

**FreeSpace?**

CGJB

Clara Au

Justin Ward

Gilbert Lam

Brandon Ward

## **Table of Contents**

1. Requirement Analysis
  - 1.1 Overview of Project
  - 1.2 Personas
    - Persona I: Business Professional
    - Persona II: Mother
    - Persona III: Student
    - Persona IV: Landlord
  - 1.3 Interview Script and Participants
    - Semi Structured Interview Script
    - Roleplay Observation Scenarios
  - 1.4 Interview and Observation Notes
    - Participant #1 : Stefano Panuccio
    - Participant #2: Adam Ranallo
    - Participant #3: Sava Nozin
    - Participant #4: Beatrice Yiu
    - Participant #5: Gabriel Ciolac
  - 1.5 Improved Personas and Scenarios
    - Improved Persona I: Business Professional
    - Improved Scenario II: Mother
    - Improved Persona III: Landlord
    - Affinity Diagram
2. Initial Design Alternatives
  - 2.1.1 Design One: Simple Swiss Army Design
  - 2.1.2 Design One: Sketches
  - 2.2.1 Design Two: Utility Design
  - 2.2.2 Design Two: Sketches
3. Prototype Evaluation and Iteration
  - 3.1 Selection
  - 3.2 Iterations
    - 3.2.1 Iteration I
    - 3.2.2 Iteration II
4. Heuristic Evaluation
  - 4.1 Clara's Heuristic Evaluation
  - 4.2 Gilbert's Heuristic Evaluation
  - 4.3 Justin's Heuristic Evaluation
  - 4.4 Brandon's Heuristic Evaluation

## 4.5 Consolidation

## 5. Workload Distribution and Summary

### 5.1 Clara's Contributions

### 5.2 Gilbert's Contributions

### 5.3 Justin's Contributions

### 5.4 Brandon's Contributions

## Consent Forms

## 1. Requirement Analysis

### 1.1 Overview of Project

#### Project Idea

For the first project in COMP3008, our group has taken on the task of proposing and designing a web-based application using the Interaction Design process. As a group, we decided that an application domain of interest for us would be a storage solutions application. With this application, we hope to address the needs and concerns of people who require storage spaces such as garages, parking spots, and alternative storage spaces. The application will offer a map with nearby storage solutions, allowing users to explore storage solutions closest to them as well as near an address a user can input. The application will offer filtering for storage spaces, such as by size, environment(indoor/outdoor), climate-controlled and power sources. That being said we are not limiting the application to particular storage solutions, the application should be able to handle parking spaces, garages but also handle smaller solutions such as lockers and storage units.

#### Why is this Needed

There exist online repositories such as Kijiji or Craigslist that offer a limited offering for searching for storage. Our application is needed as it is difficult to find storage solutions on these existing sites and they do not offer the needed filtering to find exactly what the user is looking for. Furthermore, with our application, all contractual and payment elements would be handled by the application whereas the other sites explicitly tell users to handle this on their own.

#### What Problem is this Addressing

The population of our city is increasing, and the living spaces in the core of the city are becoming smaller and more scarce. People living in densely populated areas of our city are faced with challenges such as parking their car and storing their outdoor equipment such as bicycles or kayaks. Perhaps a client needs a short term rental of garage space to get their vehicle out of the elements and into a dry space to perform some quick maintenance to their vehicle, this user would require a garage with a power outlet. This would be an example of a filter that we could implement in our application, to assist users to find the exact storage solution they are searching for, and eliminate those that do not meet their needs. Further, there are many people who have free storage space but don't have the proper means of finding a use for it. These spaces in densely populated areas can generate income for these people but mostly sit unused. The first case noted above we believe would be our application's primary users, those searching for a space, with the second case noted above being the applications secondary users, those trying to rent a space. Our application will help alleviate the difficulties of finding storage solutions but also help secondary users find people to rent their free space. Whatever the primary user hopes to do with the storage space is up to them, but we hope to deliver an application that assists them in finding an offering from a secondary user that fits their needs.

## 1.2 Personas

### Persona I: Business Professional

#### Demographics

Name: John Davies

Occupation: Lawyer, works in the core of the city

Education: University of Toronto, Faculty of Law

Status: Single

Location: Toronto, Ontario



#### Bio

John is a 34-year-old lawyer who works at a law firm in downtown Toronto. John lives in the suburbs and for the past few years, John took public transit to work. Recently, John purchased a new BMW and now commutes 35 minutes to get to the law firm. John's law firm

does not have free or paid parking, and there is little to no free street parking nearby. In turn, John is looking for a long-term parking solution in the vicinity of his office.

### **Motivations**

- Explore parking solution options close to the office
- Finding long-term parking space, longer than 6 months, to leave the vehicle during work hours
- Looking for an indoor or underground solution to protect the vehicle

### **Frustration**

- His office does not provide parking on site
- Often receive parking tickets for street-parking on a nearby street
- Searching for free parking is too time-consuming, and few and far between
- The vehicle is often dirty and/or covered in snow or ice

### **Scenario**

John loves to be punctual, it's important to him as he believes punctuality and hard work pay off in the long run. As a result, he hates being late to work. On John's first day at his new job, he took his car and discovered he can't park at work. He drove around for 15 minutes looking for a free spot. When he finally found one, he had to walk 20 minutes to get to work, leaving him 15 minutes late on his first day. Having to leave 20 minutes earlier than usual John continues to struggle with parking for the next 3 weeks. John endures a 20-minute cold walk to and from his vehicle every day. During John's third week of struggling with street parking, he returns to his BMW completely covered in snow and ice from a storm that took place while he was at work. John adds another 10 minutes to his commute that day, cleaning snow off the car and allowing it to warm up. Feeling discouraged, he decided to try **FreeSpace?** here in order to try and find parking close by at a good price where his BMW would be safe and warm over the course of the day. He filtered his search to within 2km of his workplace and for indoor only and quickly found a parking spot perfect for his situation.

## Persona II: Mother

### Demographics

Name: Miranda Bloom

Occupation: Work From Home Mom

Status: Married

Location: Ottawa, Ontario



### Bio

Miranda is a 41-year-old mother of four who has been married to her husband Dave for over 25 years. She and her family live in a small house in the Glebe and with four kids, they've struggled to avoid outgrowing their home. As Miranda is a sentimental mother, she's largely unable to part with her children's belongings. This has led to their home filling up with mountains of clutter, much to her husband Dave's dismay. She also works from home and runs an Esty shop for curated vintage clothing. She finds that she is running out of space to store new pieces along with her children's toys, books, clothes that she wants to save to look back on.

### Motivations

- Hold onto items from her children's childhood
- Keep her husband Dave happy with the state of their home
- Clean up her house in order to impress her friends when they come over

### Frustration

- Her home is a bit on the smaller side
- Her husband frequently comments on her need to hold onto what he called "garbage"
- She doesn't have her newer friends over in fear of them judging the state of her home
- Her kids keep growing and the items she can't let go of continue to pile up
- Needs more space for her vintage clothing business

### Scenario

Miranda was cooking in the kitchen when she heard a loud crash followed by the cussing of her husband Dave. Worried he was seriously hurt, she moved to the other room to check on him. As she rounded the corner, she saw Dave had knocked some boxes full of her kids projects onto the

floor, leaving it in pieces everywhere. Dave told Miranda it was time to clean up their home, so the couple hopped on their computer and began looking for affordable storage options in the city. After trying Kijiji and multiple storage company's website, they still hadn't landed on an affordable and appropriate option. They stumbled onto a site called "**FreeSpace?**" and were suddenly offered an array of options. They filtered their search by the size of the space, the proximity to their home, and the price range they were looking for and quickly found an appropriate option just outside of the city. They agreed to the rental agreement, inputted their credit card info and the owner contacted them via email and the rental was complete all online. Within two days, they'd cleaned up their home at an affordable price.

### **Persona III: Student**

#### **Demographics:**

Name: Lucy Lui

Occupation: International Student

Education: Carleton University

Status: Single

Location: Ottawa, Ontario



#### **Bio**

Lucy is a 20-year-old international student from China at Carleton that owns a car in Ottawa. She will be returning to China for the summer to visit friends and family back home and has sublet her place in Ottawa to a short term renter. She usually finds street parking as her complex does not offer parking but free parking in the area varies depending on the time of the day. She would like to find a short term storage/garage rental space for her to park her car for the time being that she is not in the country. She currently lives downtown where there is a higher crime rate so she is hoping to find somewhere that is well surveillanced as her car is her most expensive belonging and she will be leaving some stuff from her apartment in the vehicle.

#### **Motivations**

- She does not have a designated parking space where she lives

- She wants to keep her car in Canada and some of her belongings as she will be returning in fall

### **Frustrations**

- She can't bring all her belongings back with her for the summer and she doesn't want to leave it in her apartment as she is subletting to a renter
- Leaving her car parked out on the street for the whole summer is unsafe because of the crime rate
- She won't be here in the summer and can't monitor her car or her belongings

### **Scenario**

Lucy is an international student from China at Carleton University. She's been missing her friends and family back home a lot, and has decided to take a trip back home in the summer to visit them. She's extremely excited about the trip, however she's been stressed out over thinking about where to park her car while she's gone. She's not able to park on public property since the availability of those depends on the time of day. She also had worries that something would happen to her car while she was gone. She would also like to sublet her place to someone over the summer in order to save some money, and would need a place to store all her clothes, shoes, and other belongings. She looked online at ads for parking spaces and came upon an app called **FreeSpace?**. Using this app, she was able to find a space that could function as both a parking space for her car and storage space for her belongings. She was also able to search specifically for a place with a level of surveillance so she wouldn't worry about crime. She rented the space and her stress over the situation disappeared.

### **Persona IV: Landlord**

#### **Demographics:**

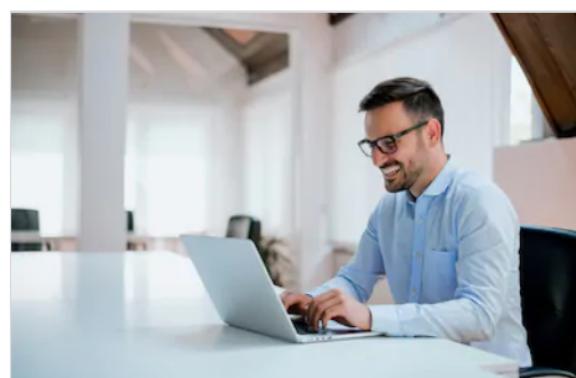
Name: Frank Smith

Occupation: Software Developer

Education: Carleton University

Status: Single

Location: Ottawa, Ontario



## **Bio**

Frank is a 24-year-old software developer that is renting a home in Ottawa, Ontario. He doesn't own a car, so his driveway and garage are always empty. He currently works at a local web development agency that is a 10-minute walk from his house. Frank values his fitness and the environment and thus uses a bicycle, which he keeps in the shed, during the summer months and public transit when going longer distances. Frank doesn't have a desire to purchase a vehicle at this time, but he feels his outdoor parking space and his garage space are going to waste.

## **Motivations**

- He has a driveway and garage space that he does not use
- Searching for a simple supplement to his cash flow

## **Frustrations**

- He would like a way to generate some passive income with his unused driveway
- Finds that ads on current options (Kijiji, Craigslist) do not get many responses

## **Scenario**

Frank has been wanting to move out from his parents house for a while, but had decided to push it off until he had paid back all of his student loans. He was finally able to reach that goal, and quickly found a new place to rent. He's enjoyed living at his new house, but has found that he had greatly underestimated the costs of living alone and has had to cut his budget for eating out and going out with friends. Frustrated by this, he's been looking for a source of passive income that can provide him with some extra spending cash each month. One day, Frank and his coworker were having a discussion about how much public parking spaces cost in the city, and this gave him an idea. Since he doesn't own a car, his garage and driveway are always empty, and he can rent the space out for some extra cash! He did some quick research online and found an app called **FreeSpace?** that allowed him to post an ad looking for someone to rent his garage and driveway. He received a reply to the ad quickly, and was soon able to rent out his garage and driveway.

## **1.3 Interview Script and Participants**

### **Semi Structured Interview Script**

1. Have you had any previous experience with space renting platforms such as AirBnb?
2. Tell me about your experiences using the space renting platform AirBnb (or alternative).
3. How do you find a place to rent on AirBnb (or alternative) successfully?
4. What makes you choose AirBnb (or alternative) over other space renting platforms?
5. Tell me about a situation where you had an issue or difficulty using AirBnb (or alternative) and how did it impact your experience? How did you feel?
6. How did you come to a resolution with your issue or difficulty?
7. What factors or elements might have prevented your issue or difficulty from happening?
8. Will you continue to use Airbnb (or alternative) after your experience?
9. Would you recommend others to use Airbnb?
10. Have you had any previous experience with online ad services such as Kijiji?
11. Tell me about your experience using Kijiji and what you were using it for.
12. What makes you choose Kijiji over other online ad services?
13. How do you use Kijiji to find what you are looking for or sell what you need effectively and efficiently?
14. Tell me about a situation where you had an issue or difficulty using Kijiji and how did it impact your experience? How did you feel?
15. How did you come to a resolution with your issue or difficulty?
16. What factors or elements might have prevented your issue or difficulty from happening?
17. How do you feel about Kijiji's payment model from a buyer's point of view and/or a seller's point of view?
18. How safe do you feel when using Kijiji?
19. What factors or elements would reassure your personal and financial safety when using Kijiji?
20. Will you continue to use Kijiji after your experience?

