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HCI 454 Car-Buying App Proposal

Project Overview Statement:

A car-buying app needs to meet a variety of needs. TRUECar is good for buyers looking for the best price. It offers competitive, haggle-free pricing but a user needs to know which car he/she is looking for to use the app efficiently. Using the CarMax app, buyers can browse cars and save searches, but buyers are limited to the cars within the CarMax inventory—and can only compare up to 10 cars at a time. CarSoup deals in both new and used vehicles. It offers local specials with partner dealerships, but how does a buyer know that there isn't a better deal on the same vehicle just a few blocks away?

I asked eight participants what words they associate with the car-buying process. 75% named price and/or the word expensive in their top five words. 50% of participants used words like liars and/or haggle with a negative connotation. Of the 24 words or short phrases used to describe buying a car, only one was positive (exciting) and two were neutral (price). This left 87.5% of words used to describe the car-buying process expressing negative emotions or experiences (e.g., stressful, inconvenience, nightmare, aggravation, tedious, etc.).

I propose an app which—using the latest search technologies—allows the consumer to customize a collection of cars specific to his/her needs. The app locates available cars matching the consumer's preferences and displays competitive, no-haggle pricing.

App Mission Statement:

This app allows consumers to take the negativity out of the car-buying experience by supporting both a comprehensive search and a no-haggle pricing schema that is fair to both the consumer and the producer.

App Users

Target users are those looking to have a positive experience when buying a new or used car.

Proposed Content Items:

Brand

> This section organizes cars for consumers who are looking based on company reputation and/or past experience with a certain brand.

Price

Consumers can search for cars without the fear of falling in love with a car they ultimately cannot afford. Organizing cars by price provides a budget-friendly way to explore car options.

Specs

The goal for this section is to provide the most detailed search criteria for those who know what they want in a vehicle or need from it.

Type

This section allows the user to browse based on the style of the vehicle.

Year

A consumer can get a good bargain on a car depending on the time of year. For example, the end of the calendar year can be a great time to buy that year's "new" cars for discounts as dealers need the room for the following year's "new" cars.

Card Sorting

Recruiting

I used social media to recruit participants for an online open card sort. I created the card sort in Concept Codify. I asked potential participants to share the short online activity with anyone they knew who has ever bought or wanted to buy a car. Five participants took the card sort. Two were completely online and anonymous. Three were observed. Of those three, one was male. Two were in the thirties, one in the forties. One is a self-identified car enthusiast, one is extremely proud to find the best deals on used cars—period, and the third would, "rather poke my eye out with a stick," than shop for cars.

Process

I designed the card sort with 40 content items, 9 of which are numbers and most of which are single words. This is less taxing on a participant's cognitive load than phrasal content items. I designed the sort to take 5-10 minutes to be respectful of participants' time and contributions. I instructed participants to sort the items into 3 or more categories (Image 1).

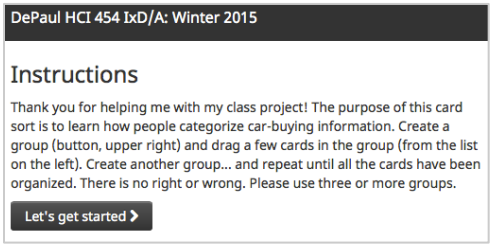


Image 1: Concept Codify: Instructions

I noticed during the three observations that each participant had different organizational patterns as to where the used, new and vintage or classic items should go. One put all three together in an "Other" category. One put vintage or classic with years, explaining that they were further back on the time continuum. This participant categorized used and new with pickup, coupe, convertible, etc. under the category "Type." One put all three under the category "Type" explaining, "Well, they're all types of cars, aren't they?"

One participant emphasized that alphabetized car brands would be important so she could find what she was looking for quickly. She pointed out that she had alphabetized them herself during the card sort. Additionally, she pointed out that she had sorted the years in reverse order so that the newest cars appeared first in the list.

Analysis

I found strong associations in the dendrogram (Image 2). I found it interesting that SUV seemed to be its own category and that Porsche and Hummer seemed to stand apart from the other car brands. I expected some discrepancy between new, used, and classic or vintage. The dendrogram supports that at least three participants held different organization patterns for those content items.

