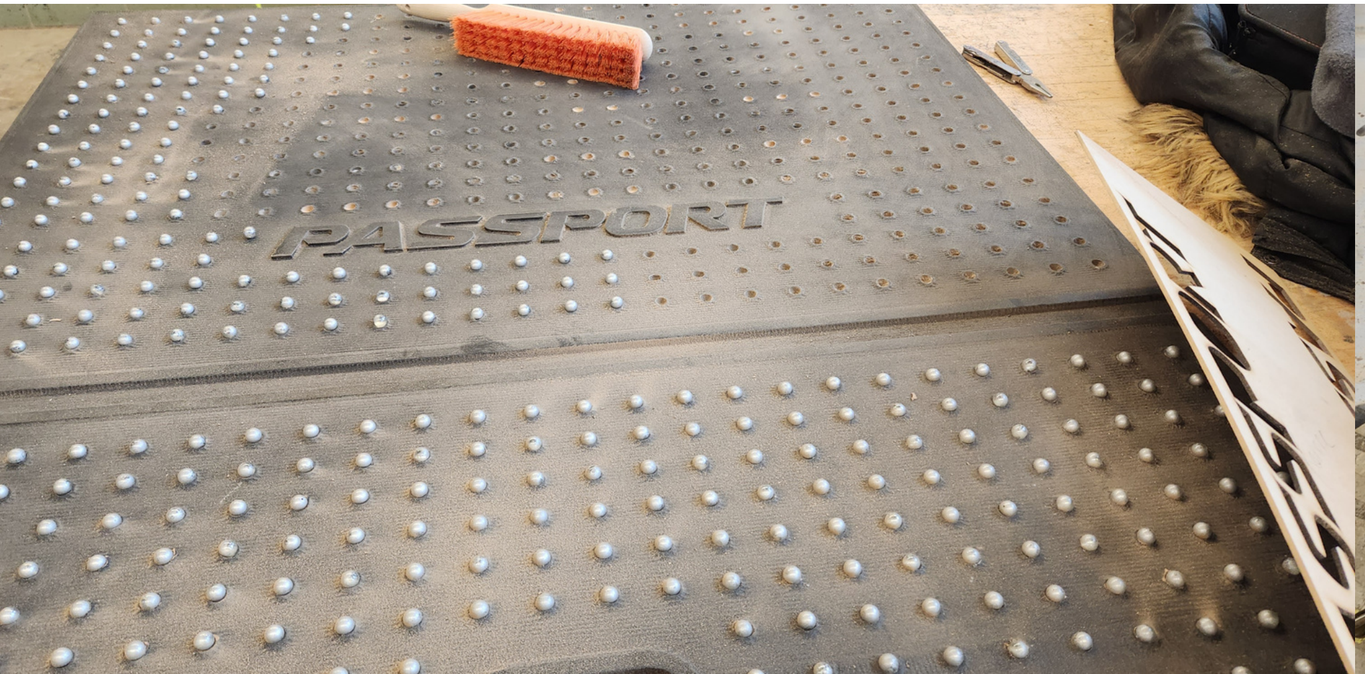


Once finished I added the Passport letters and began another coat of spraypaint. I tried to use a textured spray paint to hide some of the texture that was hard to sand off but after 2 coats of paint it still didn’t show very well. I then finished it with a coat of satin spray paint.