21. Would you recommend everyone to use Kijiji, who would you not recommend it to and why?

### **Roleplay Observation Scenarios**

Scenario 1 : You just landed a new job at a well-known law firm company downtown but you live in the suburbs and find you would waste multiple hours in transit if you were to take the bus or train. It's your first day at the job and you decide to drive your car to work, you have a 30 minute drive in and with hopes of making a good first impression you leave 10 minutes before you really have to. Having arrived outside the law firm with 10 minutes to spare, you discover they don't offer employee parking so you will have to find somewhere else to park for the day. How do you deal with this situation?

Scenario 2 : You're a mother of three kids living in a small home with your husband and your house has become more and more cluttered over the years. Your children have outgrown toys, clothes, shoes, books but you can't seem to let go of these sentimental items. You work from home running an Etsy shop for curated vintage clothing but you find you're quickly running out of space in your home to store new pieces for your online shop. How do you deal with this situation?

Scenario 3 : You're a full-time international student at Carleton University and you live off residence in an apartment downtown. Your apartment complex previously offered parking in an outdoor parking lot but just recently the parking lot was sold to Claridge Homes to build a new condo. You don't want to find a new place to live because you only have one more year left to graduation so you decide to renew your lease. However, you would still like to keep your car because you're planning to move to Toronto after graduation. You can find free parking on the street sometimes but it's only free during certain times and days of the week. How would you deal with this situation?

Scenario 4: You just finished your first year at Carleton University and you are in the process of moving out of your dorm room and into the new house you rented out with roommates. The final

date to move out all your belongings and return your key is April 28th but your move-in date for your new place is May 1st. How would you handle this situation?

#### 1.4 Interview and Observation Notes

**Participant #1 :** Stefano Panuccio

**Participant Description :** Stefano is a 22 year-old business professional who works at the Ottawa airport. He is a Carleton University Alumni graduated from the Sprott School of Business.

##### Interview

1. Have you had any previous experience with space renting platforms such as AirBnb?
  - i. “Yes, I have booked a few Airbnb’s.”
2. Tell me about your experiences using the space renting platform AirBnb (or alternative).
  - i. Stefano enjoyed his experience with the app, overall finds the app to be **clean**, useful and likes it.
3. How do you find a place to rent on AirBnb (or alternative) successfully?
  - i. “It is **easy to choose whether you want stays or experiences** or whatever then it is also **easy to input** trip details and **browse the results.**”
4. What makes you choose AirBnb (or alternative) over other space renting platforms?
  - i. “I guess it is the most well-known, and for good reason it seems to be the best on the market”
5. Tell me about a situation where you had an issue or difficulty using AirBnb (or alternative) and how did it impact your experience? How did you feel?
  - i. Stefano noted one time he had an issue with the apartment he rented itself, “There was no hot water, so we couldn’t shower or anything”
6. How did you come to a resolution with your issue or difficulty?
  - i. “Through the AirBnb app **I messaged the landlord**, and he told us to flip a switch that was behind a door that turned the water heater back on”. Stefano noted that he liked that he can **contact the landlord directly** from the app.

7. What factors or elements might have prevented your issue or difficulty from happening?
  - i. “It was a simple mistake, landlord had turned the water heater off when no one was in the apartment and forgot to turn it back on”
8. Will you continue to use Airbnb (or alternative) after your experience?
  - i. “Absolutely.”
9. Would you recommend others to use Airbnb?
  - i. “Yes, and I have recommended it to others who have used it to rent apartments, full houses and cottages.”
10. Have you had any previous experience with online ad services such as Kijiji?
  - i. Stefano has had no experience with Kijiji
11. Tell me about your experience using Kijiji and what you were using it for.
  - i. Not Applicable
12. What makes you choose Kijiji over other online ad services?
  - i. Not Applicable
13. How do you use Kijiji to find what you are looking for successfully?
  - i. Not Applicable
14. Tell me about a situation where you had an issue or difficulty using Kijiji and how did it impact your experience? How did you feel?
  - i. Not Applicable
15. How did you come to a resolution with your issue or difficulty?
  - i. Not Applicable
16. What factors or elements might have prevented your issue or difficulty from happening?
  - i. Not Applicable
17. How do you feel about Kijiji’s payment model?
  - i. “This is the main reason I do not use Kijiji, **I don’t trust meeting up with people and having to deal with cash in hand**”
18. How safe do you feel when using Kijiji?

- i. “I wouldn’t feel **safe**. You have to arrange a meet up with a random person, in a random place and exchange cash. Sounds pretty **sketchy** to me.”
19. What factors or elements would reassure your personal and financial safety when using Kijiji?
- i. Stefano noted that if Kijiji had more set guidelines he would use it. “If it **payment built into the app** using **Paypal**, I would consider using it”
20. Will you continue to use Kijiji after your experience?
- i. Not Applicable
21. Would you recommend others to use Kijiji?
- i. Not Applicable

### **Roleplay Observations**

Scenario 1 :

Stefano noted the following :

- “I would check out those general employees parking lots that charge a **monthly fee** if there was one”
- “I would ask around for any co-workers that may have a carpool schedule going on.”
- “I would look on community boards for people offering **parking in their driveway** or ask if any coworker lives nearby to utilize their **driveway**, I know this is very common near Tunney’s Pasture and downtown.”
- “I would probably feel very **frustrated** trying to find a parking lot because downtown is already **hectic** enough as it is.”
- “I prefer driving and parking at work, any other option would be comparatively **inconvenient**.”

Scenario 2 :

Stefano noted the following

- “I would initially see about moving my excess things into my **garage or shed** if possible”

- “If I had no shed or garage, I would consider a **storage unit** for the excess things that way I can keep my Etsy pieces at home”
- “It would be very **hard** to let go of the objects”.

Scenario 3:

Stefano noted the following

- “I would start by looking on **side streets** for free parking for the next few days until I can find something more long-term”
- “I would see if any other nearby buildings offer **parking permits** for their **parking lots**”
- “I would look for seniors who live in houses without cars that could be willing to **rent out the driveway**”
- “Not ideal but I would look for nearby businesses whose parking lot I could park in **over night** when they are closed”

Scenario 4 :

Stefano noted the following:

- “I would ask if I could keep my things in the dorm room for a few extra days or ask if I could drop things at the new condo a few days early”
- “A friends place, maybe I could leave things I don’t need with friends”
- “I could rent a **storage unit, or a locker** at Dymon or whatever”

**Participant #2:** Adam Ranallo

**Participant Description :** Adam is a 21 year-old economics student at Carleton University. Adam works as a department manager at a grocery store casually, and would be a fit as our second persona.

### Interview

1. Have you had any previous experience with space renting platforms such as AirBnb?
  - i. “Yes, I have experience with Airbnb”
2. Tell me about your experiences using the space renting platform AirBnb (or alternative).

- i. Adam had a mixed experience.
3. How do you find a place to rent on AirBnb (or alternative) successfully?
  - i. “To successfully find a place, it helps if you will be staying for a substantial amount of time.”
4. What makes you choose AirBnb (or alternative) over other space renting platforms?
  - i. “I guess it is the most well-known, and for good reason it seems to be the best on the market”
5. Tell me about a situation where you had an issue or difficulty using AirBnb (or alternative) and how did it impact your experience? How did you feel?
  - i. “I had a difficult time using AirBnb when trying to find a room in Paris for the weekend.” **Renters cancelled the bookings** because the stay was too short a time. “This was quite **stressful**”
6. How did you come to a resolution with your issue or difficulty?
  - i. Resolution was to stop using AirBnb, Adam booked a hotel in the end for that weekend in Paris.
7. What factors or elements might have prevented your issue or difficulty from happening?
  - i. “AirBnb hosts prefer longer stays.” Adam explained that there was not much that could be done on his end. Thinks AirBnb could introduce **incentives** to renters when doing short rentals.
8. Will you continue to use Airbnb (or alternative) after your experience?
  - i. “AirBnb is still more **convenient** than other space renting platforms because it is **easy to use**, and I will continue to use it when possible.”
9. Would you recommend others to use Airbnb?
  - i. “I would recommend others to use it”
10. Have you had any previous experience with online ad services such as Kijiji?
  - i. Adam does have experience with Kijiji
11. Tell me about your experience using Kijiji and what you were using it for.
  - i. “I was using it to look for camera lenses”
12. What makes you choose Kijiji over other online ad services?

- i. "Kijiji is useful for finding used or vintage products that you can't find in stores"
13. How do you use Kijiji to find what you are looking for successfully?
- i. "**Casual searching**, until I eventually find something"
14. Tell me about a situation where you had an issue or difficulty using Kijiji and how did it impact your experience? How did you feel?
- i. Adam finds that **sellers often won't respond** or will cut off communications with the buyer. "This made me frustrated".
15. How did you come to a resolution with your issue or difficulty?
- i. "The only resolution is to find a similar product from a different seller."
16. What factors or elements might have prevented your issue or difficulty from happening?
- i. Choosing a **reputable seller** could prevent this.
17. How do you feel about Kijiji's payment model?
- i. "It is **fine**"
18. How safe do you feel when using Kijiji?
- i. "I feel **safe** using it"
19. What factors or elements would reassure your personal and financial safety when using Kijiji?
- i. Adam believes **meeting in person** is a big factor that makes him feel safe when using Kijiji.
20. Will you continue to use Kijiji after your experience?
- i. "I will continue to use Kijiji"
21. Would you recommend others to use Kijiji?
- i. Adam would recommend it to others.

### **Roleplay Observations**

Scenario 1 :

- "I would be parking somewhere on a side street, hoping I don't get ticketed"

- “I already don’t like driving as it is, in this case I would personally take public transit if I couldn’t get a parking pass **nearby**”
- “I would **rent a parking space** at a park and ride location and then take the bus from there”

Scenario 2 :

- “I would **rent a storage locker** or get rid of things. I’d feel claustrophobic being surrounded by that amount of things”
- “I’d feel **saddened** by the situation”.

Scenario 3 :

- “I guess I’d be **parking on the street** somewhere near the condo building.
- “This seems like a poor decision to sign a lease prior to working out the parking situation if my car was so important”
- “I guess I’d start **looking on google maps for anything nearby I can start parking at”**

Scenario 4 :

- “The dorm should allow me to stay a few extra days or maybe even I can ask to move in early to the new place”
- “I would want to keep my belongings with me, but if I can’t leave them at a friends or at my parents worst case scenario a **locker**”.

### **Participant #3: Sava Nozin**

Participant Description: Sava is a 23 year-old Ottawa U Engineering Alumni student. He currently just moved out and is living in downtown Ottawa working at an engineering firm..

#### **Interview**

1. Have you had any previous experience with space renting platforms such as AirBnb?  
“Yes.”
2. Tell me about your experiences using the space renting platform AirBnb (or alternative).

“I’ve used AirBnb multiple times before for finding a place to live short-term when I had to do a co-op term in Winchester, Ontario and also whenever I visit Montreal for Osheaga, Igloofest and New Years.”

3. How do you find a place to rent on AirBnb (or alternative) successfully?

“I usually just enter the place I would like to find a rental near and find a place that fits my budget and **read reviews** other people have left so I can be confident in the place I choose to rent out. I also **read descriptions carefully** to make sure that the rental listing has everything that I’m looking for. Sometimes you have to remember to bring a hair dryer and towels.”

4. What makes you choose AirBnb (or alternative) over other space renting platforms?

“Mostly the popularity of it and how **reputable** it is. I haven’t really looked into other space renting platforms because of my positive experiences I’ve had with Airbnb. I find they have a wide **variety of options** as sometimes I can just rent a room or a whole place and it’s easy to use, find what I’m looking for when I want it and **booking the rental and paying is simple and quick.**”

5. Tell me about a situation where you had an issue or difficulty using AirBnb (or alternative) and how did it impact your experience? How did you feel?

“Sometimes the **instructions to pick up the key can be unclear** and a little bit frustrating when you’re running late or want to start getting ready to go out but otherwise everything is fine.”

6. How did you come to a resolution with your issue or difficulty?

“In the case I can’t figure it out based on the instructions given by the landlord, I have to call or text them which can be annoying sometimes.”

7. What factors or elements might have prevented your issue or difficulty from happening?

“**Better instructions given** would have saved some time, but also just installing passcode key systems such as Nest with an app access or those key lock dispensers with a code would be efficient for picking up a key.”

8. Will you continue to use Airbnb (or alternative) after your experience?

“Yes.”

9. Would you recommend others to use Airbnb?

“Yes.”

10. Have you had any previous experience with online ad services such as Kijiji?

“Yes.”

11. Tell me about your experience using Kijiji and what you were using it for.

“I’ve used it to sell computer parts, buy fitness equipment, and I used it to find the place I am currently renting out.”

12. What makes you choose Kijiji over other online ad services?

“It’s the most **popular and reputable**, Facebook marketplace is good sometimes too but Kijiji is just easier to find what I’m looking for and there is more stuff.”

13. How do you use Kijiji to find what you are looking for or sell what you need effectively and efficiently?

“I just search what I’m looking for and try to find a **seller that is close to me** so I can pick it up as soon as possible. I also look at posts that are **posted most recent** as sometimes **some listings are dead** and I waste time trying to get in contact with the seller.”

14. Tell me about a situation where you had an issue or difficulty using Kijiji and how did it impact your experience? How did you feel?

“All of my Kijiji experiences have been positive so far as most of the stuff I look for is very niche so I can always get what I need. Although when I’m trying to find something that others might also want it can sometimes be **difficult to reserve** the item as the seller usually just wants it to be bought and picked up immediately and my friend has had multiple experiences where they have been flaked on because the seller already sold the item.”

15. How did you come to a resolution with your issue or difficulty?

“I just moved on.”

16. What factors or elements might have prevented your issue or difficulty from happening?

“I think if they had an option to **show the availability of an item** would be beneficial. Maybe like a marker that shows it’s available, on hold, or sold, or even seller inactive for a long time so we know when it’s probably not available.”

