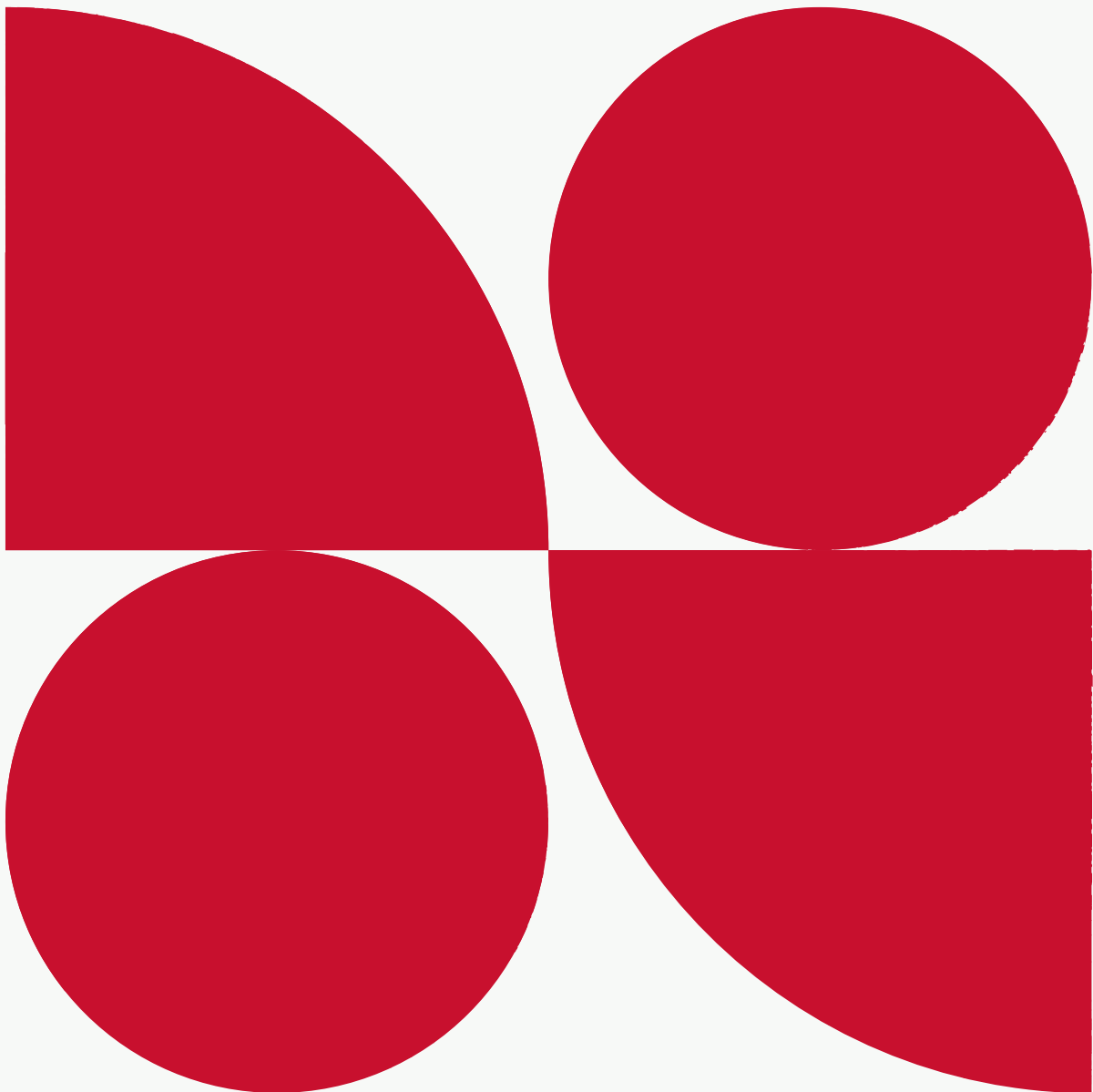


SENIOR CAPSTONE

Process Book

Partnership with **HONDA**





HELLO!

My name is Madyson Webb, and I'm a designer from Port Clinton, Ohio. My senior thesis in Industrial Design focused on vehicle system and product design, but I'm also passionate about UX and UI design.

I'm excited to share with you a project I worked on called the Honda Crocer Companion, an app developed with and for Honda, a local company in Columbus, Ohio. The Arts Undergraduate Research Scholarship at The Ohio State University provided financial support for this project. I would like to extend a special thanks to my friends, family, teachers, and all the people at Honda for their unwavering support throughout this journey.

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Senior Capstone
AU 2022

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Abstract

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The Honda Grocer Companion digital vehicle app was developed as a partnership project with HONDA, investigating how to increase competitiveness with their next-gen vehicles by observing future grocery shopping trends and redesigning the cars' assistive aspects to improve this experience during grocery store pick-up.



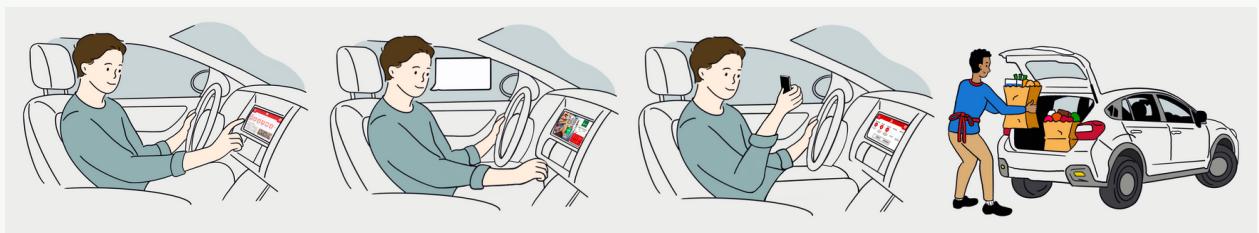
The Impact of COVID-19 on Shopping and the Rise of Dark Stores:

COVID-19 has had a significant impact on the incomes of consumers, which have decreased dramatically. Despite this, global shopping volumes have surprisingly increased, thanks to the safety, ease of use, and other advantages of online shopping. As a result of the pandemic, individuals and companies have had to rethink their daily activities and reimagine their lives. COVID-19 has driven the creation of new solutions to address the rapidly changing world we now live in, with even the most mundane tasks, such as grocery shopping, being affected. One successful adaptation by retail stores has been the pivot to the "dark store." A dark store is a location that has been closed and repurposed into a center for fulfillment operations. This trend raises questions about the future of grocery stores and transportation and how we can design these elements to function together seamlessly in our daily lives.