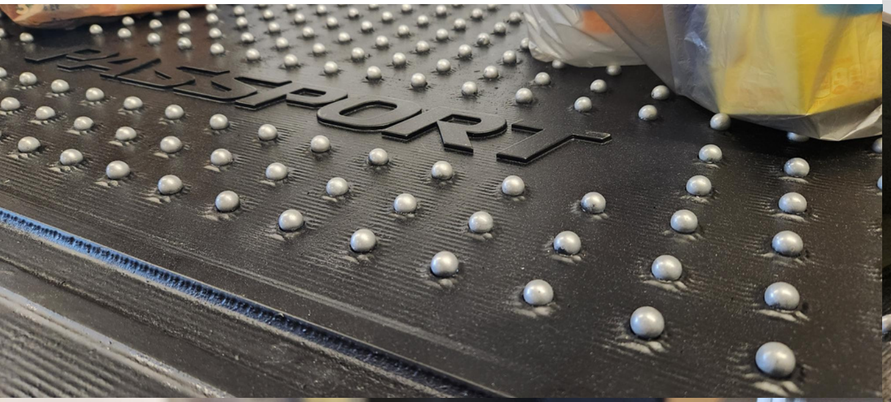


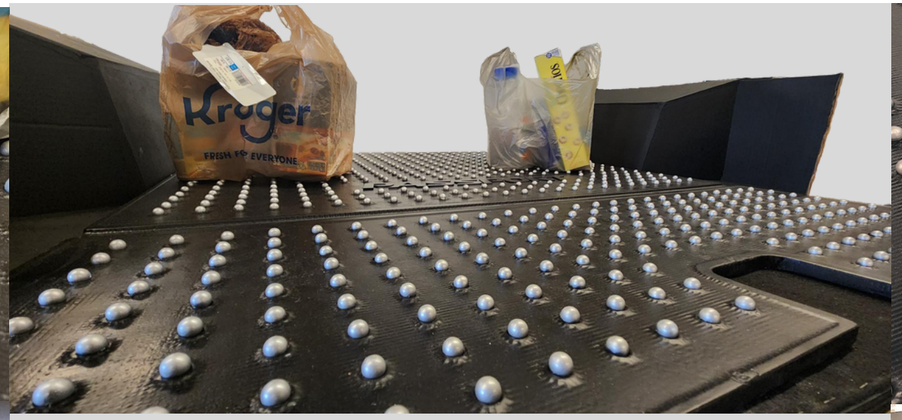
The final steps were to glue on all the painted marbles. But since the CNC could not run its 3rd pass I went in and dremeled the casings so they fit in deep enough.



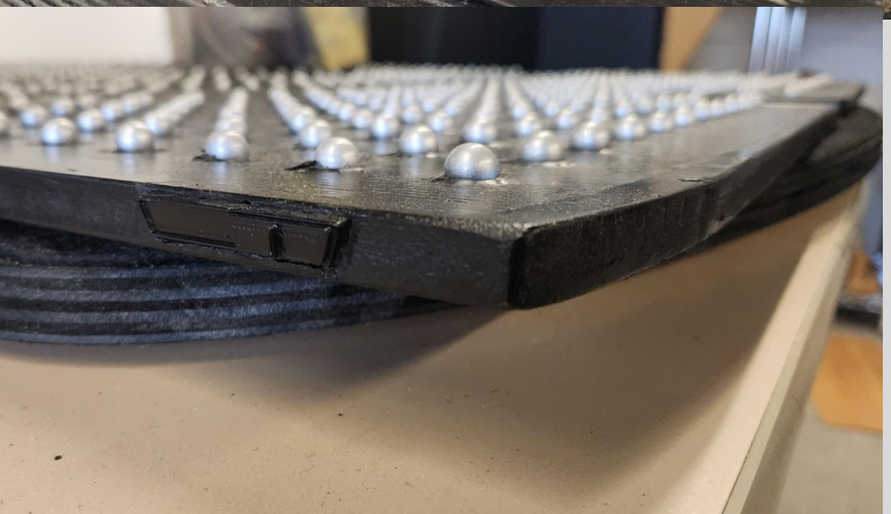


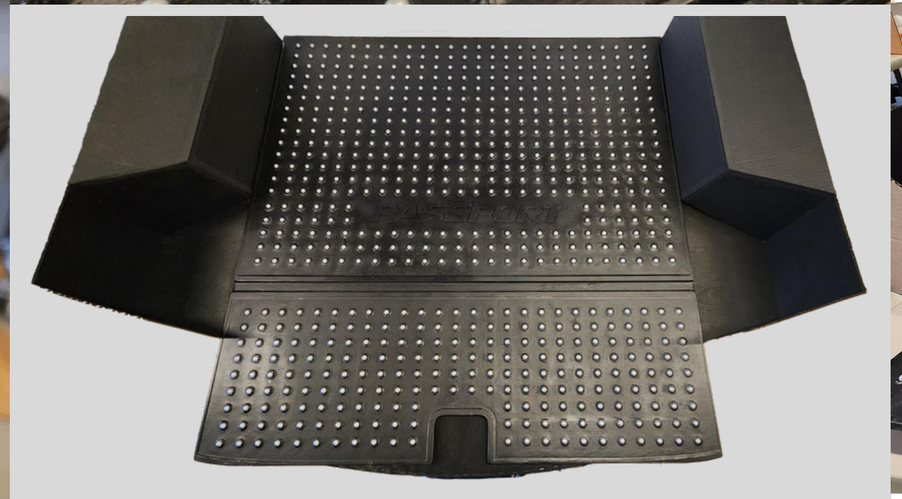
Here are some of of the images of the final prototype.