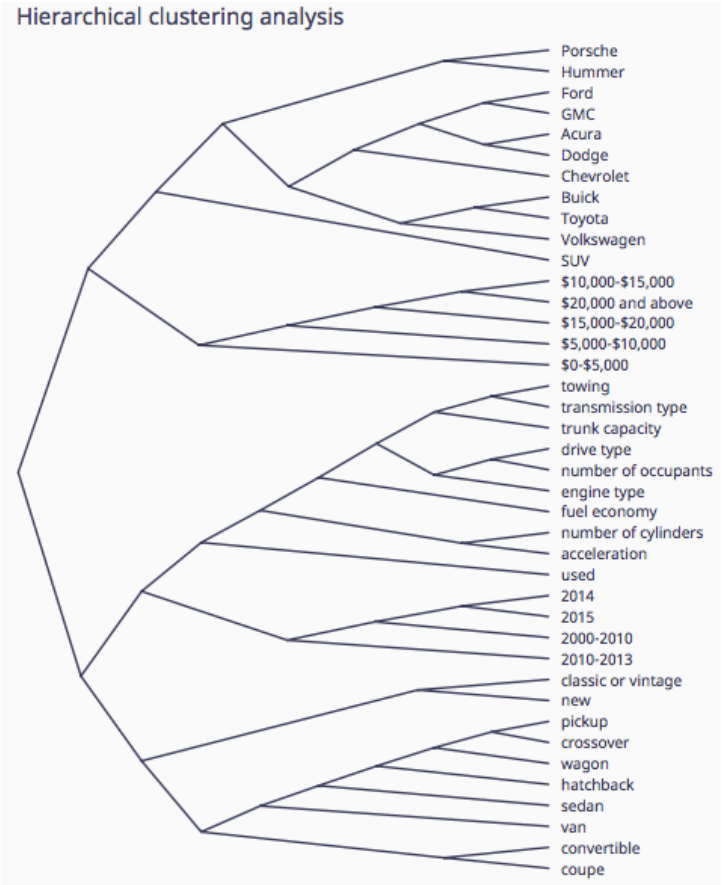
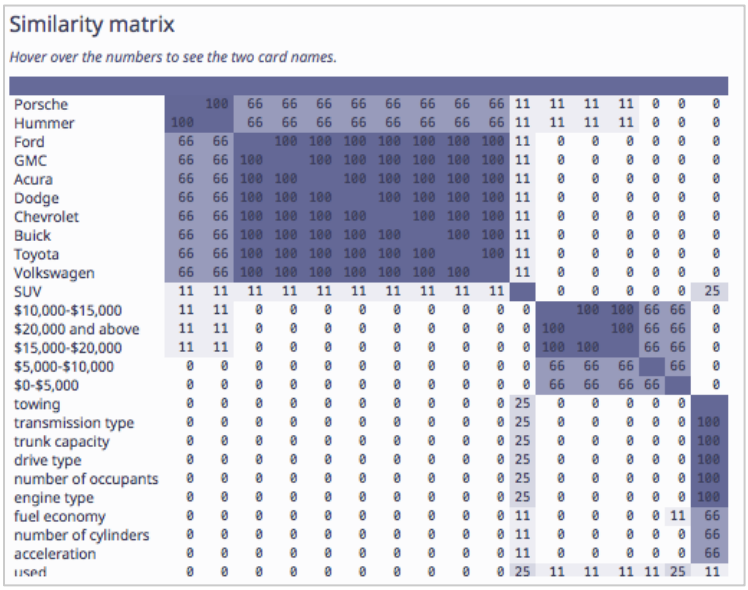


Image 2: Concept Codify: Dendrogram

The Similarity Matrix indicated that Porsche and Hummer had 100% strength of association to one another but only 66% to the other car brands (Image 3). I downloaded the YAML version of participant responses to further explore why Porsche and Hummer had been set off from the other car brands in the dendrogram (Image 4). One of the online participants had sorted Porsche and Hummer into a category labeled “Things I Won’t Buy” and the other 8 car brands into the category “Brands.”

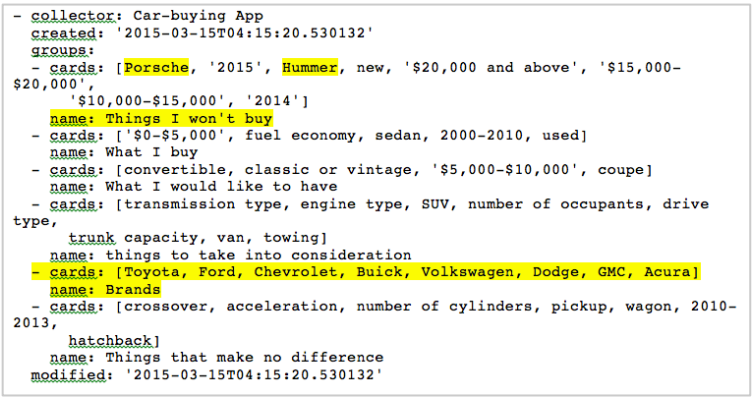


Similarity matrix

Hover over the numbers to see the two card names.

