After meeting with our client, we have identified two key user groups of the SmartBox. The SmartBox will be used by 1) realtors and renters and 2) homeowners. Based on these two user groups, we will discuss and identify our key questions we would like to know more about separately.

Realtors and Renters
We know that realtors have historically used a physical, fully mechanical lock box to store keys or key fobs inside. These locks are generally large and clunky, and can only hang onto traditional door knobs given the standard curved lock design. Given this information, we would like to know if there is a market for alternative lock boxes for doors that may not have a traditional door knob, such as sliding doors, barn doors, swing doors, and any other door that would be unable to hang the widely used realtor lock. Formally, our question would be:

> *What are the current alternative locks or methods that realtors/renters use to access the physical keys for homes or locations without a traditional door knob?*

Our current design of the SmartBox will have a paired application that will allow the lock owner to remotely lock and unlock the box, but we are unsure if this would even be useful for realtors and renters. With our limited knowledge of the real estate business, we believe that face to face interaction is an important part of a realtor's business, however, from the client side, there may be some situations where a client would like to view a home without someone trying to "sell" the house to them. There are also some situations where renters may be unavailable but would still like potential tenants to view the location. Some of the things we would like to know more in this aspect are:

> *How important is face to face interaction between realtors and clients when touring a home. Are there any situations where a realtor may give access to a client without being there themselves? Are there any liability issues included in doing so?*

Continuing on with the paired application, we will be providing a data logging service. We are currently envisioning tracking who accessed the lock, when they accessed it, and when they locked it. These are some very basic data points that we are tracking, and we would like to know if there is any other data that we can record that realtors/renters may find useful.

> *Are there any data points, besides the ones listed in the paragraph above, that a realtor is currently tracking or would like to track to help the realtor or their business?*

Finally, after discussing with our client, we would like to implement Alexa support. Alexa currently utilizes HTTP/2 for their API/development which requires internet access. Given the nature of our user space, this may not always be available. We would like to know what percentage of homes have internet enabled at the time of viewings from both realtors and renters

and how useful it would be to actually implement Alexa support and a WiFi adapter into our hardware. Our question would be:

What percentage of homes that are listed as available currently have internet access?

Homeowners

We envision that the SmartBox would be used by the second group, homeowners, to give temporary access to friends, family, service workers, delivery drivers, or anyone who may need to access their homes without the homeowners being present. Although we believe that this may be a useful technology as the product designers, homeowners (typically older, financially stable individuals or families) may not think the same way. We would like to know if there are any concerns with privacy, security, or fears of using new technology that homeowners may have.

Does the homeowner believe that this new technology would be useful to them? Would a homeowner prefer to be present to monitor the activities of whoever is accessing their home? Would homeowners have/add another layer of security such as surveillance cameras within their home? If not, what security or privacy concerns does the homeowner have in regards to this new technology?

Conversely, we would also like to know if those who are granted access would feel comfortable entering homes without anyone present.

Given permission, would you enter someone's home without the homeowner present to perform any work, tasks, or requests given by the homeowner? If not, is it a matter of personal ethics, work policy, or anything else? Would you find that this would help you accomplish your tasks?

Broadening the scope a little, we would like to know if a homeowner would actually find the technology useful. We would like to know how often homeowners actually have people entering their homes. Our question would be:

How often does the homeowner have people entering their homes, whether it's guests, service workers, etc? Would the homeowner say it is frequent enough that it takes a significant amount of time away from their schedule? Does the homeowner believe our product can improve quality of life and free up time?

We believe that the data logging will be primarily used by homeowners. They will be able to track who enters their home and when, and remotely be updated in real-time when it happens. After hearing about the SmartBox's features and our current minimal viable product, would there be any features that the homeowner would like us to implement?

What features would the homeowner like to see added that is currently not designed? Why would they want those features?

Rationale

      The user group of our product are often very busy. Using the survey method would likely get passed over or worse, the survey takers would take little to no time taking the survey, rendering false data. Whereas interviewing face to face would create a more personal and invested experience and our audience may react more positively if we were given the opportunity to provide our motivations for these questions. Because we are dealing with security business, some may feel uncomfortable giving out information about how their business operates with little context so interviewing people seems to be the best option.

More so, the interview questions we provided are not a script, but they are more of a guideline of the sorts of information we can think of that might be useful. There may be times at the interview where the interviewees allow us, the interviewers, to gain a different perspective. And we might ask more about that. All in all, interviewing people face to face allows for more flexibility and allow us to look at our products and its features with a different lense.

Summary of Key Findings
Realtors/Renters

What are the current alternative locks or methods that realtors/renters use to access the physical keys for homes or locations without a traditional door knob?

      Of the three realtors we interviewed, we found that none of the three have ever had a need for an alternative lock design as the traditional model sufficed. This shows that within our small sample, there is no current alternative that realtors are using, however, the need may be small enough to be insignificant. We would like to continue our interview process to see if we can find some use cases of nontraditional locks.

How important is face to face interaction between realtors and clients when touring a home?