Continued

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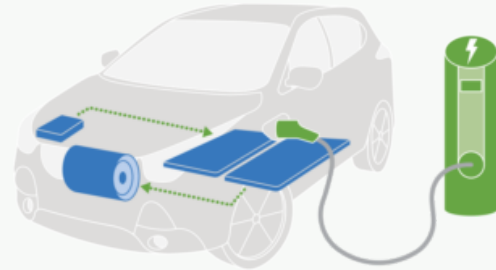
Introducing an innovative digital feature installed in the vehicle hub center to highlight the significance of future vehicle development while shopping for groceries online. Our app fosters interaction between the user and the fulfillment workers, enhancing communication during the online shopping process. Conveniently, users can now shop from their vehicles without having to leave during the typical grocery shopping experience.



Introduction

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As society becomes increasingly on-the-go, cars are evolving to meet the needs of modern life, including the way we shop for groceries. The COVID-19 pandemic has led to a surge in popularity for curbside pickup, making cars a key player in the shopping experience with their loading and unloading areas. Looking ahead, EVs and autonomous vehicles are set to become even more prominent, suggesting an opportunity to integrate these two concepts into a single system that could revolutionize the grocery shopping experience. In 10-15 years, Honda's EVs and autonomous cars could offer an assistive cargo area in the vehicle, improving the delivery experience and making shopping more convenient than ever before.



This sophisticated interface is highly intuitive, and customizable, and has been designed for ultimate usability to elevate the car beyond being a means of transportation to become fully integrated into the owner's modern connected life.

Honda and other companies are taking advantage of **Electric Vehicles (EVs)** to reimagine how they use their space. While still a relatively new concept, experimentation and development are crucial in understanding customer needs, particularly in regards to the cargo area. Since EVs do not require large mechanical parts and engines, they provide more room for cargo space. This extra space creates opportunities for innovative designs that take advantage of the additional storage capacity.

Benefits:



AFFORDABILITY

Save up-front with incentives & rebates



CLEAN AIR

Reduces pollution from day-to-day



CONVENIENCE

Charge wherever & whenever with low rates



EASY UPKEEP

Fewer parts & lower maintenance costs

Continued

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The Shift to Online Grocery Shopping and its Impact on Consumers:

As of 2022, over 50% of users have turned to online grocery e-commerce for their shopping needs. This trend was particularly notable among senior users, who turned to online shopping in response to the COVID-19 pandemic. The pandemic has had a significant impact on consumers' incomes, which have decreased dramatically. Despite this, global shopping volumes have surprisingly increased due to the convenience, safety, and other benefits of online shopping. Retailers have adapted to the pandemic by introducing the "dark store" concept: closed locations repurposed as centers for fulfillment operations. This raises questions about the future of grocery shopping and cars, and how we can best design these elements to seamlessly integrate into our daily lives.



"Human intelligence combined with Artificial Intelligence, robots are going to transform much of the food value chain and retail".



Innovative Use of Robots and Digital Grocery Shopping During the Pandemic:

The pandemic has led to the introduction of robots and digital grocery shopping to enhance operational efficiency and safety. These designs utilize autonomous technology in a safe and contactless manner. Similar to self-driving cars or shopping yourself, these technologies feature high carrying capacity, a paging function, and a voice control system. They use multiple cameras for 360-degree vision, ultrasonic sensors, measurement units, and GPS navigation to map out the route between the vendor and the delivery point, considering sidewalks, crossings, vehicles, pedestrians, and animals. Human monitoring ensures that it can be taken control of at any moment if necessary. These technologies represent an important part of our future systems and have inspired my final design.

Research: Primary

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Two Surveys to Enhance Research Process on Grocery Shopping Habits:

To narrow down my focus group and comprehend deeper problems related to the assigned brief, I conducted two surveys. The first survey involved 137 participants and helped document attitudes, opinions, and preferences regarding grocery shopping styles, experiences, and habits related to the car.

The second survey targeted the elder community, engaging 25 participants aged 50 and above with a mix of survey and interview questions. The aim was to better understand how grocery shopping affects the elderly and how we can provide better support. Additionally, we gathered ideas for the future of autonomous shopping.

01

Date Preferneces

Analyzes the behaviors and attitudes of online grocery shoppers

02

Ethnographic Research

Study shoppers in grocery stores and observing car layouts and what is put into cars, why, and how.

03

Interview Quotes

Displaying quotes from interviews to determine their opinions on online shopping, curb side pick-up, etc.



Research: Data Preferences

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Car Storage Preferences:

When it comes to car storage, many people expressed frustration about the location of grocery bags. These bags are often difficult to access, with no designated location for them. However, participants found that the least frustrating aspect of grocery shopping was the bag's location. They explained that their cars were already full of other items from their daily lives, so they would just throw the groceries wherever they could.

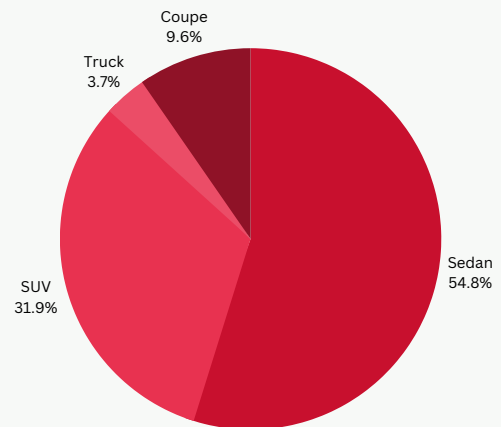
On the other hand, the most frustrating aspect of car storage was the constant shifting of grocery bags while driving. This caused items to frequently fall out, making the experience more frustrating.



72.3%

In my study of shoppers, the majority prefer placing their groceries in the trunk of their vehicles. The next most common location is in the backseat, at 23.4%.

Types of Cars Driven to Store:



What People Prefer When Shopping Online:

When it comes to quick and efficient shopping, online grocery shopping is the way to go. Recent studies have shown that as of 2022, 54.3% of U.S. adults have done their grocery shopping on the internet within the last 12 months.



72.3%

By 2022, the majority of U.S. adults will still prefer to shop for their purchases in physical stores.

However...



49.5%

By 2022, a significant number of U.S. adults are expected to do their grocery shopping online.