Porsche		100	66	66	66	66	66	66	66	66	11	11	11	11	0	0	0
Hummer	100		66	66	66	66	66	66	66	66	11	11	11	11	0	0	0
Ford	66	66		100	100	100	100	100	100	100	11	0	0	0	0	0	0
GMC	66	66	100		100	100	100	100	100	100	11	0	0	0	0	0	0
Acura	66	66	100	100		100	100	100	100	100	11	0	0	0	0	0	0
Dodge	66	66	100	100	100		100	100	100	100	11	0	0	0	0	0	0
Chevrolet	66	66	100	100	100	100		100	100	100	11	0	0	0	0	0	0
Buick	66	66	100	100	100	100	100		100	100	11	0	0	0	0	0	0
Toyota	66	66	100	100	100	100	100	100		100	11	0	0	0	0	0	0
Volkswagen	66	66	100	100	100	100	100	100	100		11	0	0	0	0	0	0
SUV	11	11	11	11	11	11	11	11	11	11		0	0	0	0	0	25
$10,000-$15,000	11	11	0	0	0	0	0	0	0	0	0		100	100	66	66	0
$20,000 and above	11	11	0	0	0	0	0	0	0	0	0	100		100	66	66	0
$15,000-$20,000	11	11	0	0	0	0	0	0	0	0	0	100	100		66	66	0
$5,000-$10,000	0	0	0	0	0	0	0	0	0	0	0	66	66	66		66	0
$0-$5,000	0	0	0	0	0	0	0	0	0	0	0	66	66	66	66		0
towing	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	
transmission type	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	100
trunk capacity	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	100
drive type	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	100
number of occupants	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	100
engine type	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	100
fuel economy	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	11	66
number of cylinders	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	66
acceleration	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	66
used	0	0	0	0	0	0	0	0	0	0	25	11	11	11	11	25	11

Image 3: Concept Codify: Similarity Matrix



```
- collector: Car-buying App
  created: '2015-03-15T04:15:20.530132'
  groups:
  - cards: [Porsche, '2015', Hummer, new, '$20,000 and above', '$15,000-
$20,000',
      '$10,000-$15,000', '2014']
    name: Things I won't buy
  - cards: ['$0-$5,000', fuel economy, sedan, 2000-2010, used]
    name: What I buy
  - cards: [convertible, classic or vintage, '$5,000-$10,000', coupe]
    name: What I would like to have
  - cards: [transmission type, engine type, SUV, number of occupants, drive
type,
      trunk capacity, van, towing]
    name: things to take into consideration
  - cards: [Toyota, Ford, Chevrolet, Buick, Volkswagen, Dodge, GMC, Acura]
    name: Brands
  - cards: [crossover, acceleration, number of cylinders, pickup, wagon, 2010-
2013,
      hatchback]
    name: Things that make no difference
  modified: '2015-03-15T04:15:20.530132'
```

Image 4: Concept Codify: YAML

Observing the card sort has clear benefits. I can ask questions to better understand a participant’s thought process if I am there in-person. I cannot follow up on the Porsche/Hummer categorization because that participant was an anonymous online respondent. I am able to prompt a participant if I am there. This could be about ordering items within the categories or it could be about ensuring equally weighted categories are chosen to sort the items.

Sitemap

I asked eight participants what they consider important when selecting a car for purchase. One chose not to answer. The remaining seven listed company reputation, price, specs, and car type as important. None of them mentioned the year or age of the car. I compared the search categories on the TRUECar, CarSoup and CarMax apps. I also considered the dendrogram, which indicates that site users would understand what content they would find in a category for the year the car was made. Ultimately, I chose 5 categories and allocated the content items according to findings from the card sort (Image 5).