      The answer was unanimously, "the most important." A large part of going through realtors is to have someone knowledgeable and immediately accessible to answer questions. One interviewee stated that, "the client can witness how much effort that the realtor puts in to make sure all the needs and wants of the client are met" which allows for a more intimate, and trusting relationship between the realtor and client. This may be a breaking point for our realtor/renter use case of our project, as we are trying to eliminate the need for physical presence. However, further interviewing must be conducted to see if there is a market for our project within the real estate idea space. There were also concerns about liability issues. Allowing a buyer to view the house leaves no way to track damages or theft, and it decreases trust between seller and the real estate agency.

Are there any data points, besides the ones listed in the paragraph above, that a realtor is currently tracking or would like to track to help the realtor or their business?

There were no relevant answers to this question. May need to further research potential data the could be useful to real estate agencies.

What percentage of homes that are listed as available currently have internet access?

All three realtors stated that a majority (90%+) of homes currently listed have internet access. Note that this is in reference to homes that currently have tenants in them and this is the primary clients that realtors work with. This gives us confidence in implementing Alexa command support and remote access.

Homeowners

Does the homeowner believe that this new technology would be useful to them?

While four of the six homeowners we interviewed believe that this technology would be useful to them, two have noted that there are already plenty of alternatives on the market that they're currently using, (SmartLocks like August, garage door openers, etc). However, one interviewee mentioned that to be able to centralize all things security related and having it on one platform would be preferable. This is something we can look to add into the future as our MVP at the moment is just the lock.

Would a homeowner prefer to be present to monitor the activities of whoever is accessing their home?

Many are willing to allow friends and family to access their homes without being physically present, but it was a unanimous "yes" on being present for strangers, maintenance and repair workers. However, upon further explaining, homeowners are open to the idea of allowing access to the latter if there was some video/audio feed to monitor - but once again this may be out of the scope of our current project.

Would homeowners have/add another layer of security such as surveillance cameras within their home? If not, what security or privacy concerns does the homeowner have in regards to this new technology?

Most of the interviewed homeowners already have cameras or other layers of security in place. The general sentiment is that our product would be the extra layer of security as opposed to the security systems/cameras being the extra. However many homeowners expressed that our technology would make them feel more secure.

Given permission, would you enter someone's home without the homeowner present to perform any work, tasks, or requests given by the homeowner? If not, is it a matter of personal ethics, work policy, or anything else? Would you find that this would help you accomplish your tasks?

Only one of the homeowners interviewed would be okay with entering a home given permission. Most others would require a legal contract if for a job, or have a very close personal

relationship with the homeowner. Many people feel like that there is a two way liability issue and would not want to be accused of something that they didn't do so they would feel more comfortable if the homeowner was present and actively available to monitor.

How often does the homeowner have people entering their homes, whether it's guests, service workers, etc? Would the homeowner say it is frequent enough that it takes a significant amount of time away from their schedule?

All homeowners would say that they have people come over infrequently, and the homeowner is always present when it is someone that they do not know. This somewhat negates the entire premise of our project and limits our users to a very niche market. We did find valuable insight within college students however. Many college students have roommates and guests of roommates will often be over. Some suggested that this would be a good market to target as personal belongings in a communal space often times requires some form of accountability, especially with roommates that you do not know well.

Does the homeowner believe our product can improve quality of life and free up time?

Although many homeowners would agree that this product is useful and convenient, many already have other systems in place that they are comfortable with and they believe that this may be useful for those who need the flexibility of having people enter their homes without them being present. Unfortunately, the homeowners that we interviewed do not share that sentiment and believe that the product will not be useful relevant to themselves.

What features would the homeowner like to see added that is currently not designed? Why would they want those features?

There were actually some great and relevant suggestions that we can add to our project. The notable ones were, fingerprint or biometric scanning, alerts for tampering, and being compatible with existing security systems. The added security with biometric or 2-factor authorization as well as implementing a tamper-proof system are definitely some features that can be implemented within the scope of our project, and may be something to look more into to expand our market.

Interview Questions
Realtors/Renters
1. What are the current alternative locks or methods that realtors/renters use to access the physical keys for homes or locations without a traditional door knob?
2. How important is face to face interaction between realtors and clients when touring a home?
3. Are there any situations where a realtor may give access to a client without being there themselves? Are there any liability issues included in doing so?
4. Are there any data points, besides the ones listed in the paragraph above, that a realtor is currently tracking or would like to track to help the realtor or their business?
5. What percentage of homes that are listed as available currently have internet access?

Homeowners
1. Does the homeowner believe that this new technology would be useful to them?
2. Would a homeowner prefer to be present to monitor the activities of whoever is accessing their home?
3. Would homeowners have/add another layer of security such as surveillance cameras within their home? If not, what security or privacy concerns does the homeowner have in regards to this new technology?
4. Given permission, would you enter someone's home without the homeowner present to perform any work, tasks, or requests given by the homeowner? If not, is it a matter of personal ethics, work policy, or anything else? Would you find that this would help you accomplish your tasks?
5. How often does the homeowner have people entering their homes, whether it's guests, service workers, etc? Would the homeowner say it is frequent enough that it takes a significant amount of time away from their schedule?
6. Does the homeowner believe our product can improve quality of life and free up time?
7. What features would the homeowner like to see added that is currently not designed? Why would they want those features?