17. How do you feel about Kijiji’s payment model from a buyer’s point of view and/or a seller’s point of view?

“I like it because there is no tax to be paid and **none of the money goes towards Kijiji such as selling fees** so I think it’s good when I buy and sell as the money directly goes to the seller and to me when I sell.”

18. How safe do you feel when using Kijiji?

“From my experiences I feel safe using Kijiji but I do think there has to be **some safety implemented** as there are stories that are very rare of scammers/murders.”

19. What factors or elements would reassure your personal and financial safety when using Kijiji?

“Maybe a **payment through the app** would prevent getting **scammed or paid with counterfeit money.**”

20. Will you continue to use Kijiji after your experience?

“Yes I think it is very **convenient and efficient for me to find things** I need at a good price and I like how it promotes buying second hand as opposed to new because it is more environmentally friendly and saves me money.”

21. Would you recommend everyone to use Kijiji, who would you not recommend it to and why?

“Yes I would recommend everyone to use Kijiji but I would just advise them to stay smart and stay safe. I might not recommend it to anyone under 18 as it could be dangerous for them to meet a seller .”

## **Roleplay Observations**

Scenario 1:

With 10 minutes to spare I would first try and just find some free street parking and then move my car every once in a while throughout the day so the Bylaw doesn’t ticket me and I don’t have

to pay. If I can't find free parking I'll Google parking spaces near me and see if I can park in a parkade or a private parking lot and just pay. I'd probably be very frustrated and annoyed that I have to shell out money to park and also anxious about running late to work on my first day.

#### Scenario 2:

I'd probably feel very disorganized and my work productivity would be affected by my cluttered environment. I'd also feel torn between choosing to let go of sentimental items for the sake of the state and organization or keeping my children's memories. I'd first Google how to declutter items and look into Marie Kondo and learn to only keep things that spark joy. If I try her method and still can't seem to let go a reasonable amount of stuff I would look into maybe selling the more valuable items and if I don't have the heart to sell/donate or throw out anything I would Google storage units to rent out for the time being.

#### Scenario 3:

I would first Google parking spaces near me and look at the cost of renting out a parking space nearby. Then I would do a benefits and risk analysis to assess whether the likelihood of getting a ticket and being fined is high and if the fine would still be lower than renting out a parking space. In the case that it wouldn't be likely for me to illegally park but there would still be a possibility of me getting fined but it still costs less than renting our a parking space, then I would just illegally park, vice versa.

#### Scenario 4:

I would ask the residence desk if there is storage somewhere on campus I can keep my belongings. If there isn't I would ask a friend that already lives in Ottawa if I can put my belongings in their house for the time being. If I don't have any friends or they don't let me I would rent a U-Haul for when I move my stuff and just park it in a Wal-Mart parking lot until I have to move in.

#### Participant #4: Beatrice Yiu

#### Interview

1. Have you had any previous experience with space renting platforms such as AirBnb?  
“Yup, I've used it before.”
2. Tell me about your experiences using the space renting platform AirBnb (or alternative).

“I’ve used it a couple times to find rooms during vacations. It was **easy to use**, and I’m pretty happy with my experiences.”

3. How do you find a place to rent on AirBnb (or alternative) successfully?

“I just type in the **location** I want to find a place near and it’ll show me a **list of all the listings that are close by**. I look through them until I find one that has **good reviews** and fits within my **budget**, then I’ll book it on the app.”

4. What makes you choose AirBnb (or alternative) over other space renting platforms?

“I haven’t heard of any alternatives.”

5. Tell me about a situation where you had an issue or difficulty using AirBnb (or alternative) and how did it impact your experience? How did you feel?

“I haven’t had any issues or difficulties using AirBnB. Usually if I have any questions I’ll **message the landlord through the app** and they’ll respond pretty quickly.”

6. How did you come to a resolution with your issue or difficulty?

“Not applicable”

7. What factors or elements might have prevented your issue or difficulty from happening?

“Not applicable”

8. Will you continue to use Airbnb (or alternative) after your experience?

“Yes”

9. Would you recommend others to use Airbnb?

“Yup, I’ve referred friends before.”

10. Have you had any previous experience with online ad services such as Kijiji?

“I’ve used it to both post and browse ads.”

11. Tell me about your experience using Kijiji and what you were using it for.

“I’ve had mixed experiences with Kijiji. Usually, it’ll be good but there have been times where I’ll respond to an ad and I’ll receive **no reply**. Sometimes we’ll agree to meet up but day off they’ll cancel. Usually I’m using Kijiji to buy things.”

12. What makes you choose Kijiji over other online ad services?

“I’ll usually use both Kijiji and Facebook Marketplace. I use those two because there are more ads posted on those services.”

13. How do you use Kijiji to find what you are looking for or sell what you need effectively and efficiently?

“I use **specific search terms** when I’m searching for something to buy. If I’m selling, I try to be as **descriptive** as I can and also include some pictures.”

14. Tell me about a situation where you had an issue or difficulty using Kijiji and how did it impact your experience? How did you feel?

“One time someone responded to my ad saying they’ll come to my house to pick up the item and pay, but they just never came and I **never got a response** from them after that. It was pretty frustrating.”

15. How did you come to a resolution with your issue or difficulty?

“I didn’t resolve it, I just waited until another person responded to the ad and sold the item to them.”

16. What factors or elements might have prevented your issue or difficulty from happening?

“Maybe if they **handled the payments online** it could help prevent people from saying they’ll buy something but not actually going through with it.”

17. How do you feel about Kijiji’s payment model from a buyer’s point of view and/or a seller’s point of view?

“From a buyer’s point of view I like it since it gives the buyer a chance to **see the product and inspect it before paying.**”

18. How safe do you feel when using Kijiji?

“I feel safe using Kijiji, but I’m pretty cautious about it. There are definitely some sketchy ads that look like scams on Kijiji.”

19. What factors or elements would reassure your personal and financial safety when using Kijiji?

“If Kijiji **verified the sellers and buyers** somehow then it would definitely make me feel safer when using Kijiji”

20. Will you continue to use Kijiji after your experience?

“Yup”

21. Would you recommend everyone to use Kijiji, who would you not recommend it to and why?

“I’d recommend people to use Kijiji, but I’d also tell them about some of the frustrations I’ve had with it.”

### **Roleplay Observations**

Scenario 1:

I would drive around to find a free place where I can park my car like a plaza or street parking, even if I have to walk a bit further. I’d definitely be extremely frustrated and anxious since it’s the first day and I want to make a good impression. I would try and see if any of my coworkers lived close to me and could carpool. If not, then I would have to take the bus or train, even if it would take much longer.

Scenario 2:

I would look at **storage units** that are available to rent and see if any fits within my budget, that way I won’t have to throw any of the sentimental items away. I could also ask my parents to see if they would let me store some of that stuff in their house. If none of those options are possible then I think the only option would be to force myself to throw some of the items away.

Scenario 3:

I would see if there are any public parking lots near me that had free parking. If not then I would consider paying for a spot at one of those paid parking lots. I would also start asking my friends at Carleton if they knew any students who lived off campus that had a driveway they aren’t using. I feel like this would be a good option, since many university students live off campus where they have a driveway, but they do not own a car. There are a couple Facebook groups of people who post ads for sublets and rentals in Ottawa, so I would also post there asking if anyone was willing to rent their driveway.

#### Scenario 4:

I would ask the landlord to see if I would be able to store my stuff there a few days early. I would also ask my friends to see if they would allow me to store some of my stuff at their house for a couple days. If not, then I would look at **renting a storage unit** for a couple days if possible.

#### Participant #5: Gabriel Ciolac

##### Interview

1. Have you had any previous experience with space renting platforms such as AirBnb?
  - i. “Yeah, I’ve used it a few times for trips with friends. Not a bad service.”
2. Tell me about your experiences using the space renting platform AirBnb (or alternative).
  - i. “My buddies and I used to go on trips places. The app itself is easy to use, but it’s putting a strain on the housing market.”
3. How do you find a place to rent on AirBnb (or alternative) successfully?
  - i. “You just search for a location. It’s pretty simple, there’s a map which will show you **all the possible AirBnB’s within your location**. You can **filter by price to find something affordable** and **you can even include a party size** in order to **find something big enough** for your group.”
4. What makes you choose AirBnb (or alternative) over other space renting platforms?
  - i. “The only other platform I can think of is Kijiji, and that app sucks. **Too many ads and paid listings** that you can never find something decent.”
5. Tell me about a situation where you had an issue or difficulty using AirBnb (or alternative) and how did it impact your experience? How did you feel?
  - i. “I’ve never really had any issues.”
6. How did you come to a resolution with your issue or difficulty?
  - i. “N/A”
7. What factors or elements might have prevented your issue or difficulty from happening?
  - i. “N/A”
8. Will you continue to use Airbnb (or alternative) after your experience?

- i. "Yeah of course."
- 9. Would you recommend others to use Airbnb?
  - i. "All of my friends already know about Airbnb."
- 10. Have you had any previous experience with online ad services such as Kijiji?
  - i. "Unfortunately, yes."
- 11. Tell me about your experience using Kijiji and what you were using it for.
  - i. "I've used it to search for places to rent and to list some random stuff I needed to sell. It's hard to find real postings with all the ads and paid listing they put on there. Half of every page is just the same damn ads."
- 12. What makes you choose Kijiji over other online ad services?
  - i. "I've started using Facebook Marketplace more. You get a better chance at replies and **there aren't a ridiculous number of ads.**"
- 13. How do you use Kijiji to find what you are looking for or sell what you need effectively and efficiently?
  - i. "You just search for whatever. There are **some filters to narrow down range and price**, but other than that it's largely hit and miss. When you're selling it's worse. **You can only have a few listings at a time** and it's **largely up to you to include what's necessary in your descriptions.**"
- 14. Tell me about a situation where you had an issue or difficulty using Kijiji and how did it impact your experience? How did you feel?
  - i. "Oh man, I can't tell you how many times I've been ghosted on Kijiji. The worst is when you drive out 20+ minutes to pick something up and the guy's not there and never responds."
- 15. How did you come to a resolution with your issue or difficulty?
  - i. "There's nothing you can do to resolve that."
- 16. What factors or elements might have prevented your issue or difficulty from happening?
  - i. "I mean, I don't really know what could be done. **Maybe have some sort of rating system for sellers and buyers** so you have an idea of who you're getting into bed with?"

17. How do you feel about Kijiji's payment model from a buyer's point of view and/or a seller's point of view?

- i. "It's not a bad model. At least when you get there as a buyer you can haggle the price down if the product isn't up to the description's standards.  
**As a seller, it's a little harder for the same reason, you'll always have hagglers."**

18. How safe do you feel when using Kijiji?

- i. "Well, there are plenty of scammers on it. It's not a problem if you use common sense though.

19. What factors or elements would reassure your personal and financial safety when using Kijiji?

- i. "**The rating system could really do it. If you know other people have had good experiences with the buyers/seller, you know you probably will too."**

20. Will you continue to use Kijiji after your experience?

- i. "No way."

21. Would you recommend everyone to use Kijiji, who would you not recommend it to and why?

"I wouldn't recommend it to anyone, it's not a good app."

### **Roleplay Observations**

Scenario 1:

This is unrealistic. The first thing on my mind as a car owner is if a job has parking or if I could find transit there easily. If not, then I won't take the job. Honestly, I would have picked a job around whether or not they have parking. If I was in this situation, I guess I'd probably look for a superstore nearby? Other than that, paid parking would be the only other option. It would really suck, but honestly I would never find myself in this position.

Scenario 2:

I should really talk to her husband about her hoarding problem. I mean, if I were my husband I would definitely just load up a trailer and take it all to Value Village. Well, no that would be too harsh. I would definitely stage an intervention though. I guess I would look into some sort of storage option, preferably not on Kijiji. I would also try and let go of the more useless stuff.

#### Scenario 3:

I live somewhere without parking, yet I have a car? Why would I even move in without looking into parking? I guess at this point I could look for a Walmart or something like that? My other option would be to shuffle her car around the various parking spaces nearby. I think there's actually some overnight permit you can get to park on the street if you live there. Maybe I could look into that?

#### Scenario 4:

Honestly, I think you can apply for a residence extension in those situations. If I can't get one then I might have to find an Airbnb for a few days. I'll have to move my stuff though, so I'll have to rent a truck. Actually, maybe I could just live out of the truck for the days I'd be homeless.

## 1.5 Improved Personas and Scenarios

### Key Changes

- Gabe mentioned that Scenario 1 is unrealistic since most people would have parking/transportation coordinated beforehand, and is a factor in the decision making process of taking a new job.
- Stefano noted that he enjoys paypal integration, thus we should add this a payment method to our program.
- Stefano also noted how he liked airbnb's inbox feature instead of emails.
- Sava noted that Stacy would most likely know someone who lives in Ottawa that would let her leave her items at their house.

- Sava expressed that although he likes how Kijiji doesn't have any seller fees there still has to be some financial safety set in stone.
- Sava mentioned sometimes key pickup through Airbnb can be frustrating sometimes and there needs to be clearer instructions.
- Sava mentioned he has to read Airbnb descriptions in detail as sometimes he is unaware of missing features the listing offers.

### **Improved Persona I: Business Professional**

#### **Bio**

John is a 34-year-old lawyer who works at a law firm in downtown Toronto. John lives in the suburbs and for the past few years, John took public transit to work. Recently, John purchased a new BMW and now commutes 35 minutes to get to the law firm. John knows his law firm doesn't have parking, so John is looking for a long-term parking solution in the vicinity of his office.