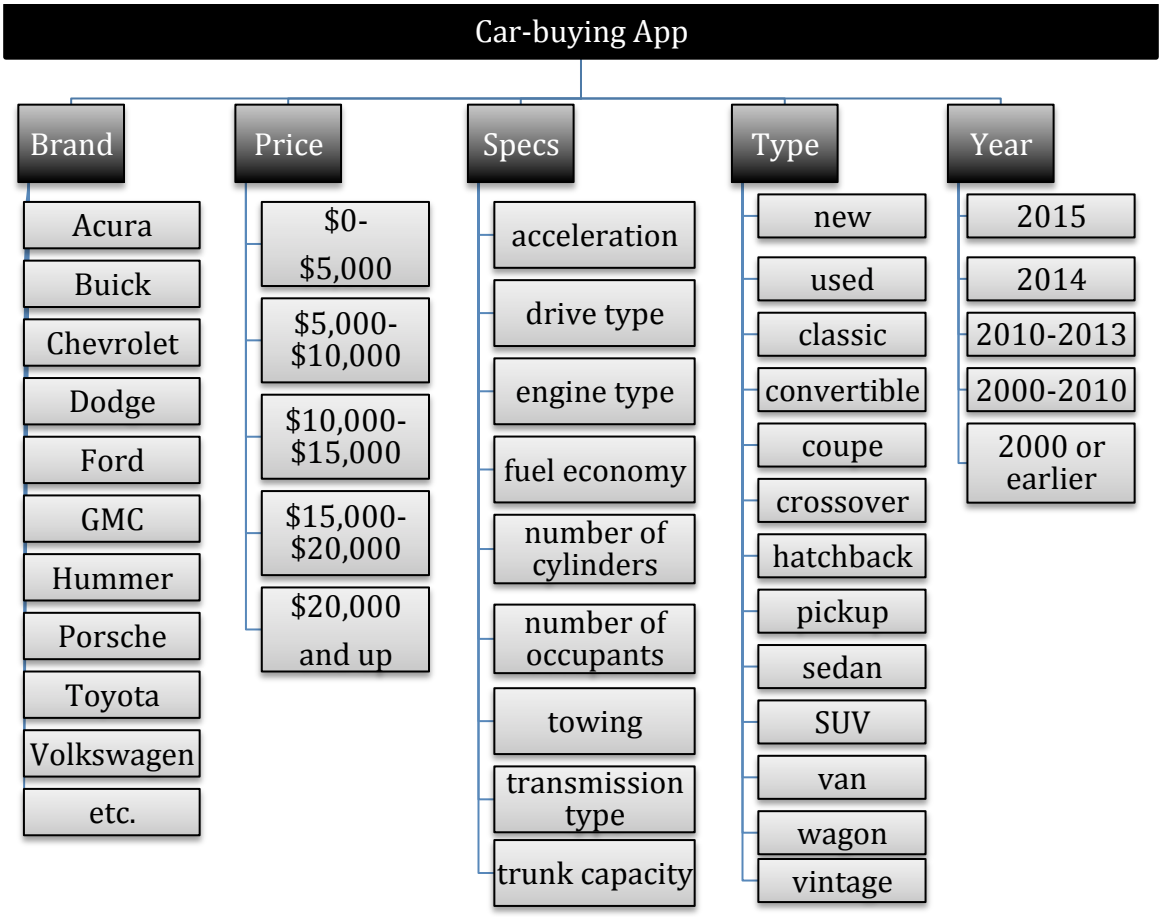


Image 5: Car-buying App: Sitemap

Design Charrette

I ran a design charrette for the main page of the app (Image 6). I chose the fourth design. Each sketch showed more attention to organization patterns (e.g., LATCH principles and the user's ease of reaching buttons) and better design development than the last. The app

displays alerts based on location, allows for browsing by category and/or alphabet, and uses percentages to display cars as a match to the user's preferences (Image 7).