Research: Ethnographic

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Observations on Grocery Store Behaviors and Car Preferences

Based on my observations of grocery store parking lots and inside store behaviors, I have collected some interesting data that you may find helpful.

- The most popular places to store groceries are the trunk and the passenger seat, especially for elders.
- Many people find it a hassle to put away their carts after shopping, so they are often left in the middle of the parking lot.
- Fulfillment workers are often unwilling to help customers, especially younger workers.
- The bagging process is often rushed, and servers may not be careful with items, resulting in broken bag handles and smashed food, among other issues.
- I witnessed an elder woman lose her car in the parking lot and feel embarrassed, refusing help because she didn't want to inconvenience others.
- Another elderly woman carried her groceries on a walker, almost falling while transporting them.
- Curbside-pickup parking slots were rarely occupied.
- Drivers in the grocery parking lot often drive recklessly, and there seem to be no enforced rules, leading to sporadic and dangerous driving patterns.
- With little to no human interaction between users, grocery shopping has become a highly isolated activity.
- Many people view their car as a personal living room and do not prioritize car storage space.
- Trunks are often cluttered and do not have enough room for groceries.



Research: Participants' Data

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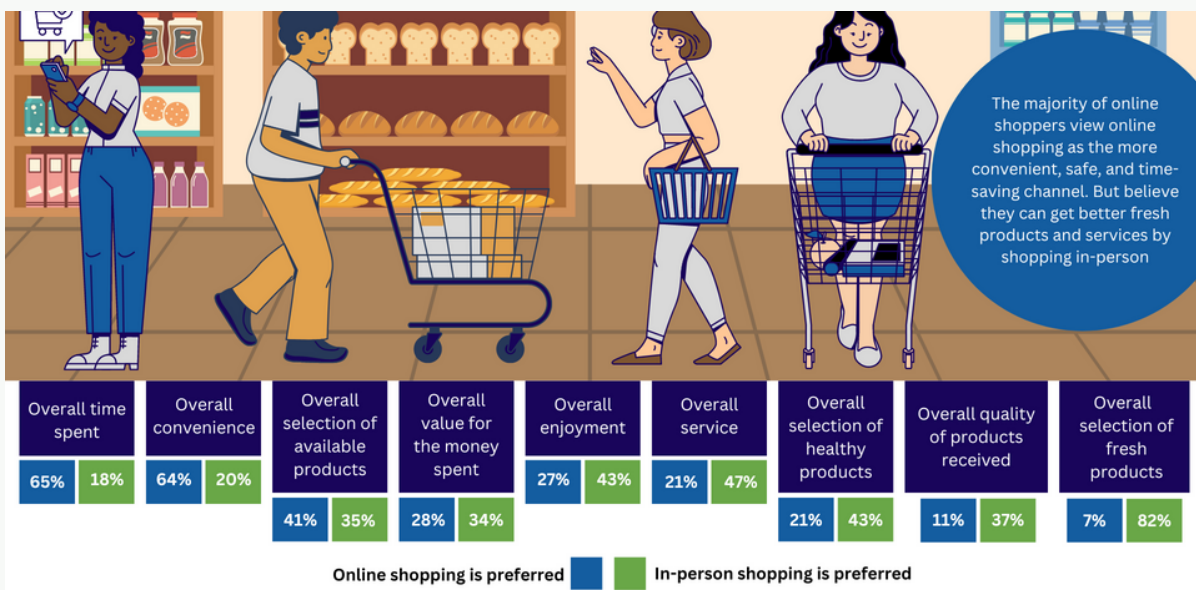
Insights on Curbside Pick-up Experience and How to Improve It:

Based on the results of my survey of 138 participants aged 18 to 60+, a significant number of respondents preferred to shop for groceries themselves, and did not fully trust curbside pick-up as a reliable option for a high-quality grocery experience. This raises the question of how we can better understand and address the underlying issues in the curbside pick-up experience to enhance its overall system, quality, and trustworthiness for these users.



Using Secondary Sources to Improve User Experience Design:

TAB Analytics provided insights on shoppers' preferences for in-person versus online shopping experiences. This secondary source helped me identify key pain points that needed to be addressed in order to create a successful and user-friendly design.

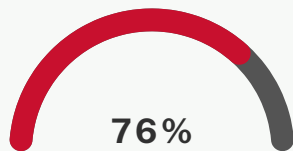


Research: Participant Quotes

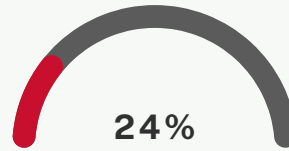
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Using Interviews and Surveys to Enhance Design Direction:

Throughout my research process, I collected fascinating data and quotes from participants that helped me determine the appropriate direction for my design. While many participants voiced concerns about their curbside experience, they also expressed that it is a safer and more efficient system given the current societal function.



all 50+ Participants stated they enjoyed talking to strangers



all participants under 50+ stated they did not like talking to strangers

Exploring the Advantages and Disadvantages of Online Shopping:

Based on my survey of participants' thoughts and preferences regarding the curbside pickup experience, I've compiled a list of pros and cons for online shopping.

Consider the pros:

- Less likely to overspend.
- Add items to your shopping list throughout the week.
- Time-saving.
- Safe and less stressful .
- Less money is spent on gas.
- Pre-save your last shopping list.

VS.

Consider the cons:

- Expensive (additional costs for usage and delivery fees).
- Loss in choice of fresh quality produce.
- Loss of social interaction and sense of productivity
- Difficult to fully stock and might need to go back to the store.

Interesting Quotes:

Quote 1

" I like the idea of someone doing the physical work while I do the mental work as a partnership".

Quote 2

"Convience is a nessecity".

Quote 3

"Sometimes, because I lost my husband 2 years ago and this is the first time I've ever lived alone. I am retired and don't see people during the day unless I go out somewhere".

Research: Secondary

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At the beginning of the research process, a viable resource to narrow down my focus group and understand deeper problems inside the assigned brief was a report conducted by myself with 137 participants. This survey documented certain attitudes, opinions, and preferences about grocery shopping styles, experiences, and habits regarding the car.

My second survey engaged the elder community of 25 participants aged 50+ with survey questions mixed with interview questions to understand better how grocery shopping makes elders feel how we can support them better and any ideas they would like to see in the future of autonomous shopping.

01

Conjectures

Analyzes the behaviors and attitudes of online grocery shoppers

02

Focus Articles

Determines the preferred preferences of cars when shopping and where and how they place groceries inside the car.