#### **Motivations**

- Be able to park close to his place of work
- Finding long-term parking space to leave the vehicle during work hours
- Looking for an indoor or underground solution to protect the vehicle
- Loves to be punctual in order to impress his boss and advance his career

#### **Frustration**

- His office does not provide parking on site
- Finding free parking close by would cause him to be late frequently
- If parked outside, the vehicle is often dirty and/or covered in snow or ice

#### **Improved Scenario**

John loves to be punctual, it's important to him as he believes punctuality and hard work pay off in the long run. As a result, he hates being late to work. John has recently been offered a better job at a law firm downtown which does not have parking, so he knows he needs to figure out where he'll leave his car in the middle of the day before he can accept this new position.

After a quick search on the internet, he decided to try **FreeSpace?** in order to try and find

parking close by at a good price where his BMW would be safe and warm over the course of the day. He filtered his search to within 2km of his workplace and for indoor only and quickly found a parking spot perfect for his situation. He contacts the garage owner through the app and quickly signs a contract for a 6 month period of parking, with the option to extend should he need to. He paid through the app using PayPal and was immediately emailed the contract. Now that he'd found parking, he let his new employer know he was able to accept the job.

### Improved Scenario II: Mother

#### Scenario

After another successful year of school for her kids, Miranda packed away some projects in boxes and asked her husband to move them up to the attic. Dave told Miranda there was no way they could fit anymore up there, so the couple decided it was time to find somewhere to store their family's keepsakes. They hopped on their computer and began looking for storage options in the city. They stumbled onto a site called "**FreeSpace?**" and were offered an array of options. They filtered their search first by the size, hoping to clear out the attic, then by the price in order to find something affordable. They set the length to the max, as they were expecting to keep their stuff there as long as possible, and then refined it again by the proximity to their house. With all of their filters in place, they were able to explore the map of options and found a perfect location. They contacted the owner through the site and signed a contract for a 1 year term. They submitted their payment information through "**FreeSpace?**" and were emailed the contract immediately after. The whole process took no more than 30 minutes.

### Improved Persona III: Landlord

#### Bio

Frank is a 24-year-old software developer that is renting a home in Ottawa, Ontario. He doesn't own a car, so his driveway and garage are always empty. He currently works at a local web development agency that is a 10-minute walk from his house. Frank doesn't have a desire to purchase a vehicle at this time, but he feels his outdoor parking space and his garage space are going to waste.

#### Motivations

- He has a driveway and garage space that he does not use
- Searching for a simple supplement to his cash flow

### **Frustrations**

- He would like a way to generate some passive income with his unused driveway
- Finds that ads on current options (Kijiji, Craigslist) do not get many responses
- Any potential renters from these sites must provide him with payment directly

### **Scenario**

Frank has been wanting to move out from his parents house for a while, but had decided to push it off until he had paid back all of his student loans. He was finally able to reach that goal, and quickly found a new place to rent. Frustrated by the unexpected costs of living alone, he's been looking for a source of passive income that can provide him with some extra money each month. Since he doesn't own a car, his garage and driveway are always empty, he could rent the space out for some extra money. He did some quick research online and found an app called **FreeSpace?** that allowed him to post an ad looking for someone to rent his garage and driveway. Frank set up his rental at \$100/mo on a minimum 6 month term. He listed the fact that he had both indoor and outdoor parking available, and that outdoor would be \$80/mo. He received a few replies to the ad quickly, and began discussing terms with potential renters through the app. He signed a contract with two renters, one for indoor and one for outdoor, and received the contract immediately via email. Shortly after, his bank notified him that he'd received \$180 from "**FreeSpace?'**" and the whole process was completed with little effort.

## Affinity Diagram



From the above interview and scenario observation data we can gather that a clean, simple and descriptive or informative design is of utmost importance to our users. With our design we want to provide users with the ability to filter results based on price, location and the date the listing was posted. The process of booking and payment should be as simple and streamlined as possible with payment options being either through credit card or through PayPal. Safety and security was also identified as a key importance to users of applications such as **FreeSpace?**, our users want to know who they are dealing with and know that they are protected from scams and poor renters. Lastly, our users identified storage spaces that they are looking for such as parking garages, driveway parking, garages, sheds, storage units and other forms of permit parking.

## 2. Initial Design Alternatives

### 2.1.1 Design One: Simple Swiss Army Design

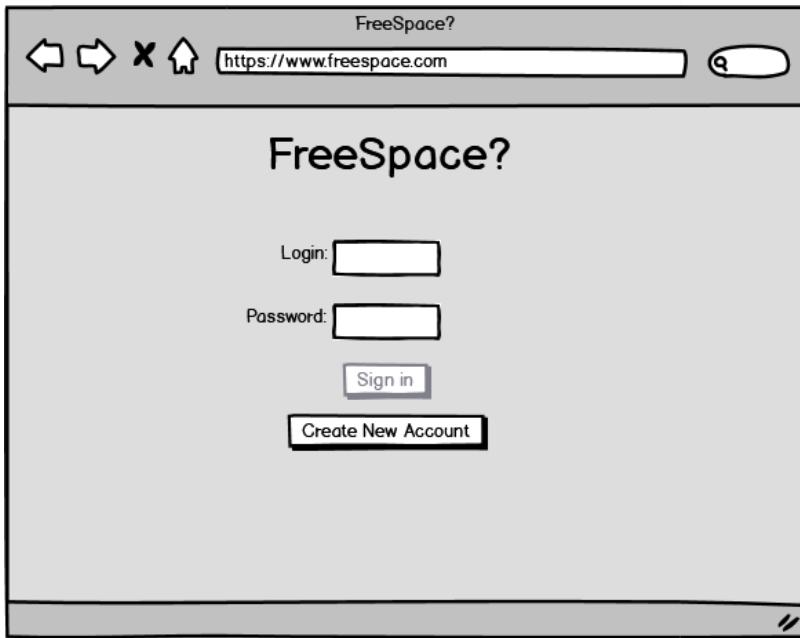
Design one's aim was to be a simple user interface which centered the user around a map displaying their location relative to the location of storage spaces available on **FreeSpace?**.

While conducting interviews with participants we found that users generally like the navigation style of AirBnB, as it was location focused, users did not want to be shown an unfiltered list of storage spaces that were not tailored to their location. Furthermore, users found that ad posting platforms such as Kijiji had complex navigation which made the experience of posting and searching for ads more difficult. For this design approach we have decided to adopt a Swiss Army Design pattern for the application that will allow users to be immersed in a map when loading into the web app, but also be able to swipe open a menu bar for things like posting an ad, managing their account. As discussed a swipeable menu bar on the left hand side will slide out when selected by the user and display the following options if available to them, “Post a Space”, which allows a user to post a space if they have linked their bank account so renters can pay them, “My Spaces” which will display Spaces that the user is either renting or they themselves have posted for rent, “My Account” which is where users can manage their account after initial creation, and lastly “Inbox” where users can view and respond to messages from landlords or renters. But the main aspects of this design is the map view of the either the user’s current area or a searchable area they have inputted. By making the map the central design aspect of the application we are centralizing all of the user's main functionality, which is searching, filtering, and renting a storage space. Centered in the middle of the web app’s menu is the search bar, the search bar when initially loaded into the application will display “Current Location” informing the user they are looking at a map view around their current area. This search bar is where a user can also input a different location if they want to look for a space somewhere else, say close to their work as an example. The right side of the web-app is where filtering of storage spaces occurs, a menu which can minimized by the user to be able to see the full map, is where you can filter spaces by type, and particular needs.

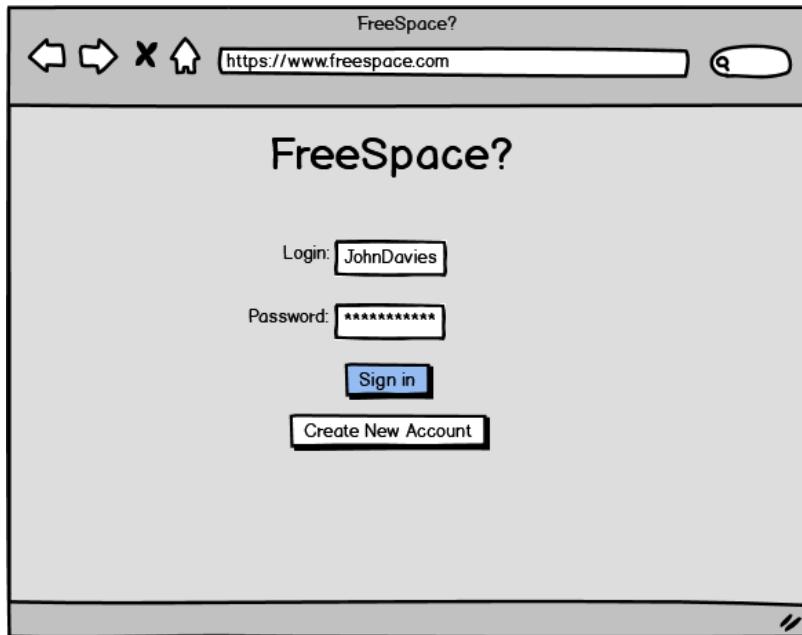
<https://www.lucidchart.com/invitations/accept/402bc5ea-7b7c-412f-94bc-48f5d926dc6c>

### 2.1.2 Design One: Sketches

The storyboard for the first design sketch is representing the scenario from John Davies' persona, search for somewhere to park his car whilst at work. This will assume that John already has created an account on **FreeSpace?** previously

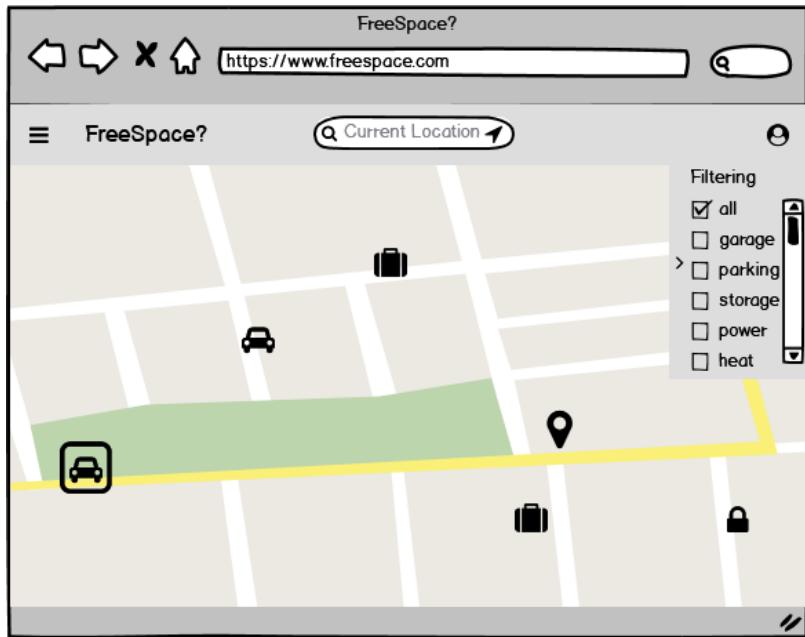


This is the landing screen of FreeSpace?,  
for the purpose of this storyboard a  
pre-existing user will log in.