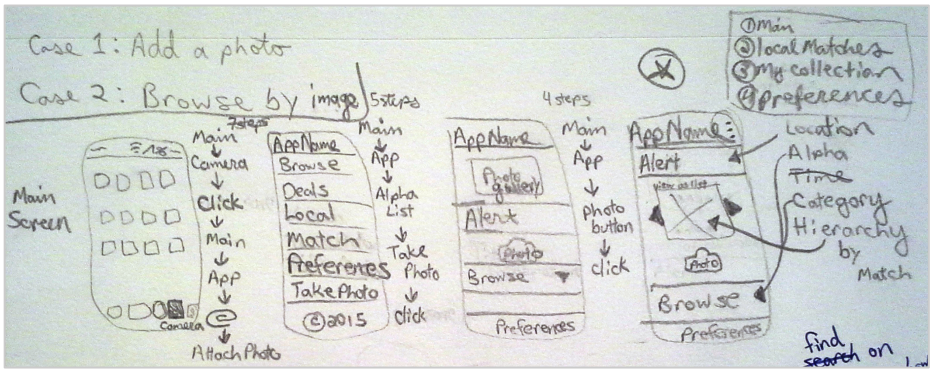


Image 6: Car-buying App: Main Page Design Charrette

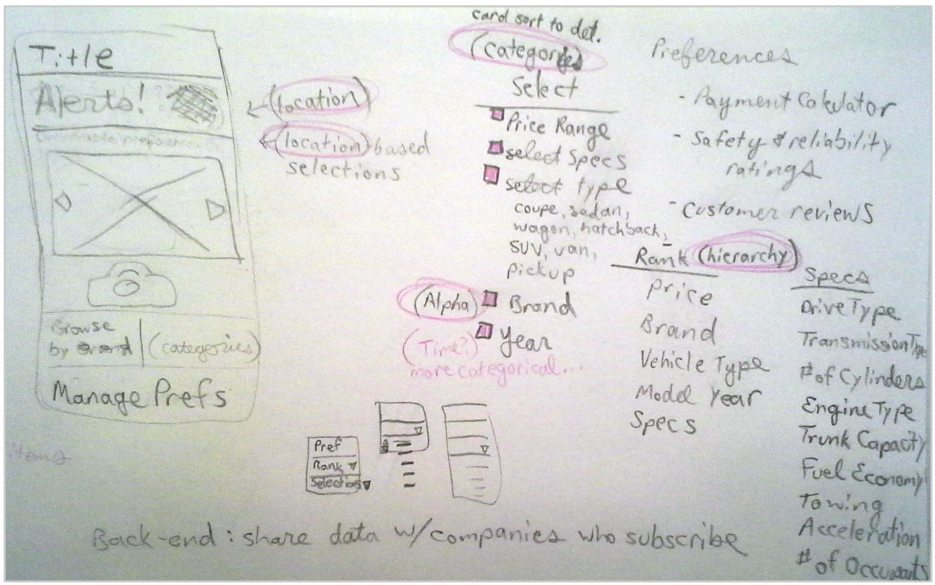


Image 7: Car-buying App: LATCH principles for main page

Wireframing Navigation Use Scenarios

I addressed context by allowing users of the app to take a picture of a car they like and upload it to the app. The app will use technology similar to facial recognition to identify the vehicle and prompt the user with a potential match. Once matched, the car goes into the user's collection where the app will search a database for local dealers who have a match. When reviewing his/her collection, the app will indicate a local TRUECar price through crossover functionality. In theory, the app would also link to contact information for dealers where there is a match.

Other design considerations include universally understood functionality and persona development. One piece of functionality was borrowed from the widely understood Tinder swipe interface. Users will swipe left to decline and swipe right to accept based on the prompts given. The personas were generalized from the known survey and card sort participant data.

Core Task # 1: Add a car (Jen and Kevin; Images 8 and 9)

Jen and Kevin are vacationing in Door County, Wisconsin. They have talked about getting a camper for years, but Jen isn't sold on the idea of having to get a new car just to tow a camper a few times a year. Kevin points out a car he's been looking at while they're walking to Wilson's ice cream shop in Ephraim. Jen agrees that it's a nice car. Kevin opens the Car-buying App, snaps a picture, indicates what he likes from his pre-determined criteria, identifies the car in his app, and adds it to his collection.

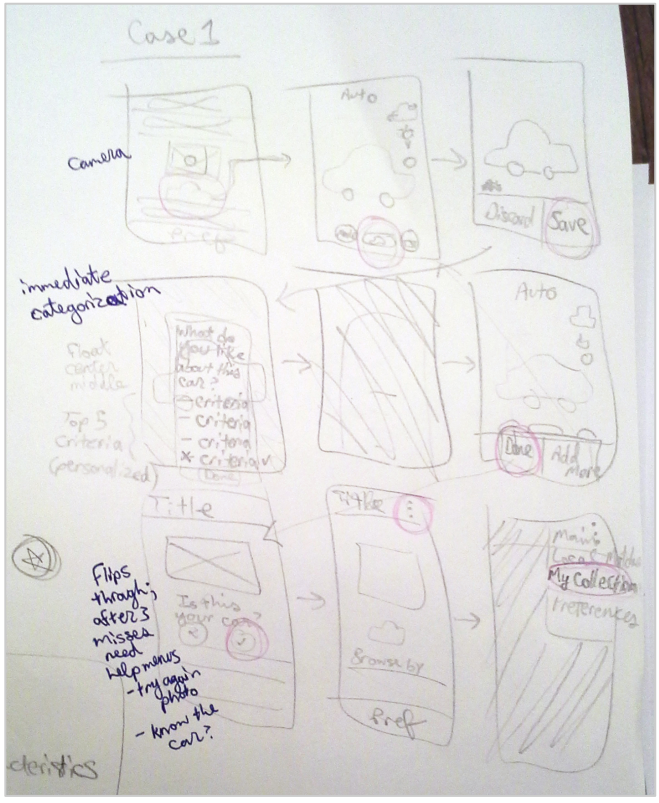
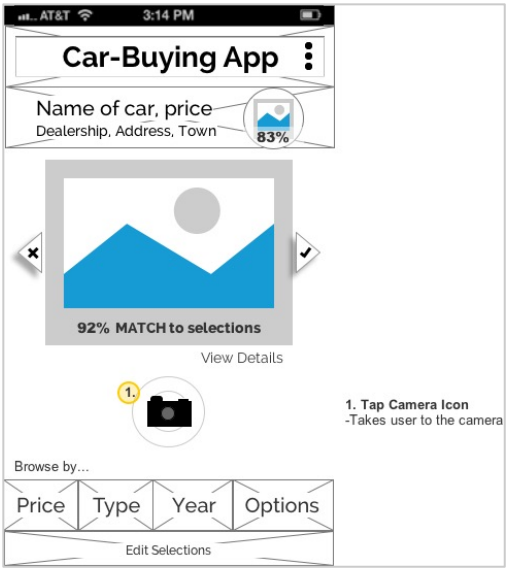
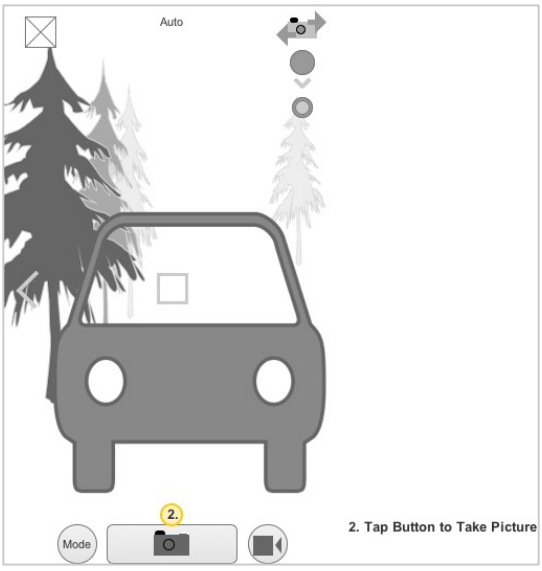
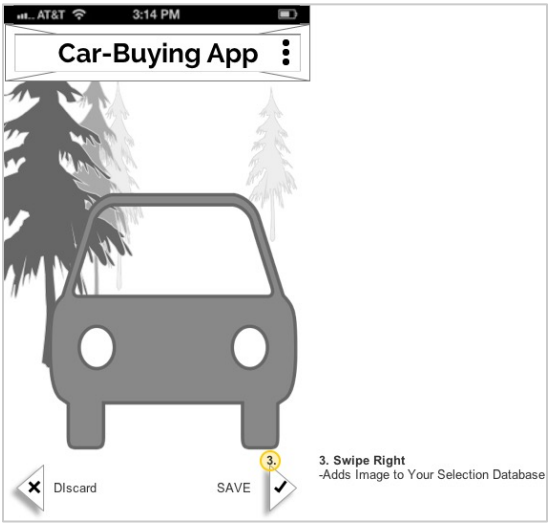