03

Meals on Wheels Data

Displaying quotes from interviews to determine their opinions on online shopping, curb side pick-up, etc.



Research: Conjectures

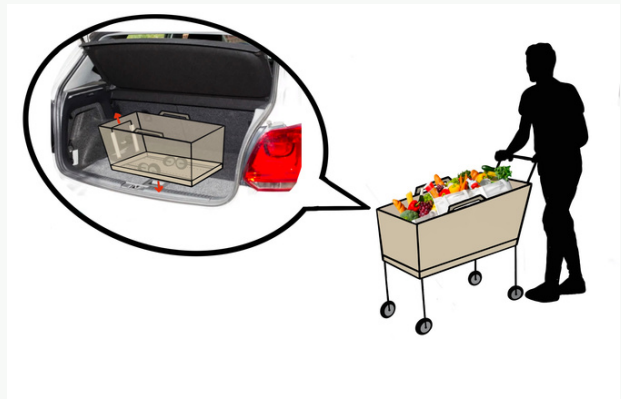
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The conjectures were used to discover gaps in my thinking process and allow me to see other routes. These designs come from my secondary research articles and were further explored in my primary research to see what is feasible, needed, or could be removed/ added to create a more cohesive design.



Insights:

Allow technology to fix minor details of the grocery shopping experience & provided insight into ways I can load the car mechanically through the use of the Honda vehicle.



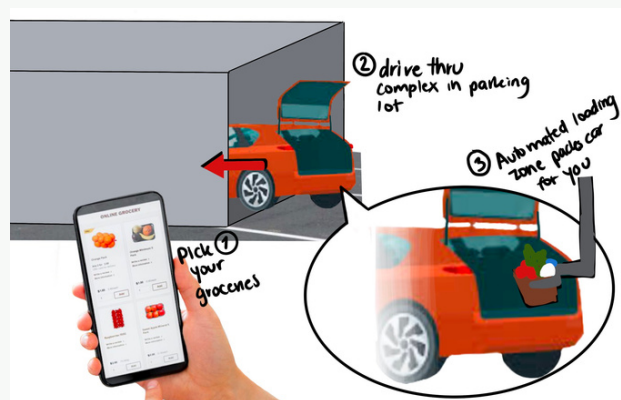
Insights:

Providing that sense of confidence and agency back into their shopping experience while also tackling the need to redesign the cart to fit users as they age



Insights:

Interactive and playful product enjoyment & functionality.



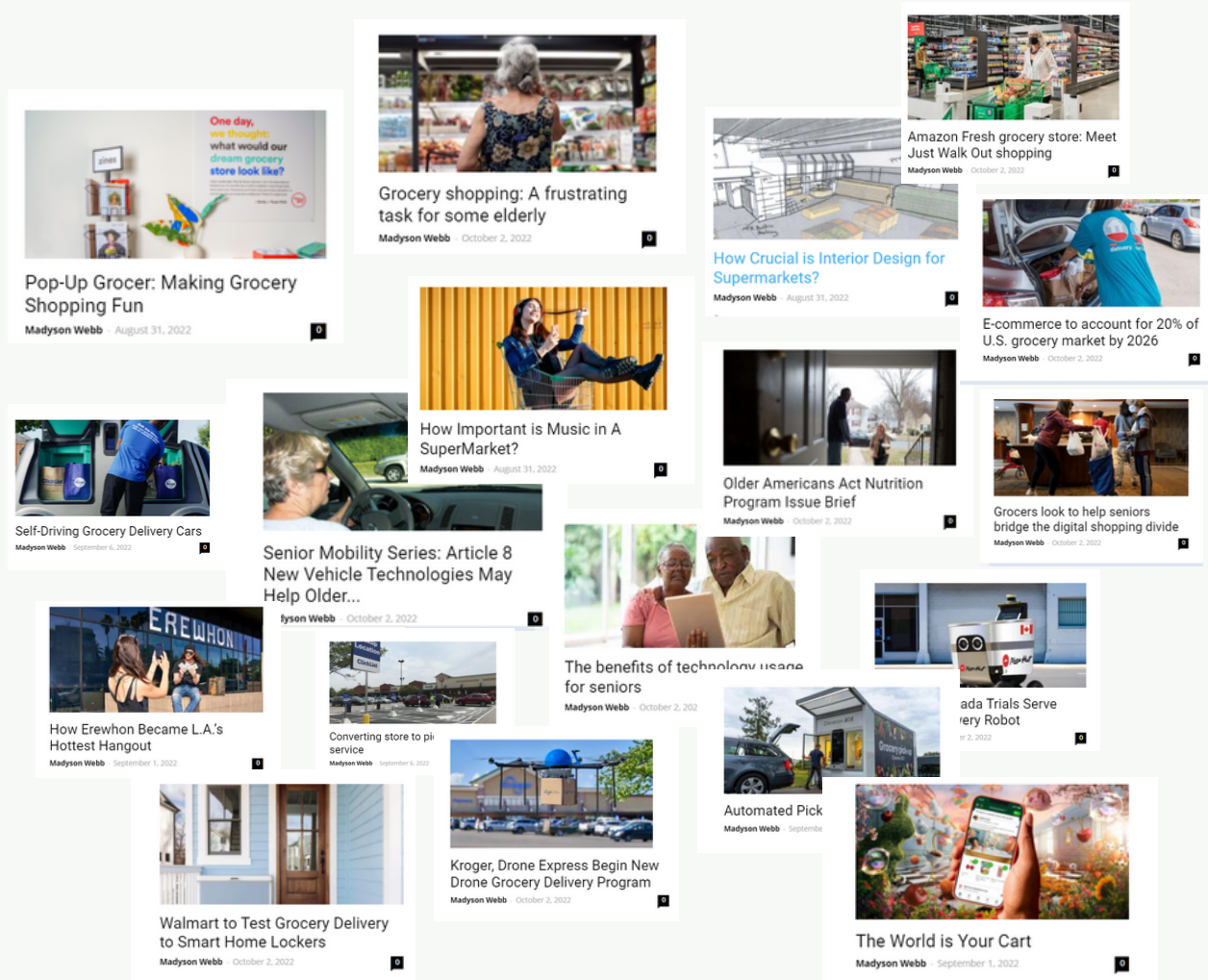
Insights:

Need for a structured and supportive system in the vehicle or the store that improves the shopping experience.