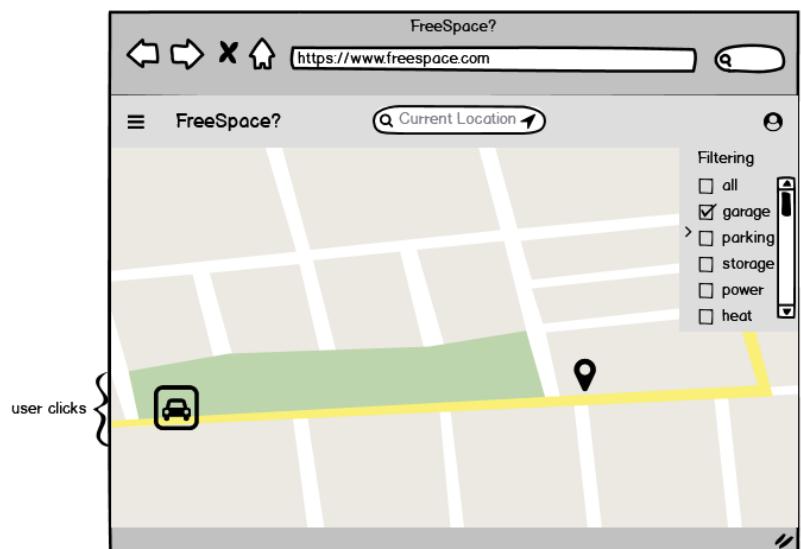




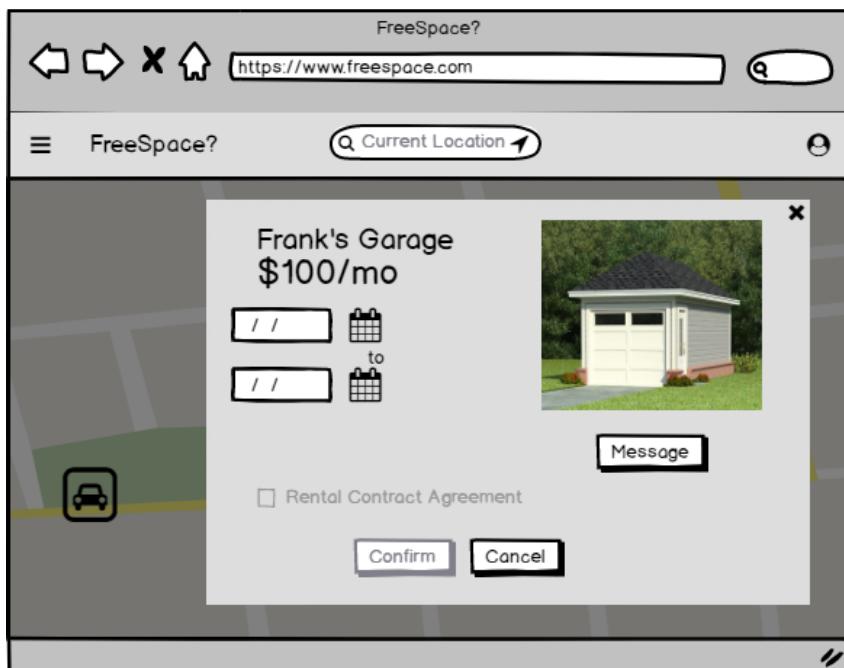
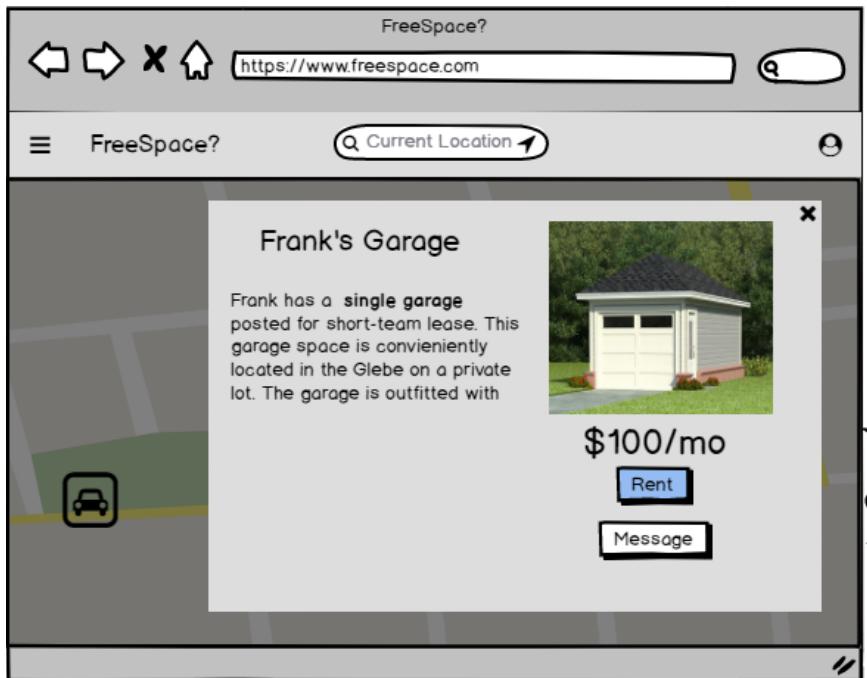
Since we've opted for a web app, the browser version and mobile app version will be very similar.  
This is the mobile alternate the landing page.

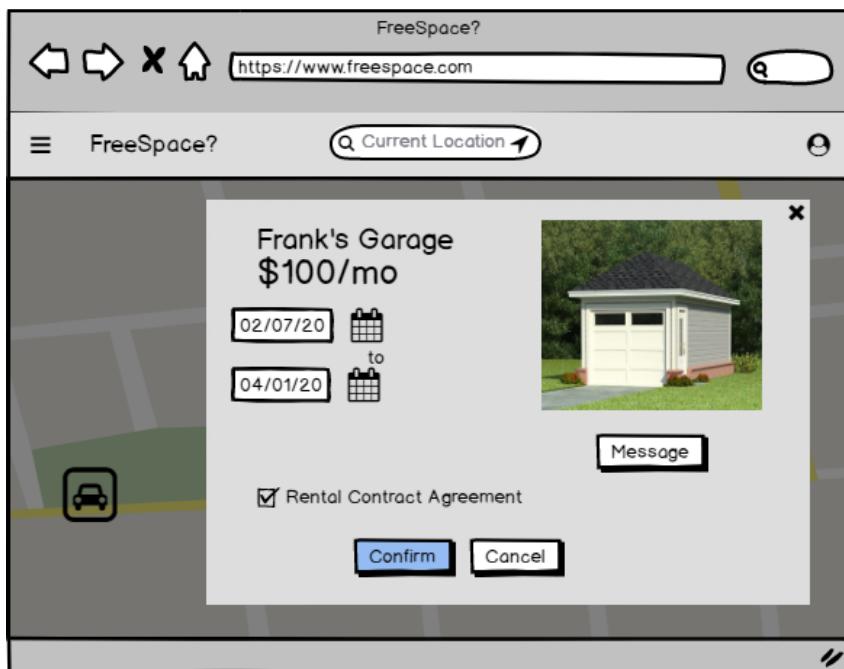
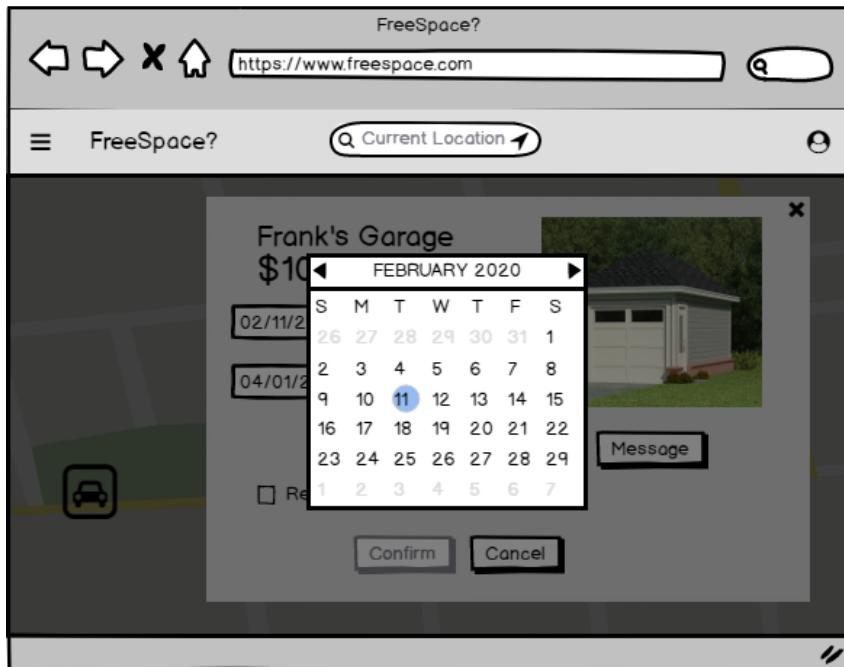


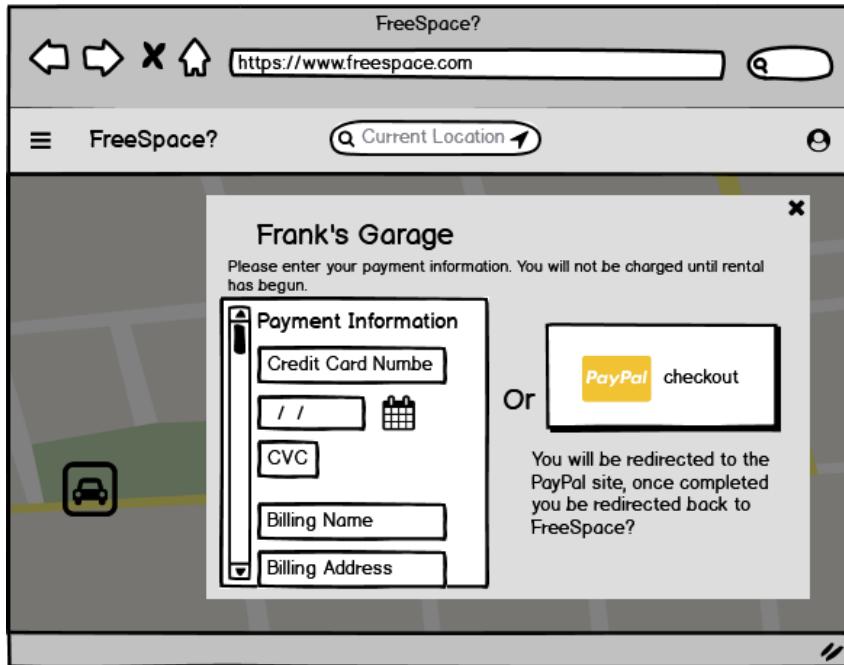
John has logged in and been immersed into a map of the surrounding area.



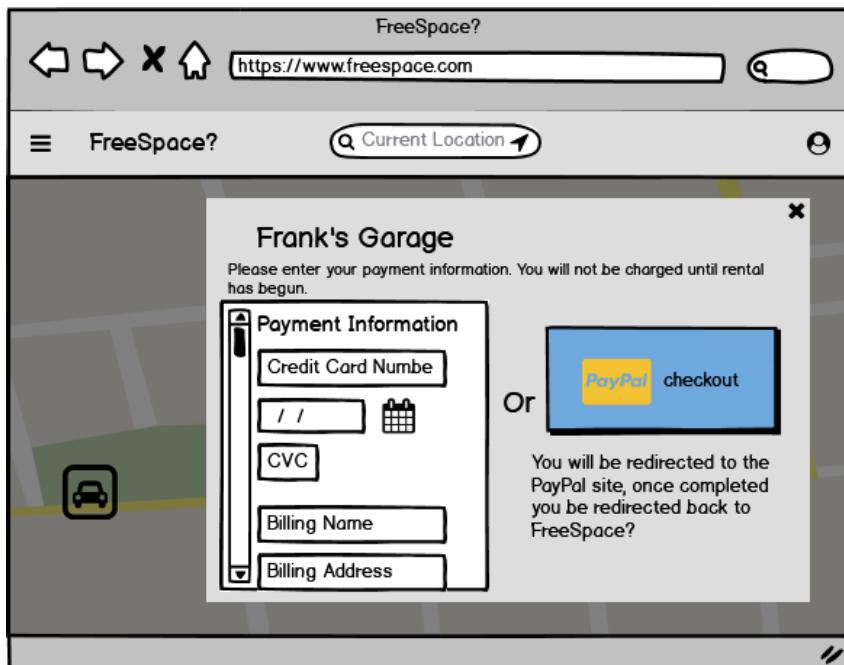
John has logged into the FreeSpace? application while at work. He is looking for a garage to park his car in whilst he's at work. So John has filtered the results accordingly.



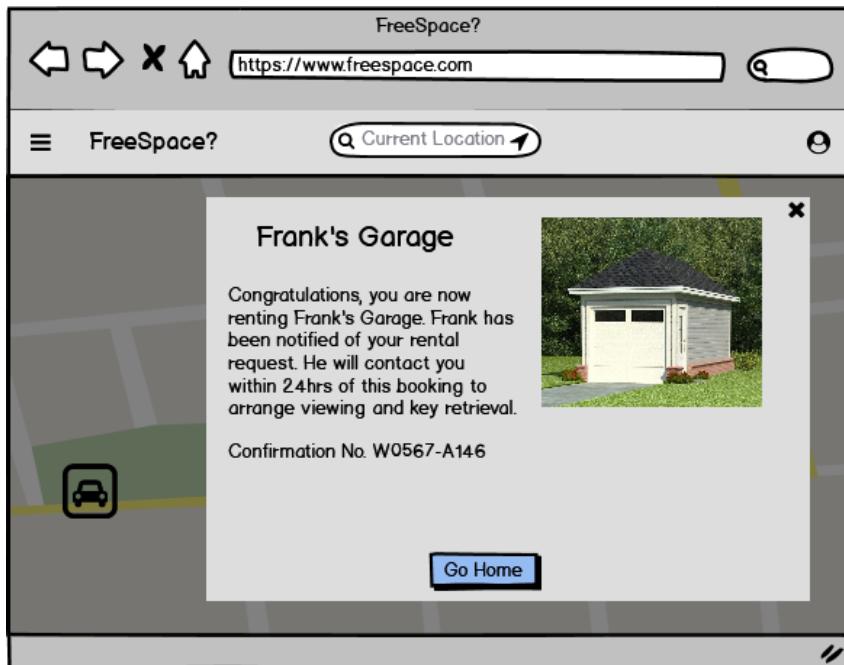




It is now time for John to enter the payment details for this rental. He may choose between using a Credit Card or PayPal.



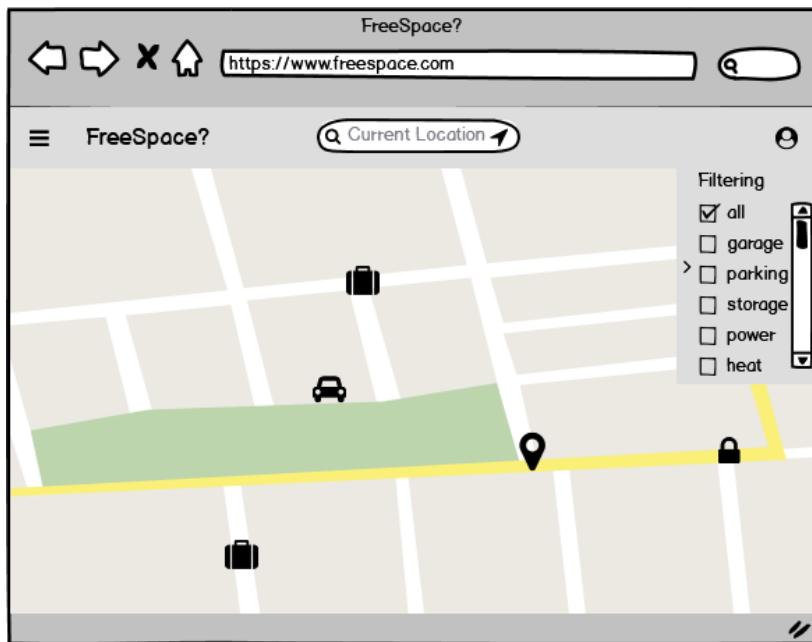
John has selected to use PayPal as his payment method.



