For our design project, we will be redesigning home door locks. We chose it to make it more convenient to open front doors for disabled people and millennials. It is hard to manipulate a lock and key with hands full of groceries or for people with muscular or nervous difficulties. The new lock design will be secure, hands free, and user friendly. In our project, we will incorporate a raspberry pi into a home security network that will use facial recognition to determine authorized users and unlock doors or turn on lights automatically.

In the brainstorming process, we talked about different methods of wirelessly securing the home. We looked at biometric scanners, motors, battery requirements and methods of ensuring secure communication across a wireless home network. Existing technologies include phone apps, fingerprint scanners, and entire home security systems. One of the challenges to designing this technology is weighing security with convenience. More opening methods in the electronic mechanism provide more opportunities for a potential intruder to find a bypass for the security system. Existing electronic doors tend to be run on battery power with no way to recharge the door system. We could include a kinetic charging system that uses the motion of the door to help recharge the lock. Another option could include an inductive charging system built into the existing door frame so the user does not have to worry about batteries at all. Integration with the doorbell electrical line will provide the system with a consistent 24 volt AC supply. This would also include an expansion for incorporating the doorbell into the system. All of these options need to be visible and available through a smartphone app that is user friendly and accessible.

By allowing connectivity to the amazon Alexa or google smart home, our original design network will also have a lot of room for expansion to incorporate conventional home automation equipment such as smart outlets and lights. Users of our product should feel safer and more comfortable with the ease and convenience of always having access to their home, while having the peace of mind that their home is secure while they are away.