Research: Focus Articles

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The secondary research for this project consisted of reading a broad range of articles related to different ideas to focus my narrative and gain a better sense of grocery stores and EV technology. From these articles, I read about elders' lifestyles and the affects of aging on one's physical and emotional, and psychological health, autonomous technology, online shopping dominating the market, and grocery stores' social experience, whether physical or mental.



Research: Meals on Wheels

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Meals on Wheels is a program that delivers meals to individuals at home who cannot purchase or prepare their meals — supporting the more than 5,000 community-based programs across the country dedicated to addressing senior isolation and hunger. By providing funding, leadership, education, research, and advocacy support, Meals on Wheels America empowers its local member programs to strengthen their communities, one senior at a time. Our nation's senior population is growing exponentially, outpacing the resources available to serve vulnerable older adults and jeopardizing their health and well-being. Meals on Wheels is a proven public-private partnership that effectively addresses the challenges of aging by promoting health and improving the quality of life for at-risk seniors.

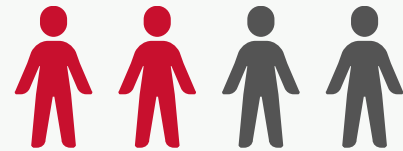
Quick Facts:

Senior Community makes up 16.9% of the human population in America, with 12,000 people turning 60 each day & 2026, 1 in 3 Americans are projected to be 60+ or older.



2 out of 3

Seniors that struggle with daily activities & receive limited community or home-based care



1 out of 4

Seniors that live alone struggle with feeling of loneliness due to social isolation



1 in 4

Seniors are projected to be living alone



1 in 3

Americans are projected to be 60 or older by 2060

Development:

Design Brief

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The Problem:

The grocery store experience is a personal and intimate activity related to our day-to-day activities. Over the years, this private shopping concept has diminished through newer technology, hurried schedules, and in-personal situations that have become the new social norm for our grocery shopping experience. The delivery staff becomes almost inhuman to the user picking up their groceries, and the team becomes indifferent to the customer they serve. Many respondents in my survey expressed that the cargo space is not the most significant issue; instead, the stress of the store experience leads them to delivery or curbside pickup. Through my research on Meals on Wheels, I discovered that elders stated that their interaction with the drivers is the only time they interact socially with anyone. So the problem lies in how a vehicle in the grocery store setting could create a deeper connection between the staff and user to create a more holistic experience.

Objective:

The project/service aims to support more intimate social interactions between the customer and the grocery store delivery worker. Here we can understand how society has become more impersonal and establish genuine connections through mundane activities such as grocery shopping

Audience & Stakeholders:

The target audience focuses more on customers sixty-plus and participants participating in the nonprofit organization Meals on Wheels to truly understand the meaning of social interactions and the grocery store experience with the fulfillment staff.

Stakeholders range from:

- Elder community- intended users for solution
- Grocery stores- consider the future of stores' shopping styles
- Honda - project partner
- Fulfillment workers- payment, extra hours, overtime possible, training

The Goals:

- Bring awareness to social inclusion that is rapidly growing in today's society
- Provide an experience that allows the users to connect
- Implement a new system that facilitates more connection or engagement between the customer and the delivery service provider
- Addressing pain points in delivery and curb-side pick that diminishes interaction between user and worker
- A system easily readable and understood by many age ranges.



Development: Problem Statement

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The human population is rapidly growing as they struggle with more opportunities of social isolation due to advance technology, hurried daily activities, etc. Therefore, with all these changes apporcahing, providing agency, support, and social interaction into our mundane activities that will soon be over run by advance technology will keep humans connected to eachother, the world, and even our most mundane taks such as grocery shopping for a more full-filling & helpful experience for the user.

Highlight 1

Providing agency from technology
& personalized choice

Highlight 2

Providing connction between the
user and full-fillment worker at
every stage of the process

Highlight 3

Improving users expereince &
trust with curbside pickup

Development: Ideation

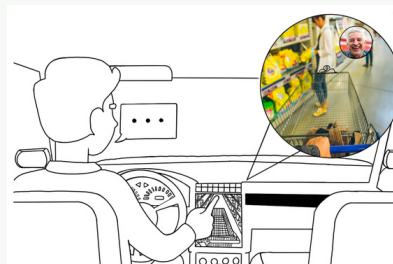
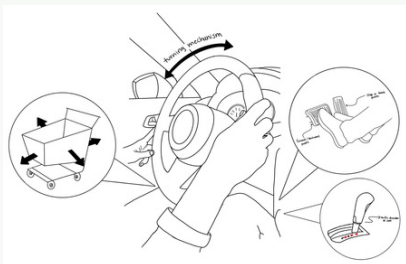
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Illustrating Creative Concept Design for a Project:

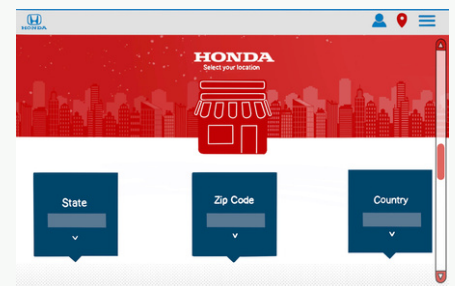
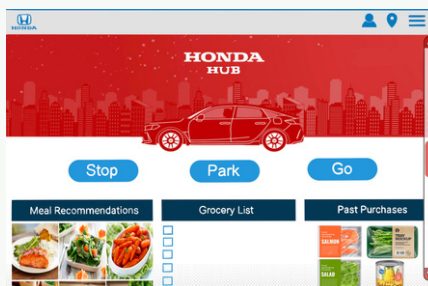
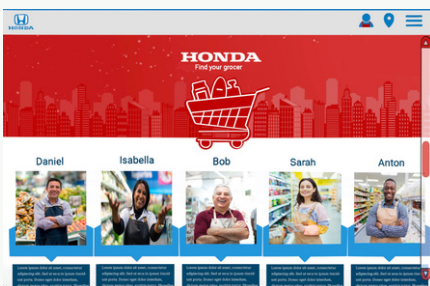
This section highlights how my ideas and research have influenced my design concept, which aligns with my project goals and objectives.

At first, my design concept revolved around personalizing and enhancing the car's central hub dash screen to make it more interactive. However, as I progressed through the design stages, I had to consider additional factors such as business needs, user and worker experiences, and future functionality of the system.

Initially, I had incorporated a robot into the design, but I later decided that this particular feature was unnecessary due to the overcomplexity of its requirements and functionality.