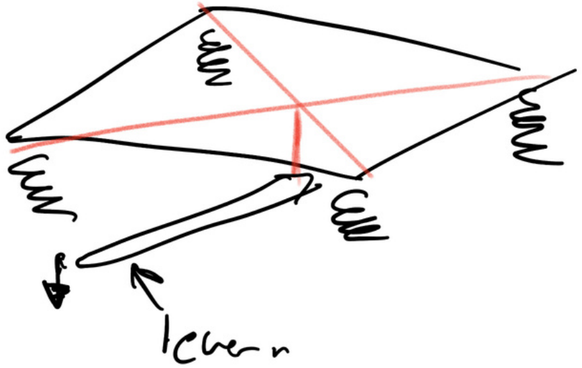






Works Like Model

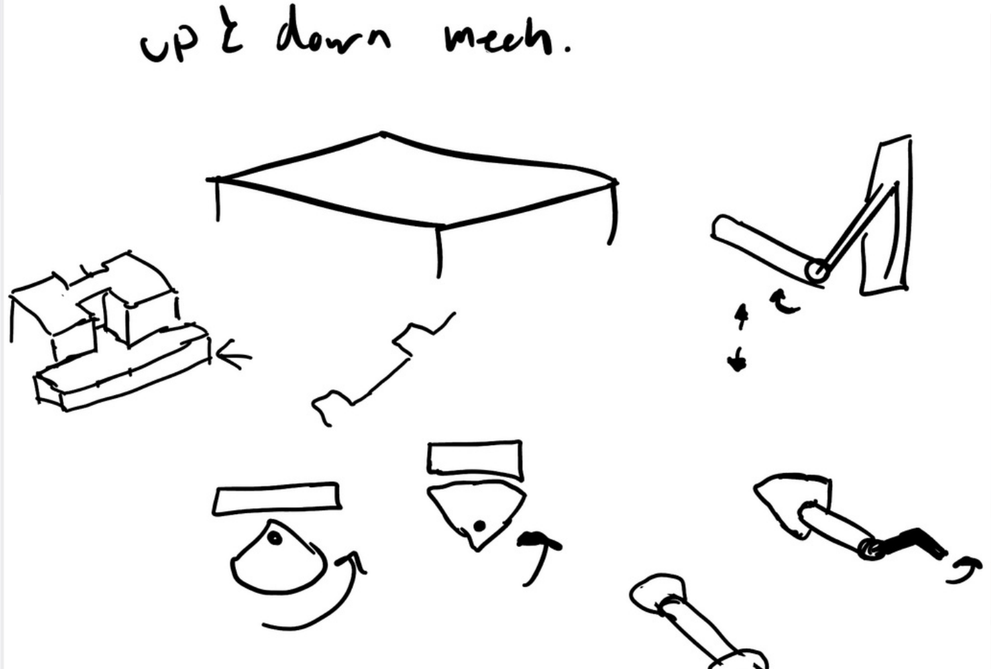
Below are some ideas I had when thinking about how to make the surface roll when I want it to, and stop when in transit. I thought about springs, different mechanics for lifting with levers and cogs.





