Challenges:

* Complicated hardware setup, not elderly and disable user friendly
* Signal not strong in certain areas of the house -> Wi-Fi signal boosters in the house.
* Privacy & Security: data breach (smart security, smart lock sending data to outside server sometimes with no encryption) -> all important data (incl. camera footage) are stored in the local NAS.
* False motion sensor detection (Motion detecting sensors have problems in differentiating movement of humans/intruders and non-human activity, eg. moving pets within a house) -> <Size Recognition>
* Can lock out of the house and cannot get in: back up physical key in case of system failure.
* Once the wifi password is changed, all the devices needed password change

Requirements:

* Device Manager:
* Smart TV: have port for ethernet but also can connect to Wi-Fi.
* Air conditioner: with micro-dust filter / air purifier
* Thermostats: works with air conditioner/air purifier, warns user about problematic weather (temperature too high/low, too much pollution in the air etc), and turns air conditioner/air purifier on when necessary.
* Smoke/Fire Alarm: automatically shutdown all electrical systems and calls fire fighters in case of fire.
* NAS: no internet access, only local ethernet.
* Smart lightning: controlled via voice and via app. Can set up timer.
* Smart lighting in hallway uses motion detector.
* Electronic appliances: can control with the app. Timer function.
* Smart toilets
* Smart water heater: in case of electric water heater: can turn on with the app, then automatically turn off before use for safety reasons.
* Washing machine: can view process with the app.
* Security camera: Automatically warns user if there’s any person detected (using motion sensor + camera). Camera footage is saved directly in the local NAS and automatically delete after 30 days.
* Smart lock: lock can be controlled by authorized devices, and by authorized devices only.
* smart doorbell (with camera): can view through the app.

Innovations/improvements:

* Vacuum bot: can load a layout file of the room to setup the most efficient cleaning route.
* Augmented reality: Can see all the information with class.
* Security camera: Can detect different shapes to recognise humans or animals for more accurate warning. Can setup in different modes for ease of use (i.e. no one enters at certain times or only people with phones connected to the app can enter the house without warning being tripped.)
* Smart temperature regulation: Regulate temperatures based on thermostats. Include a floor heating.
* Emergency mode: When natural disasters hits. Cuts all electricity and gas and unlock the doors. When there is an intruder, call authorities.