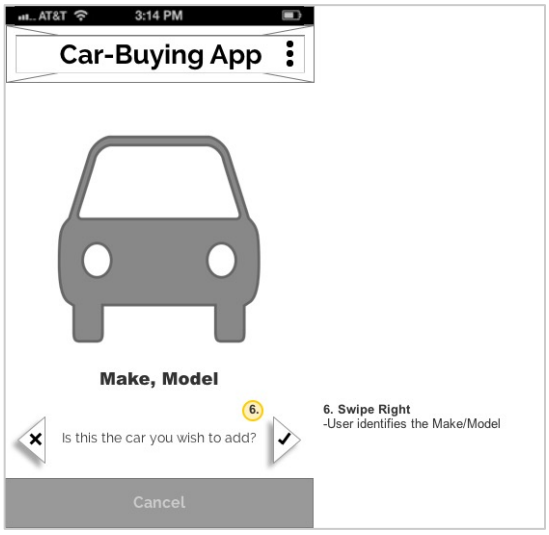
Image 8: Car-buying App: Core Task #1 (low-fidelity)


AT&T
3:14 PM
Car-Buying App
Name of car, price
Dealership, Address, Town
83%
92% MATCH to selections
View Details
1.
1. Tap Camera Icon
-Takes user to the camera
Browse by...
Price
Type
Year
Options
Edit Selections


Auto
2.
Mode
2. Tap Button to Take Picture


AT&T
3:14 PM
Car-Buying App
Discard
SAVE
3.
3. Swipe Right
-Adds Image to Your Selection Database


AT&T
3:14 PM
Car-Buying App
What do you like about this car?
4.
Selection 1
Selection 2
Selection 3
Selection 4
Selection 5
Cancel
5.
DONE
4. Tap Selections
-User chooses features from his/her top 5 selections of criteria for buying a car
5. Tap "DONE"
-Enters the selections in the database


AT&T
3:14 PM
Car-Buying App
Make, Model
6.
Is this the car you wish to add?
Cancel
6. Swipe Right
-User identifies the Make/Model