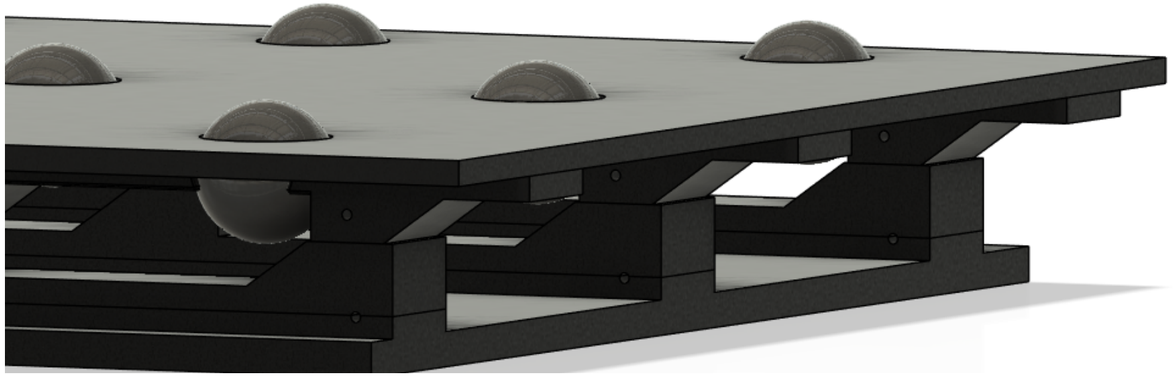


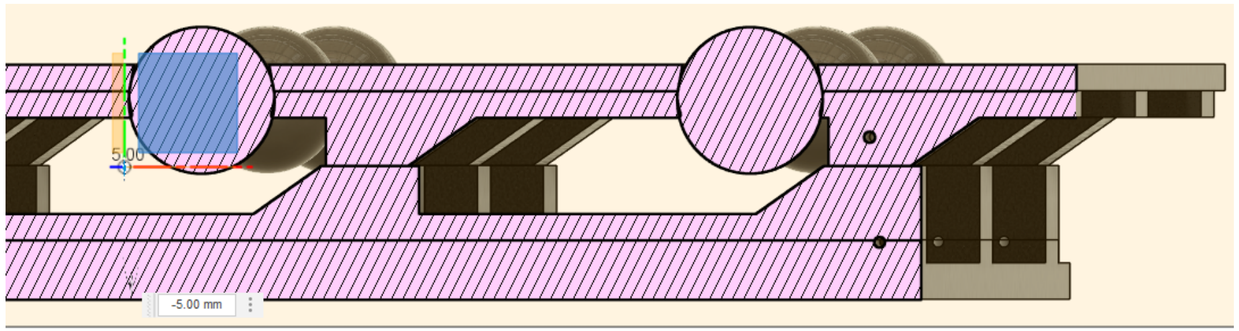


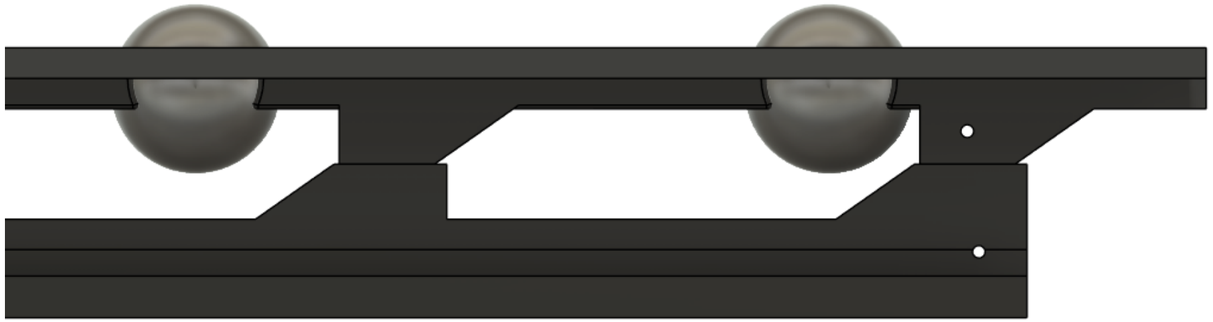


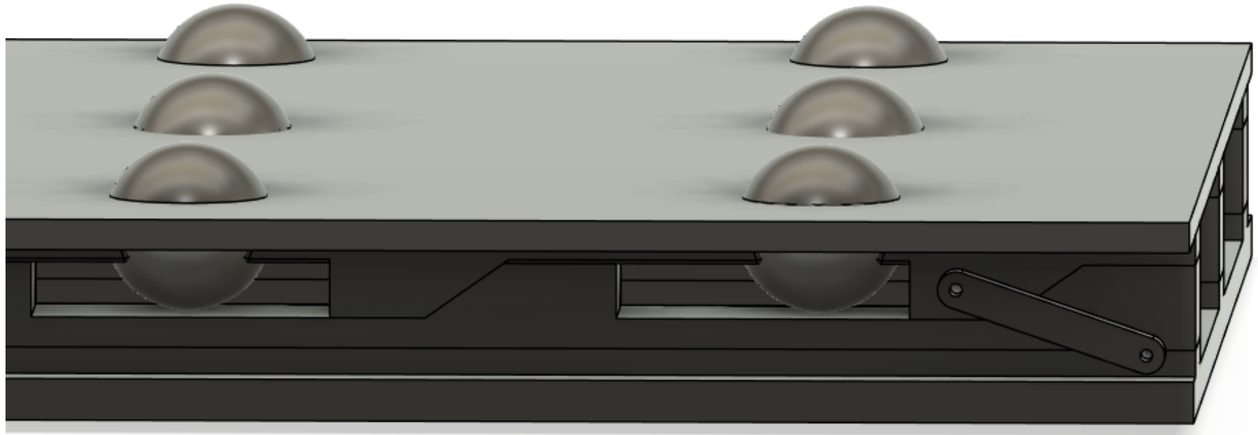


Here is the 3D model of the works like model. The idea is that the surface will slide up to allow the rollers to spin and then it will lower stopping them from moving well.