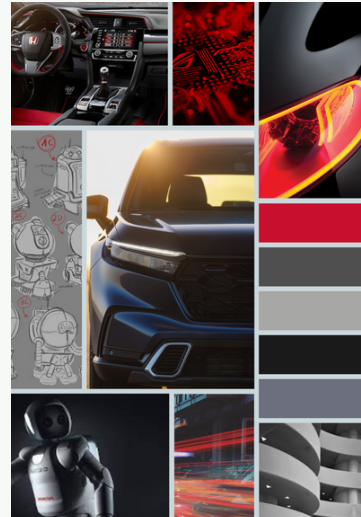


First Render of Honda App Screens:

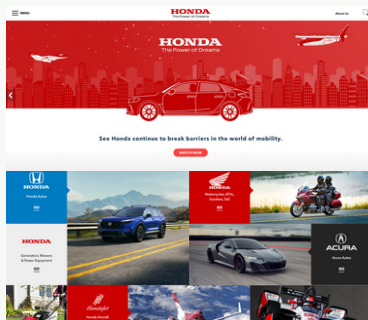


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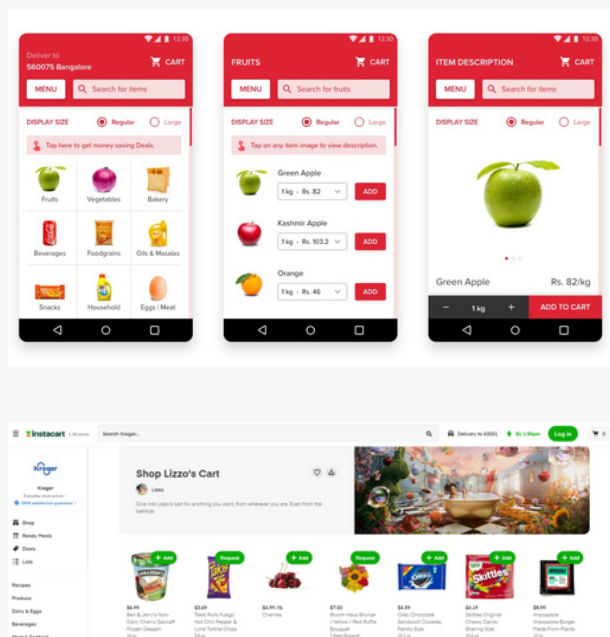
In designing my approach, I relied heavily on Honda's primary red, black, and gray color scheme, with subtle hints of white. This style was most suitable to follow as it aligns with our partnership. The Company provides a sleek, professional, and safe feeling to users. Research has also shown incorporate reds, whites, and other easily distinguishable colors as they can be reconcilable can promote positive emotions in the all ages.



Recently, I conducted a visual analysis of Honda's primary website to gain insight into their site structure, color palettes, and overall brand tone.



By examining grocery apps, we can gain valuable insights into how to create a system that enhances the user's experience and fosters strong connections with the store. As technology continues to play an increasingly important role in the grocery shopping experience, it is vital to understand how users interact with such systems. This enables us to design a system that caters to their needs and desires, and creates a deeper level of engagement. By incorporating these insights into in-car systems, we can take the shopping experience to a whole new level.



Solution: Dash System

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Collaborating with HONDA, a project was initiated to tackle the fast-paced changes in curbside pick-up and online grocery shopping. HONDA's new EV dashboard, equipped with a 12.3-inch screen, now would feature an innovative app called The Honda Grocer Companion. Customers can now shop for their groceries from the comfort of their vehicle, with options for choice and socialization. The app also provides an opportunity to understand personal preferences when it comes to grocery shopping and how to effectively adapt to these different preferences.

Introducing the Honda Grocer Companion Service:

Honda Grocer Companion Service is an innovative platform that enhances the online shopping experience and delivery process by promoting organic interactions between users. The app's main objective is to establish trust between customers and fulfillment workers. By providing users with the opportunity to get to know their grocer and participate in the online experience, the service aims to revive curbside pick-up operations and create a more connected and trustworthy process. Through improved communication, safety, ease of use, and a stronger sense of choice, this app is revolutionizing the way we shop and connect with our grocers.



Solution: Functions of App

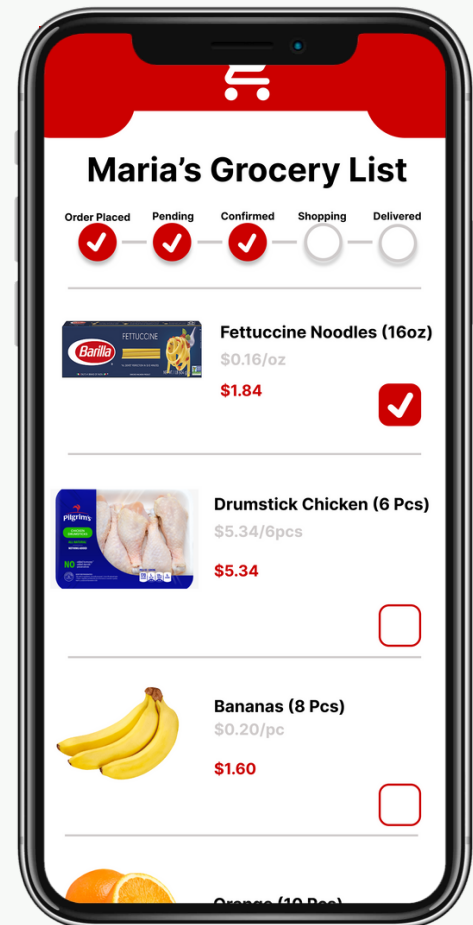
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The app comprises the following features and their interaction with the user & fulfillment worker:

- Honda Dashboard Screen
- System the app runs on inside the car Grocer Companion App
- Personalization, Choice & Recommendations Face-time Connection
- Builds mutual trust for worker and quality of products selected
- Provides the user ability to choose, express opinions, & receive in-depth details on products selected