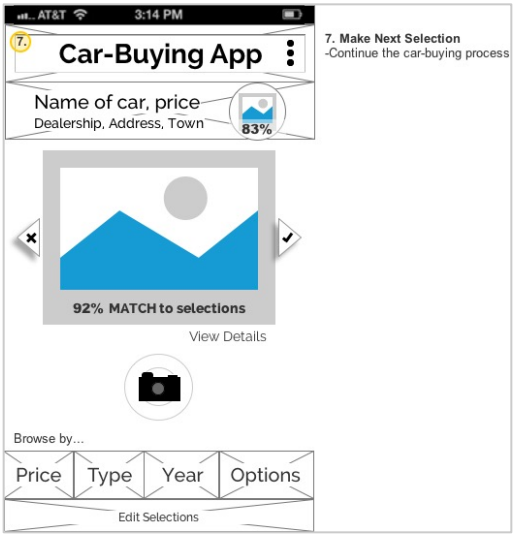


Image 9: Car-buying App: Core Task #1 (mid-fidelity series)

Core Task #2: What did he add this time? (Jen; Images 10 and 11)

Jen knows that Kevin has been looking for a new car that can also tow a trailer. She also knows that he has been using an app on his phone to look for this car. While he is sleeping in on a Saturday morning, she takes a look at his phone. She opens the Car-buying App and clicks on the main image that says "MATCH to selections." She wonders if this is some sort of a dating app for car buying. She notices criteria listed in different colors and assumes that the top and darkest criteria are the best match for the five criteria Kevin has listed. (She's correct.) She clicks "View as list" to see what that means. Here she sees several cars and automatically swipes left to dismiss two of them because they are ugly. She swipes right on the next one because she likes it. This action is so natural that she does not even realize that she is cataloging cars for Kevin's collection. She clicks on the drop-down menu and wonders what Kevin added to the "My Collection" section. The next page reveals a list of car images where some have a TRUECar label and price listed. Jen notices that the first car is the one Kevin pointed out in Door County. She really liked that car…

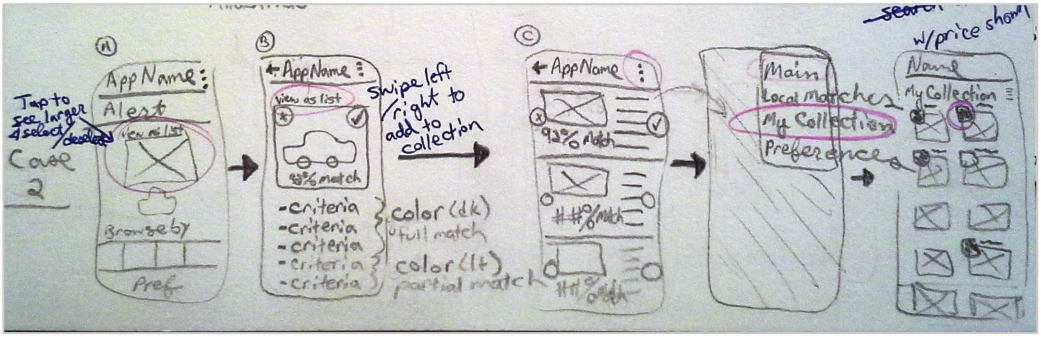
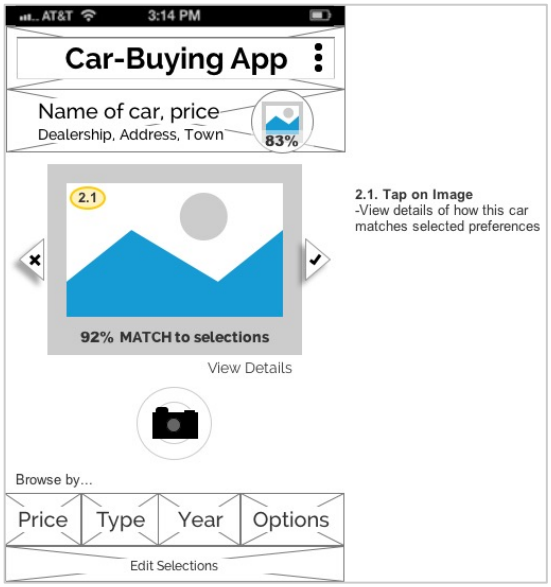
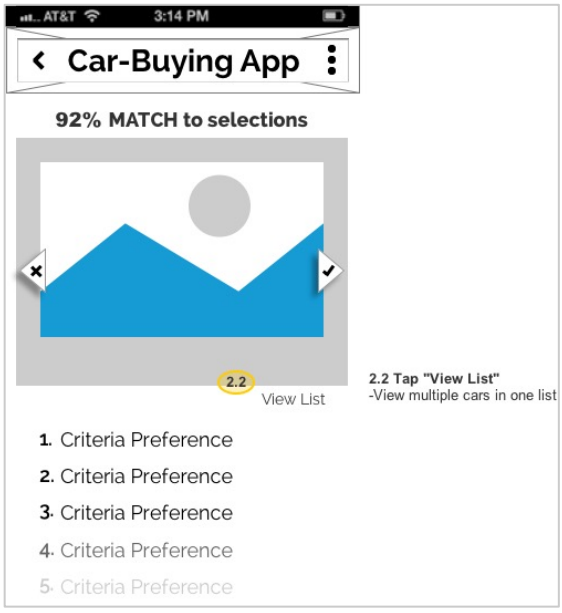
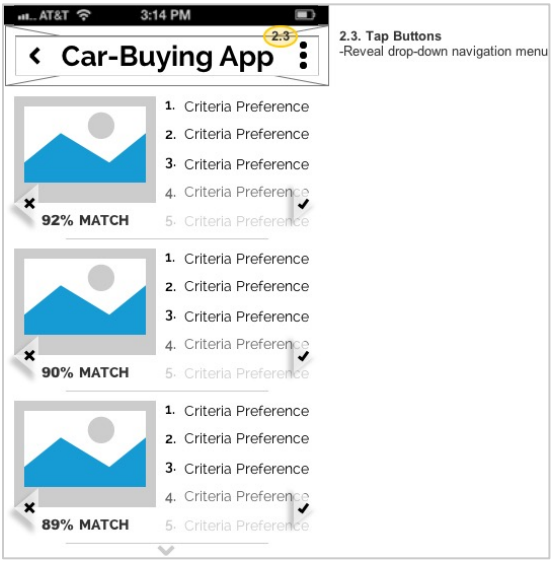
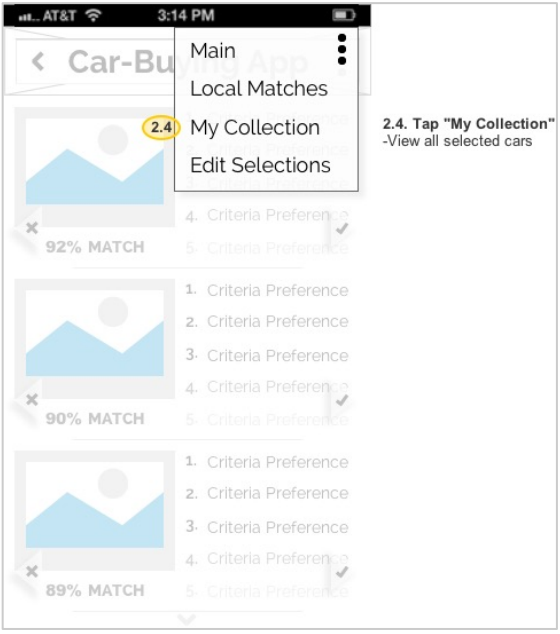