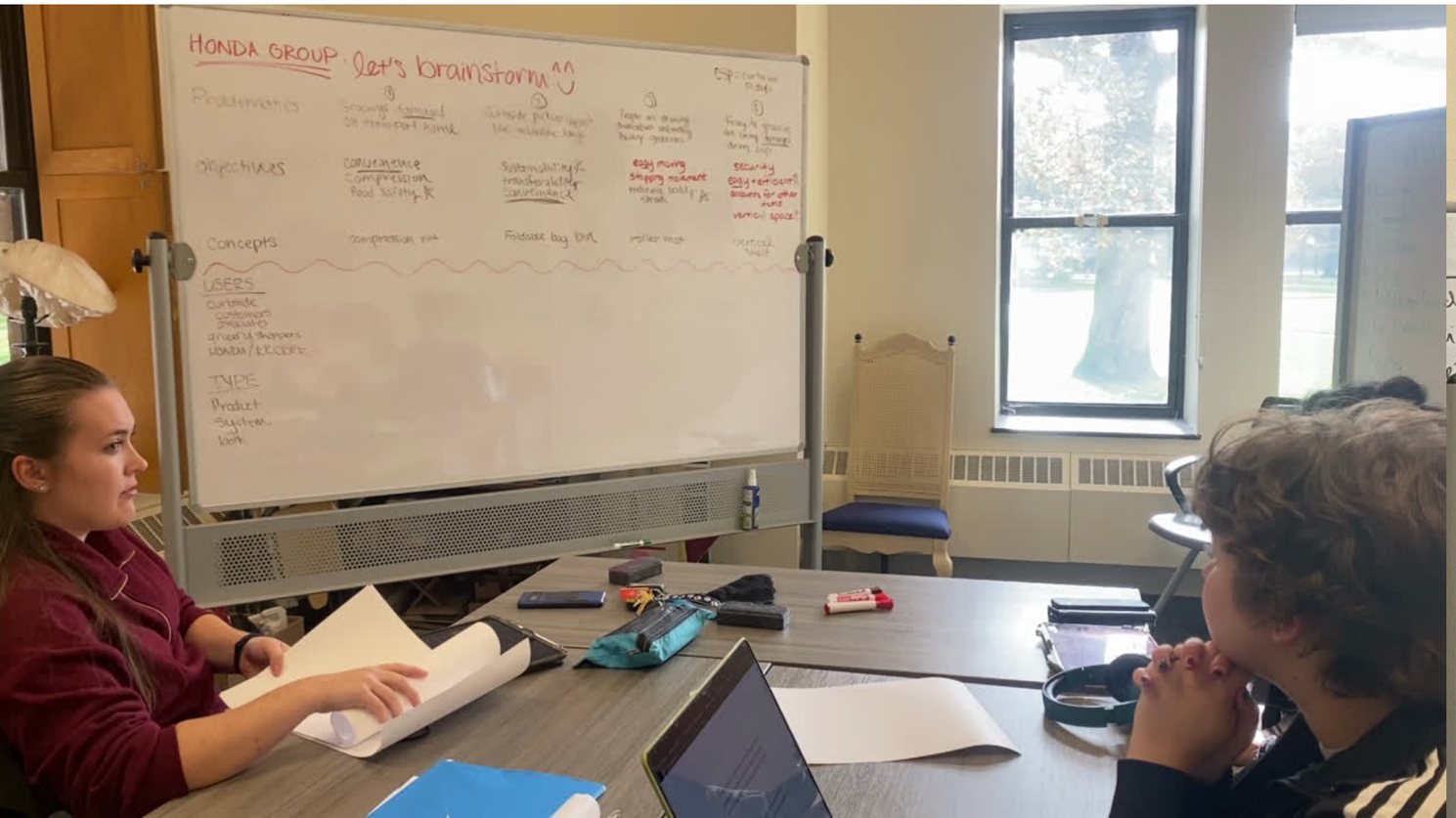


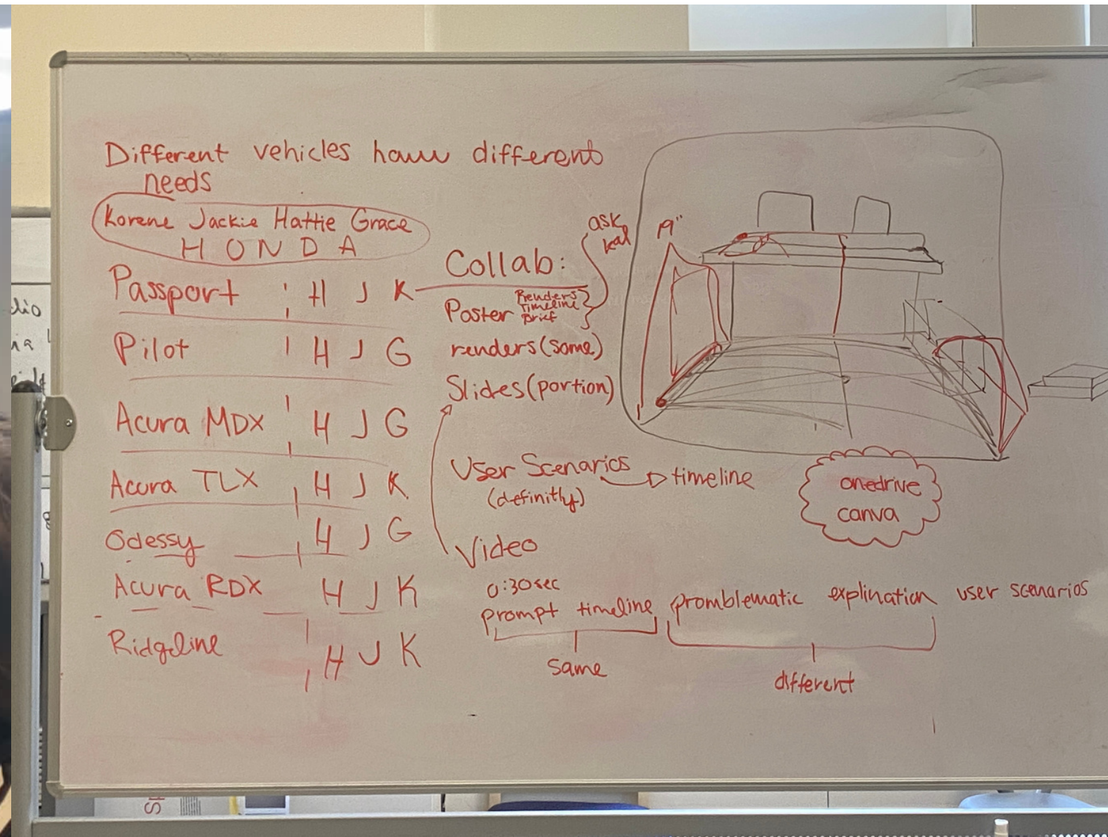




Grocery Assist System

After talking with Will, Kal and my groupmates we decided to create a way for all of our products to coexist within Honda's vehicles. The outcome was The Honda Grocery Assist. The idea is that there can be multiple configurations that our products can be in. The grouping are listed on the white board below.







Here is a render of all of the
Grocery Assist Products together