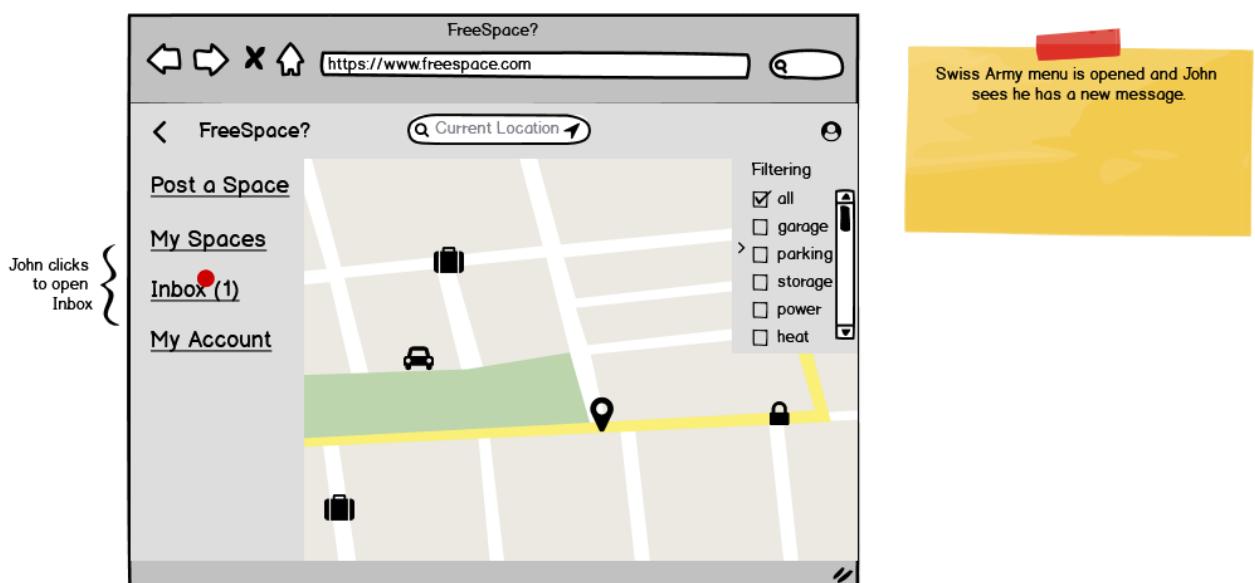
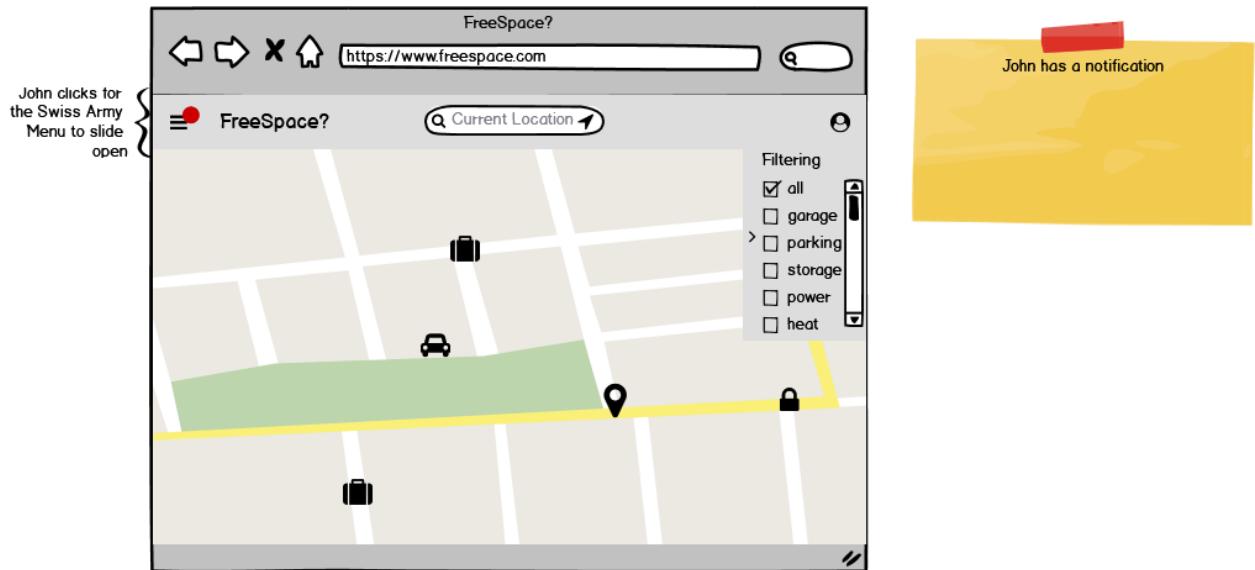
John completed his Payment on the PayPal site and has been redirected back to FreeSpace?

At this point John has completed his rental, and the landlord, Frank will contact him.

John returns to main screen.



Some time less than 24 hours goes by...





John has received a message from Frank's Garage landlord with rental information as to when he can start using the garage.

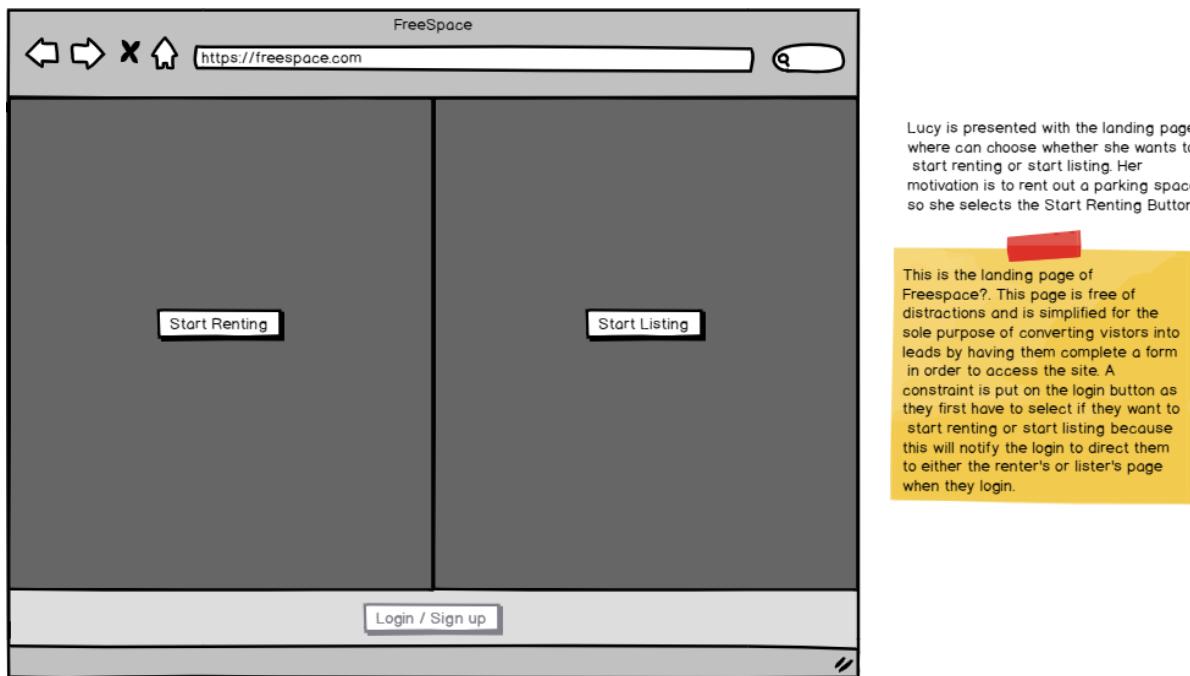
## 2.2.1 Design Two: Utility Design

Design two was designed when, during the interviews, we noticed a stark contrast between users which use the app to list either storage space or parking spaces to rent versus those looking to rent those types of spaces. The design will focus on immediately identifying and targeting each type of user. The first page they land on if they haven't visited the app before will simply be a split screen asking if they're there to rent or if they're there to list a space to rent. At the very bottom, there will be a prompt to login. This immediately filters users into which category they're visiting the site for, and thus streamlines their experience with the app. If they choose to list something to rent, then they will be prompted to create an account first. Once they've filled in the necessary information, the user will then be taken to a page asking what type of space they're looking to list, divided first into parking, storage or a hybrid of the two. From there, they'll be required to enter information in order to fit filters such as size, price, indoor or outdoor, security, the location, and what terms may be required in order to rent it. Keeping with the split pane design pattern the application is then split into two panes. The left-hand pane will display the listings in a cascade style sorted by distance to either the user's current location or closest to the search location. The right-hand pane will display filtering options and a mini-map that will give the user a frame of reference to compare each listing.

location to search location. When the user selects a listing the right-hand pane is then used to display the listing information, and ultimately allow the user with the option to rent.

## 2.2.2 Design Two: Sketches

The storyboard for the second design represents the scenario from Lucy Lui's persona given that she already has an existing account with FreeSpace?.



FreeSpace

Username: lucylui@cmail.carleton.ca

Password: \*\*\*\*\*

Login

Don't have an account? [Sign up today!](#)

Lucy enters her e-mail associated with her account and her password to login.

This is the login form where the user can log in as an existing user or create an account if they don't have one.

FreeSpace

FreeSpace?

What are you looking for today?

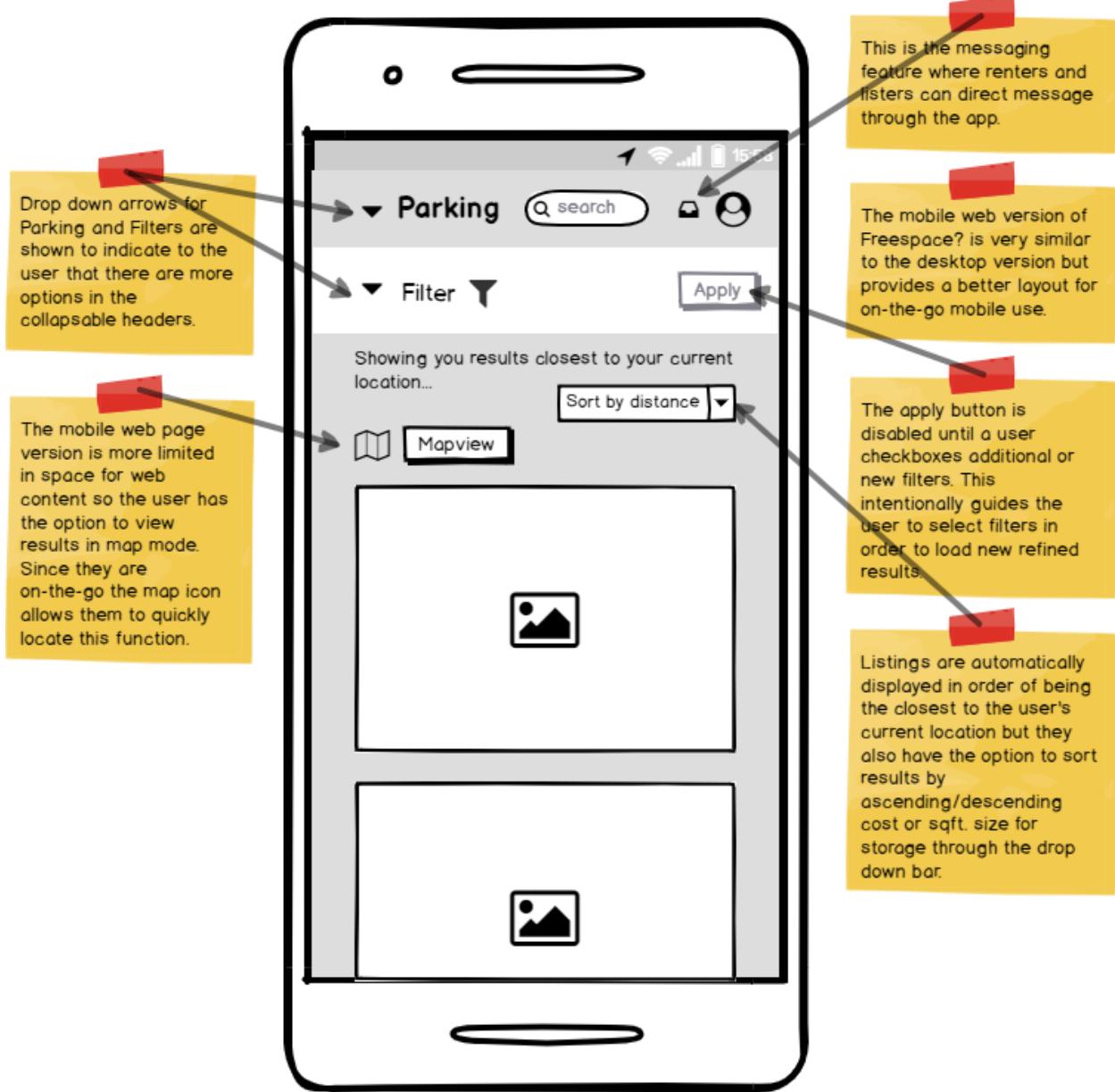
Parking Space

I need both!

Storage

Lucy is mainly looking for somewhere to park her car but she also has some personal belonging she would like to find space for aswell so she selects that she needs to find both.

This page is a simple web lead that finds the user's motivation by asking them if they are looking to rent a parking space, storage, or both.





Listings will be presented as clickable image links.

If the user's motivations change and they are looking for only Storage instead, they can change the type of listings through the dropdown header indicated by a down arrow beside the title.

Listing locations will be shown on a map and also the user's current location.

After the user's motivation is determined (Parking, Storage, Both) this page will load them results closest to their current location.

The apply button is disabled until a user checkboxes additional or new filters. This intentionally guides the user to select filters in order to load new refined results.