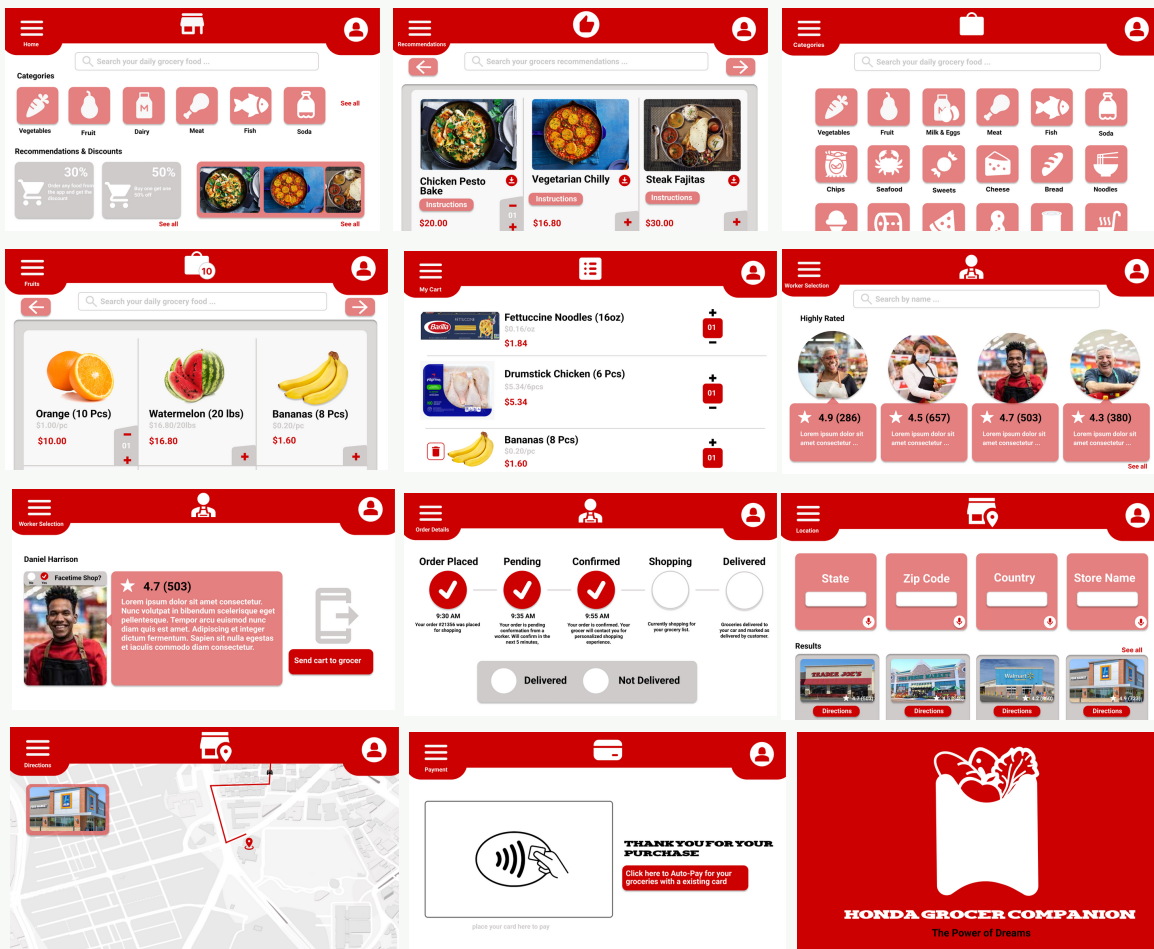
Key Features of the App's Interface for Customers:
The app offers a range of convenient features that make shopping easier and more efficient for customers. These include:

1. Creating a shopping list and sending it to your vehicle or creating a list while driving to the store through voice activation.
2. Setting up a profile to save meal recommendations, receive cooking and health tips, and access exclusive deals and discounts.
3. Saving your last grocery list automatically for future use.
4. Using the built-in GPS to find the nearest stores.
5. Rating stores and grocers based on your experience.
6. Virtually shopping with your chosen grocer from the safety of your own personal space.
7. Choosing items and enjoying faster shopping times thanks to dark store operations.
8. Enjoying personalized conversation with the fulfillment worker during the shopping experience.
9. Connecting app to your phone to shop as well.



Solution: Renders

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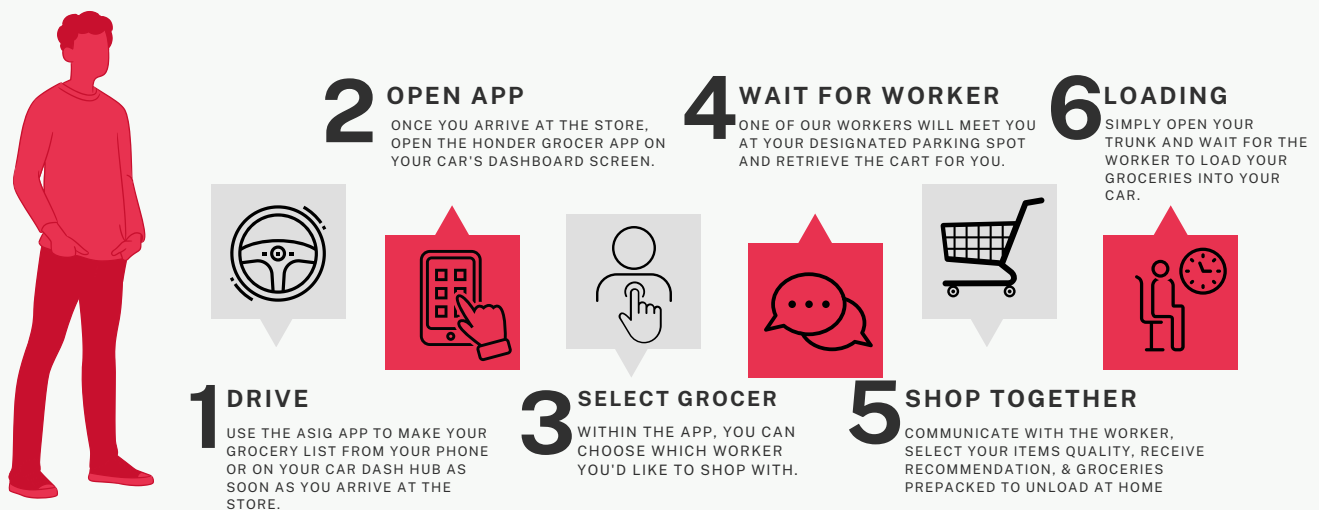
Solution: Customer Journey

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The Customer Journey: A More Relaxed System for Grocery Shopping

The process begins when the user opens the app on their car dashboard and inputs their store location. Once the store is located, the user can select a personal shopper based on their profile picture and bio. This initial connection is not forced, allowing for a more natural interaction. The user is then connected to their shopper via Facetime and can shop alongside them, as they locate and collect all the items on their list. During the shopping process, the user is free to engage in conversation with their shopper, adding a social aspect to the experience. Once the shopping is complete, the shopper delivers the groceries to the user's car, leaving them with a full cart and a satisfying experience.