Image 10: Car-buying App: Core Task #2 (low-fidelity)


AT&T
3:14 PM
Car-Buying App
Name of car, price
Dealership, Address, Town
83%
2.1
92% MATCH to selections
View Details
Browse by...
Price
Type
Year
Options
Edit Selections
2.1. Tap on Image
-View details of how this car matches selected preferences


AT&T
3:14 PM
Car-Buying App
92% MATCH to selections
2.2
View List
1. Criteria Preference
2. Criteria Preference
3. Criteria Preference
4. Criteria Preference
5. Criteria Preference
2.2 Tap "View List"
-View multiple cars in one list


AT&T
3:14 PM
2.3
Car-Buying App
2.3. Tap Buttons
-Reveal drop-down navigation menu
1. Criteria Preference
2. Criteria Preference
3. Criteria Preference
4. Criteria Preference
5. Criteria Preference
92% MATCH
90% MATCH
89% MATCH


AT&T
3:14 PM
Main
Local Matches
2.4
My Collection
Edit Selections
2.4. Tap "My Collection"
-View all selected cars
92% MATCH
90% MATCH
89% MATCH

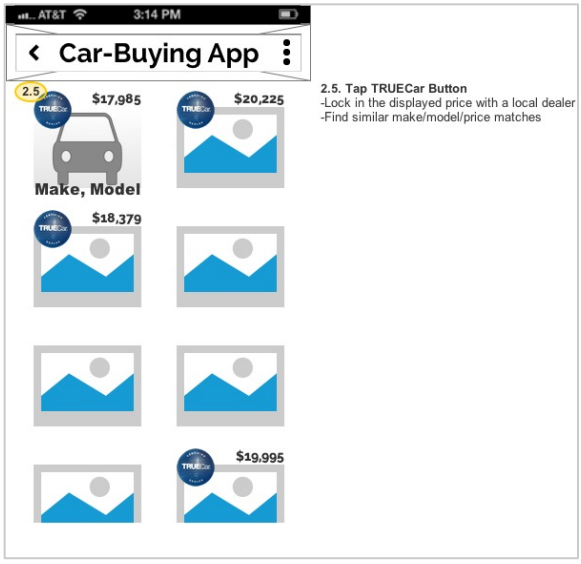


Image 11: Car-buying App: Core Task #2 (mid-fidelity series)