Listings are automatically displayed in order of being the closest to the user's current location but they also have the option to sort results by ascending or descending cost or sqft. for storage through the drop down bar.

Lucy is presented with results of listings that offer both parking and storage by how close they are to her in her current location of her browser.

FreeSpace

<https://freespace.com>

FreeSpace?

Parking & Storage

Showing you results closest to your current location...

Sort by distance ▾

Filter

- humidity controlled
- long-term
- shared
- surveillance
- 24hr access
- short-term
- power outlets

Apply

This shows the action of enabling the apply button when filters are checkboxed so the user knows to press apply in order to load new results.

After selecting the apply button, a loading circle will appear above current results to indicate that the results are currently being refined.

FreeSpace

<https://freespace.com>

FreeSpace?

Parking & Storage

Showing you results closest to your current location...

Sort by \$-\$-\$ ▾

Frank's Garage  
\$100/month

Rent Now

Back to search

Features

Questions?

[Message](#) [Call](#)

A big Rent Now button is located beside the listing name opposite from the back to search button to avoid user error.

The back to search button is located in the top left corner of the sidebar promoting usability as most users have been conditioned to find the back button on the top left.

Call or message options can be found under the listing's images with recognizable and noticeable icons for the user to quickly locate contact details and optimize user's interaction.

The current listing's location pin point on the map will be a different color to differentiate from the other listings.

After selecting one of the listings that catch her eye, Lucy finds that Frank's Garage is the perfect place for her that meets her needs so she decides to rent it now by selecting the Rent Now button.

FreeSpace

<https://freespace.com>

FreeSpace?  search

Parking & Storage

Rental Agreement Terms & Conditions

Rent Frank's Garage from  MM/DD/YY to  MM/DD/YY

I understand and agree to the terms & conditions.

After a user selects the rent now button they will be prompted to fill out the date form and a rental agreement terms & conditions they will have to read and accept.

The confirm button constrains the user to provide the necessary information before the button provides feedback and enables them to continue to the next step.

Date forms constrain the user to only pick a date from the current calendar to avoid input error.

Lucy is presented with the terms and condition of the rental and booking information she needs to fill out.

FreeSpace

<https://freespace.com>

FreeSpace?  search

Parking & Storage

Rental Agreement Terms & Conditions

Rent Frank's Garage from  05/01/2020  to  08/31/2020

I understand and agree to the terms & conditions.

After correctly inputting all details, the confirm button is enabled, providing feedback to the user that they can continue to the next step.

Lucy inputs that she wants to rent Frank's garage from May 1st to August 31st and agrees to the terms and conditions. She then proceeds to the payment by selecting continue.

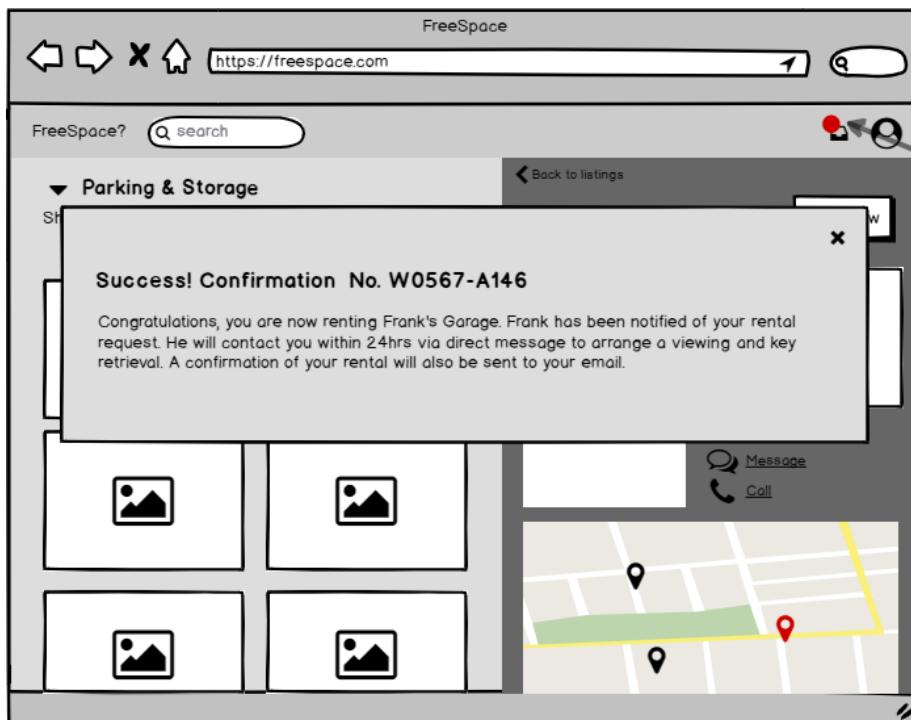
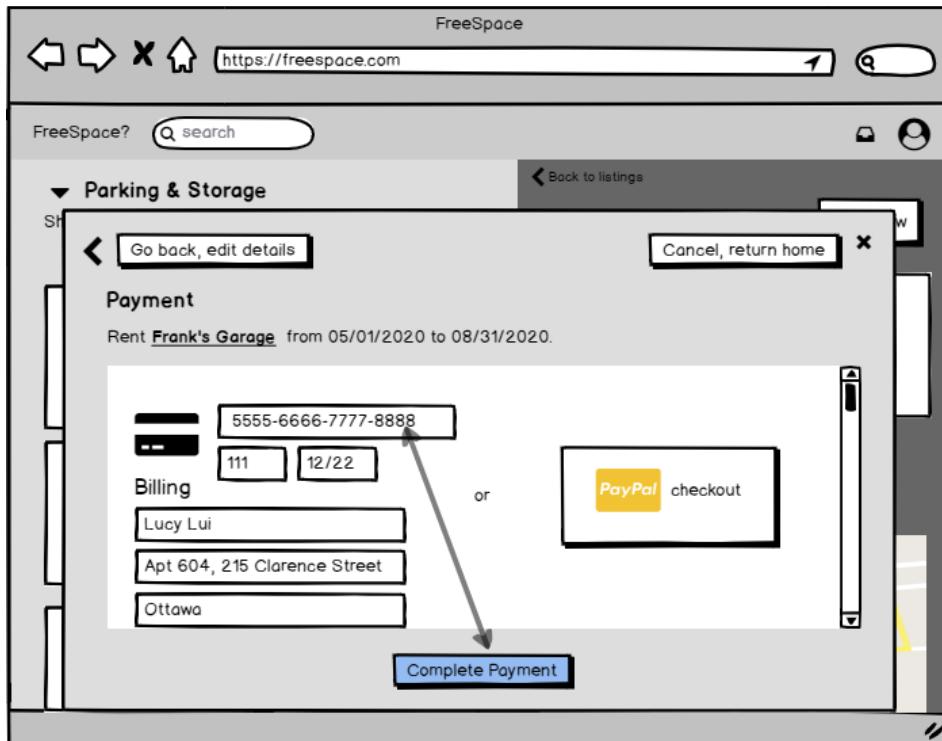
After the user agrees to the terms & conditions of the rental agreement and selects their booking dates, they are prompted to this payment form to complete their rental. They can choose to either pay with credit/debit or through PayPal.

The back and escape/cancel functions are placed opposite of each other like a web browser that almost all user's are familiar with while also preventing the user from accidentally selecting the wrong action.

Placeholders can be found in the input text fields of the payment details to display the correct format of input.

The Complete Payment button is disabled to constrain the user to input the correct details before proceeding to completing checkout.

Lucy is presented with the checkout page where she needs to input her payment details.



### 3. Prototype Evaluation and Iteration

#### 3.1 Selection

After much evaluation, we chose to continue with the ‘Utility Design’ as it led to the best flow among both primary types of users. It was a cleaner process for users to input why they’re visiting the app and led them immediately to what they were looking to accomplish. The efficiency this provided the app was a key requirement for our users. Taking into consideration that a large demographic of our users are drivers looking for parking it is assumed that they will access ‘Freespace?’ on their mobile phone in their car. The mobile web version of this design reflects the on-the-go utility as location results are displayed in the order of being closest in distance to the current user’s location in a photo scroll style much like Instagram. With limited space on a mobile screen, it can be challenging to optimize space for features so drop down headers are used to modify the type and filters for easy access. For both the desktop and mobile web version of the app, user’s are first introduced with three options to choose from after login to select what they are looking for whether that be parking, storage, or both. Restricting the user to select from three options initiates the first step for the search effectively and efficiently while also promoting learnability. Taking into account the user’s motivations and needs in order to provide quality and more efficient services, all results are displayed in sorted order of being closest to the user’s current location as most user’s would be looking for some place most convenient. Along with this, there is a separate feature to sort the results in conjunction with the automatic sorted order that allows the user to sort by price and sq ft. size. For example, if a user wanted to look for the closest parking space but at the lowest price, they can efficiently do so by selecting sort by low-high cost. To provide the user with a better understanding of where the available listings are located in distance to each other and to their current location, a mapview is shown with pinpoints of differentiating the current listing selected, other listings, and the user’s current location meeting the utility goal. As for selecting options such as filters or completing forms, we restrict the user from enabling the continue or apply button until the proper information is entered to avoid an input error. This saves time and promotes learnability, memorability, and effectiveness for completing user tasks. Overall the ‘Utility’ design takes into account all of the user’s needs and meets usability goals that optimize user interaction with ‘Freespace?’.

## 3.2 Iterations

### 3.2.1 Iteration I

#### Notes from Gabe

##### Wizard of Oz Testing

Gabe was given the app and wanted to look for parking to finally bring his car up to Ottawa.

- Hunted wanted a larger search bar on the mobile app
- He didn't understand why the type wasn't built into filters
- He wanted to be able to input a price range and a max distance in his filtering of searches
- He didn't understand why the 'Cancel/Return Home' button was beside the close button and labelled both cancel and return home (wireframe 8/9)

#### Notes from Timothy

Timothy was given the app to look for a parking space near his workplace

- Timothy wanted filters for prices and distance because only having the ability to sort and not filter makes it difficult to search for the cheapest spot near you
- Timothy wanted to be able to filter by dates instead of having to select the date after pressing the Rent Now button, as this would save wasted time looking at ads for spaces not available during the days you wanted
- Timothy also wanted a way to filter the listings by the size of the unit
- Timothy thought it would be useful if there was a place for user reviews from people who have previously rented the spot or rented from the landlord

#### Notes from Marco

Marco was given the app to look for storage space to store rented camera/film equipment for a music video shoot.

- Would like to see availability dates before choosing the rent now button
- Maybe a filter to filter out dates
- Show distance in km of each listing in preview
- Would like to see availability of the lister in order to find one with fastest response

#### Revisions

We updated the header on the mobile app in order to satisfy Gabe's comments about the search bar being too small. The bold work specifies what list you're looking at, and the filters allow you to change that list.

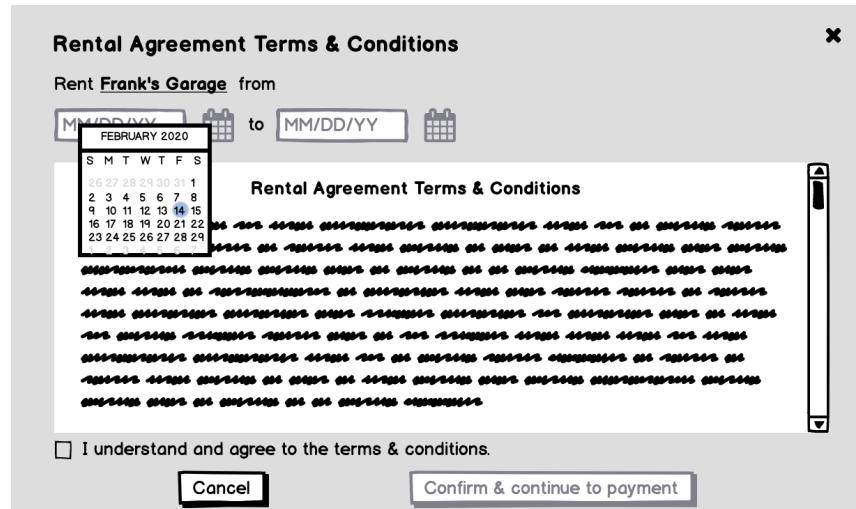


**Filter**

<input type="checkbox"/> humidity controlled	<input type="checkbox"/> long-term
<input type="checkbox"/> shared	<input type="checkbox"/> short-term
<input type="checkbox"/> surveillance	<input type="checkbox"/> power outlets
<input type="checkbox"/> 24hr access	
<input type="button" value="Min"/>	<input type="button" value="Max"/>
Price	
<input type="button" value="Max"/>	Distance(Kms)

We added a price range and maximum distance to the filters in order to meet the need for filtering by budget and what a user's maximum range would be when it comes to various storage and parking solutions they may be looking for

We pushed the 'Cancel, return home' button down to the bottom of the screen left of the 'Confirm & continue to payment' and relabelled it 'Cancel' for as it was simpler and users wish to return to their search results over the home screen.



### 3.2.2 Iteration II

#### Notes from Hunter

Hunter recently started school at Carleton University and had to move out. He's left a lot of his belongings back home, including his car. Now that he's in the city he's been hating the transit system, so he's been investigating ways he could bring his car to the city.

- Hunter didn't like that he had to sign up before he could even check out what's available to rent.
- He did like that he was easily able to select 'Both'
- He said the 'Filter' button on the mobile app looked strange and that maybe it could just be a simpler button.
- He noted the inbox button seemed too small
- He wanted to be able to list out options in a vertical list rather than a cascading list

### **Notes from Ian**

Ian is a student at Carleton University and has decided to take a summer job in the US. Since he won't be living in his room during the summer, he's decided to sublet his room out and needs a place to store his belongings in the summer.