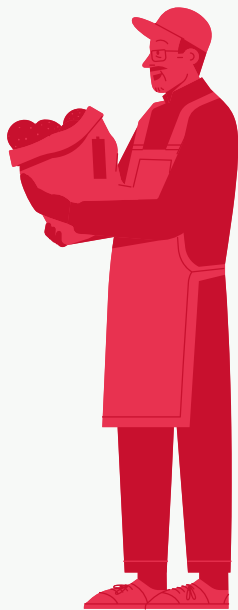


Solution: Worker Journey

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The Fulfillment Worker Journey: Unique Hands-on Experience

During this experience, the worker takes on a more physical role. After being notified, they meet the customer outside, introduce themselves, and establish a connection. The worker should inquire about the customer's preferences, such as the background they are hoping to have and the types of groceries they want. Accompanying the customer on the shopping trip as a shopping partner rather than a personal shopper helps to form a bond and allows for good conversation. During this time, the worker can make recommendations and suggest items that the customer may have missed. Once the shopping is complete, the worker packs up the cart and follows the customer to their car to unload and pack the groceries appropriately. The customer is then bid farewell, and the worker returns the cart to be charged for the next user.



1 CAMERA PINGED

TO ENHANCE CUSTOMER SERVICE, WORKERS ARE EQUIPPED WITH BODY CAMERAS WHILE SHOPPING ALONGSIDE CUSTOMERS. THESE CAMERAS ARE PROGRAMMED TO CONNECT TO THE USER'S VEHICLE HUB SYSTEM AUTOMATICALLY ONCE ACTIVATED.



2 GREET

AFTER CONNECTING, THE WORKER WILL INTRODUCE THEMSELVES AND INQUIRE ABOUT YOUR GROCERY LIST AND PREFERENCES.



3 SHOP TOGETHER

MAXIMIZE YOUR CART BY FOLLOWING THEIR LIST, INITIATING CONVERSATIONS, AND RECOMMENDING NEW MEALS TO TRY



4 LOAD CAR

PROVIDE ASSISTANCE BY TRANSPORTING THE GROCERIES TO THE CUSTOMER'S VEHICLE AND LOADING THEM UP.



Conclusion: Impacts & Limitations

Industrial Design
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Impacts and Limitations of the Honda Grocer Companion App

Impacts:

The Honda Grocer Companion app offers a powerful solution to combat the growing isolation crisis in America. By using this app, users can remain up-to-date with evolving technologies and how they can impact their daily habits, activities, and lifestyles. Unlike most apps, this one empowers users with agency in their choices and opinions.



Furthermore, the app can potentially help reduce plastic waste by eliminating the need for checkout and bagging with its cart scan & go system. Users can bring their bags from home for the fulfillment worker to use when bagging groceries after completing the order. Additionally, integrating the app with other day-to-day activities, such as routing technology, can enhance communication, engagement, and a more efficient shopping experience.

Limitations:

- **Cost & Time**

While the Honda Grocer Companion app offers many benefits, there are some limitations to consider. The cost of running the app on Honda's dashboard screen and how workers would be compensated for this service are important factors to consider. Additionally, some users may still prefer to shop in-store rather than using the app, which could have an impact on its feasibility.

- **App Repairs**

If the app needs repair, would mechanics need to learn how to fix it, or would it require a different shop altogether?

- **Safety Protocols**

Lastly, there are safety concerns to address, such as preventing distracted driving while using the app and conducting background checks on workers to ensure user safety.



Reflection:

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AU 2022

Project Outcomes and Personal Growth:

Though this project did not unfold as I had anticipated the first time around, it provided me with valuable insights into my design process and myself for the redesign, which I am now presenting in this process book. There were many hurdles to overcome, and while it seemed daunting, I was able to conquer them. I encountered multiple setbacks and struggled to seek assistance, but this project taught me that it's acceptable to seek help and that it's okay not to know what the next step is. Prolonging the unknown space allowed me to rely on my research and see new paths in the project that were not initially apparent.

As a designer and a person, this project challenged and humbled me in ways I did not expect. It taught me that it's acceptable to express when an idea is not working or to own up to failure. Doing so permits you to take a step back, evaluate the problem, and address the core issues. The Honda Grocer Companion App was able to come out of my research and failed project by taking the needed steps backward to redefine the issue and simplify. As a designer, you must strive to maintain the essence of simplicity in the complexity of your ideas. Knowing when to omit specific details, communicating a cohesive narrative that draws your clients in, and demonstrating a passion for every aspect of the design process are all hallmarks of a great designer.

While my project may have failed on some levels, it taught me more than just a portfolio piece could. Failure is an inevitable part of any project, but it is how you respond to and learn from it that is crucial. I learned that I have a voice and the confidence to change the narrative when it is necessary. To guide my clients through the process and offer them superior options when appropriate. This project taught me that failure is sometimes preferable to always succeeding because it allows us to challenge fundamental societal norms and develop cohesive designs more thoroughly.

The Importance of Reworking and Redesigning Projects:

I had the opportunity to revise a project recently and witnessing its transformation from its previous state to its current form instilled in me the value of consistently reworking ideas until the optimal solution is reached. Originally, the app was designed to function as a robot, but it became clear that it was not suited for the future of technology. Therefore, it was necessary to strip the project down and find a solution that aligns with the evolving technology landscape. This redesign proved to be a vital step in the process.

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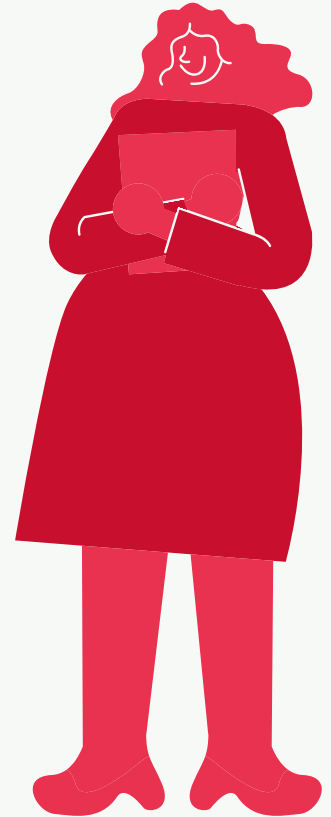
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