- Ian thinks it would be easier to browse through the listings if the prices and distances were listed on the search results as well, instead of only shown on the listing details page that shows up only after selecting a listing.
- He thought that the type (Parking vs Storage) could be a filter instead.
- He thought a filter to choose specific dates would be useful
- He thought having the price and location of the listing shown on the checkout page where you add your payment information would be useful for users to double check that the listing is what they actually want

### **Notes from Martin**

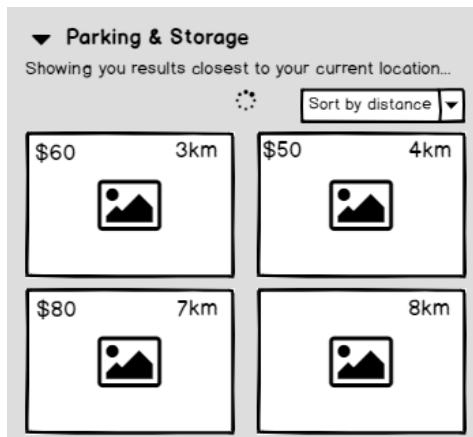
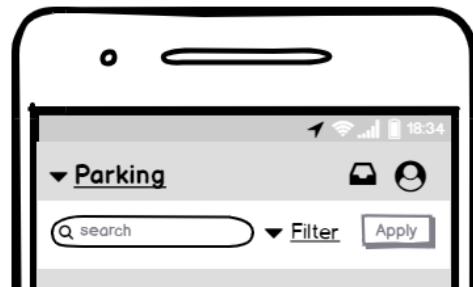
Martin is a visual arts student at University Ottawa that has had his painting stolen from the storage room in his class' storage room. His undergrad show case is coming soon and he wants to find a safe place to store his pieces including sculptures and big canvas paintings.

- Thought choosing a date period before searching would be more efficient and would waste less time
- Thought maybe reviews would help select a location to rent
- He thought displaying the listing location's address in the confirmation notification would be useful if he wanted to go immediately
- He thought a summary of payment or invoice presented after checkout would be useful to keep for his personal records
- He thought the placement of the dropdown Filter button was too close to Parking dropdown button

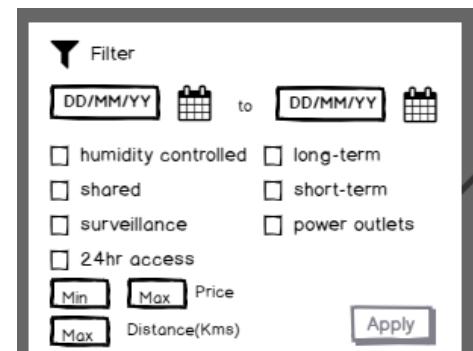
## Revisions

We updated the header and underlined both Parking and Filter phrases to indicate that they are links that contain more information to the user. We rearranged the search bar, filter, and apply to be more sequential with their actions from left to right.

In order to provide better usability and promote efficiency, we added the price of the listing and the distance in km from the current user over each image listing result.



We added a date form to the filter section of the search so users can search for the available listings for the certain time period they need to book it for. This update improves efficiency a lot from our previous design as users don't waste time clicking through a listing that won't be available for them.



## 4. Usability Inspection Evaluation

We decided to exclude the **Error prevention** and **Help users recognize, diagnose, and recover from errors** heuristics because it is irrelevant to this design phase.

### 4.1 Clara's Heuristic Evaluation

#### 1. Visibility of system status: Severity Rating: 0

*When loading results for listings after a user has clicked apply or started their search, a loading animation is displayed to show that the system is currently fetching the data. In addition after a user has completed their payment the system provides them feedback with a confirmation number to inform them of a successful transaction.*

#### 2. Match between system and the real world: Severity Rating: 0

*The system implements a lot of language and common phrases that's commonly used in other systems such as e-commerce websites to provide the user with easy navigation. Although listing descriptions are input by the individual listers, the system draws tags and keywords to provide users with filter options.*

#### 3. User control and freedom: Severity Rating: 0

*The user has access to go back to listings, go back to review the terms and conditions and cancel to return to the homepage while completing the forms to confirm their booking. In the case a user has changed their mind they have complete freedom to change their motives with the use of back, cancel, exit, return buttons, and toggle checkboxes for filtering. In addition, users can change what they are looking for through the dropdown bar whether it be parking, storage, or both instead of revisiting the homepage that asks 'What are you looking for today?'.*

#### 4. Consistency and standards: Severity Rating: 0

*The system provides clear phrases and standard actions that are commonly used by any web browser user such as back and exit. In addition, recognizable icons are placed beside phrases to avoid misconfusion while also promoting learnability and usability and quicker navigation.*

#### 5. Recognition rather than recall: Severity Rating: 1

*For the mobile web version, collapsible headers are used to access filter options and to change the user's motive. Although filter options are first hidden to the users, a drop down icon is indicated beside the Filter phrase to notify the user that the header needs to be clicked to display all filters. As for renting out a listing, the system carefully guides the users with the proper constraints to allow them to continue after each task while also providing placeholders for input text fields to avoid input errors.*

#### 6. Flexibility and efficiency of use: Severity Rating: 2

*To provide an even more efficient and effective usability experience for the frequent user's that are on-the-go, a saved preference search can be implemented to load their preferred listings quicker.*

**7. Aesthetic and minimalist design:** *Severity Rating: 0*

*The design of the user interface is simplistic and contains only the essential phrases and buttons needed for the user to complete their goal.*

**8. Help and documentation:** *Severity Rating: 3*

*Although the application is fairly simple to use, no help or documentation is provided to the user if they fail to complete their tasks. Currently only inquires about a rental listing is provided for the user but that help is dependent on the lister's interaction with the user renting.*

## 4.2 Gilbert's Heuristic Evaluation

**1. Visibility of system status:** *Severity Rating: 0*

The user never has to wonder whether the app is frozen or just loading the search results since the app will show the user the status of the system through the loading animations

**2. Match between system and the real world:** *Severity Rating: 0*

Since our app allows users to post their own listings, the match between the system and the real world will depend on the accuracy of the ads posted by users. Assuming the information on the ad is accurate, the system will show a map with the locations of each listing. Images of each listing will also be shown to the user through the app.

**3. User control and freedom:** *Severity Rating: 0*

The user is always free to navigate through the different parts of the app. Even when there is a dialog box that is shown to the user, they are able to simply close it and return to the previous page if they wanted. The users are also able to easily toggle the filters on and off if they made a mistake with the filters.

**4. Consistency and standards:** *Severity Rating: 0*

The user interface is consistent throughout the app. The listings for both types (parking vs storage) have the same layout and information, making it easy for the user to quickly find the information they need. We also made sure the icons used throughout the app are obvious and is the standard that are implemented in other popular apps such as the filter icons and the close icons.

**5. Recognition rather than recall:** *Severity Rating: 1*

Our app shows the user important relevant to the user in most parts of the app like the large headings that show the user whether they are browsing for parking spots or storage spaces, or showing the name of the listing on the payment page. However, this could be improved by also showing the location of the listing and the price of the listing on the payment page as well.

6. **Flexibility and efficiency of use:** *Severity Rating: 2*  
Our app currently does not have any shortcuts for users to navigate the app with. However, this can be fixed by implementing keyboard shortcuts or different gestures to browse listings, add filters, or navigate through the app.
7. **Aesthetic and minimalist design:** *Severity Rating: 0*  
The design of our app is simple and the dialogs only contain important information that would be interesting for the user to see.
8. **Help and documentation:** *Severity Rating: 2*  
We currently do not include any documentation or any help for the user to consult with. However, I feel the app is quite simple and intuitive to use so the lack of documentation is not a major problem for the user.

#### 4.3 Justin's Heuristic Evaluation

1. **Visibility of system status:** *Severity Rating: 0*  
At every point during the execution of the system, there are UI events which update the user on the system status and prevent the user from believing the system may have frozen.
2. **Match between system and the real world:** *Severity Rating: 0*  
Our system uses simple language to clearly direct the users where they need to go. The only potential issue would be listings made by users, however there isn't much we can do to avoid this aside from using our filters for listings.
3. **User control and freedom:** *Severity Rating: 0*  
Our dialogs have clearly labelled buttons which leave the user able to recover previous states or return to the homescreen with filters in place. This allows for a high level of user freedom.
4. **Consistency and standards:** *Severity Rating: 1*  
Our platform largely follows 'Parking' and 'Storage' however for the more naive users, the subtypes could create mild confusion. Each listing should be clearly labelled with the parent type in order to alleviate this.
5. **Recognition rather than recall:** *Severity Rating: 0*  
Every action possible to the user is clearly accessible. States are passed between the different screens of the app and there are always clear indications as to what the current state of the system is.
6. **Flexibility and efficiency of use:** *Severity Rating: 2*  
We have no built-in methods for improving the speed of which frequent actions can be done. The system is only in the design phase, however this is something that needs to be considered moving forward.

7. **Aesthetic and minimalist design:** *Severity Rating: 1*  
Some of our dialogs do contain excess information, however this was designed to allow for the most naive users to have a friendly experience with the system.
8. **Help and documentation:** *Severity Rating: 3*  
We haven't built in any documentation or help page for our system. While our system is user-friendly and minimalistic, this would be a huge design flaw moving forward.

#### 4.4 Brandon's Heuristic Evaluation

1. **Visibility of system status:** *Severity Rating: 0*  
When loading the various fragments of the app, we display a loading animation in order to show the user that the app has not frozen, but is simply working on populating the results of their latest query.
2. **Match between system and the real world:** *Severity Rating: 0*  
Our system uses maps similar to those users have become familiar with. This shows them their world mapped out and the locations of every possible listing near them. We also include photos for every listing, therefore adding an element of realism to the application.
3. **User control and freedom:** *Severity Rating: 0*  
In every dialogue box we have clearly marked a button for which the user can choose to exit the dialogue and return to the previous state of the application. Our home screen itself displays all the functionalities a user will need to access in a minimalistic design which should be friendly to even the less technologically advanced users. This allows for better freedom when using our app, and thus better control.
4. **Consistency and standards:** *Severity Rating: 0*  
For every aspect of the app we include headings which clearly state what the user is looking at and what to do on each screen. The terms throughout the application are kept primarily to renter, lister, parking, and storage with various sub-types of parking and storage being displayed. For each listing with these subtypes, the parent-type is also on screen.
5. **Recognition rather than recall:** *Severity Rating: 2*  
Admittedly during the flow of renting, our application does drop certain pieces of larger information. However, we do include enough strings to allow for a user to recall where they had just been given any state in the system.
6. **Flexibility and efficiency of use:** *Severity Rating: 1*  
Ideally, once the app had been coded function keys will be included in order to quickly scroll through listings, open and apply filters, and select listings. Our current design allows for quick toggling of filters and the built-in map, as well as quick refinement of any listing.
7. **Aesthetic and minimalist design:** *Severity Rating: 1*

We do have both an ‘X’ and a ‘Cancel’ button in many dialogues, however the remainder contains as little information as necessary. The double close feature is tailored to provide novice users with ease of access over the entire app.

8. **Help and documentation:** *Severity Rating: 2*

Our system was designed to be as simple as possible. We don’t have any documentation built into the app, however it should be fairly easy to use.

#### 4.5 Consolidation

Our consolidated individual heuristic evaluations showed that the heuristics that the team felt didn’t need work were the following:

**Visibility of System Status** - *Severity rating: 0*

Whenever the system is loading a component of the app or retrieving the search results, a loading animation is shown to the user so they can see that the app is not frozen, but just loading.

**Match between System and the real world** - *Severity rating: 0*

Our system uses commonly used icons and phrases so the user is able to easily understand how to navigate and operate the app. The system also includes a map with the listings on it so that the user can more naturally determine where each listing is located without searching the address themselves.

**User control and freedom** - *Severity rating: 0*

The system allows the user to easily navigate throughout the app with the use of back, cancel, exit, return buttons, and toggle checkboxes for filtering. If the user made a mistake and wants to navigate back to a previous screen, the buttons are there to allow them to do so.

**Consistency and standards** - *Severity rating: 0*

Our system uses icons that are recognizable to the user, so they never have to guess what the buttons do. The system also includes large headings and phrases that show the user where in the app they are, and what actions they can take.

We did agree on the following cosmetic problems:

**Aesthetic and minimalist design:** *Severity Rating: 1*

The dialogs in the app only contain the most relevant and needed information. However, our dialogs include 2 close buttons, which we felt would help new users navigate the app. This could possibly be improved by removing the duplicate button and adding more emphasis on the close icon, so user’s will more easily be able to identify the close button.

**Recognition rather than recall:** *Severity Rating: 1*

Our designs have buttons and icons that are obvious to the user, allowing them to easily identify the different options that they have. We also have large headings to show the user which part of the app they are currently using. However, we feel that there is more information that we could include on the payment pages such as the price and the location of the listing. Having this information included on the payment page could allow users to double check the listing information before paying.

The following were minor usability problems which will need to be fixed:

**Flexibility and efficiency of use:** *Severity Rating: 2*

Our designs allow the users to quickly select the filters that they want and the inclusion of the map allows the users to browse the listings with an alternative interaction style. However, we feel that more work can be done to provide the user a way to more efficiently use the app. A possible improvement that could be made is to allow the user to save their filters so they won't have to re select which filters they want or re enter their price range whenever they want to rent a new place. We could also include function keys that help the user navigate through the app with more efficiency.

The final topic is a major usability issue:

**Help and documentation:** *Severity Rating: 3*

Our system doesn't contain any documentation or help for the user to consult with. Although we have a simple and intuitive design that includes icons to inform the user of the possible actions that they could take, including documentation that the user can reference if they have any issues would certainly help in case a user is running into issues.

