Smart Home

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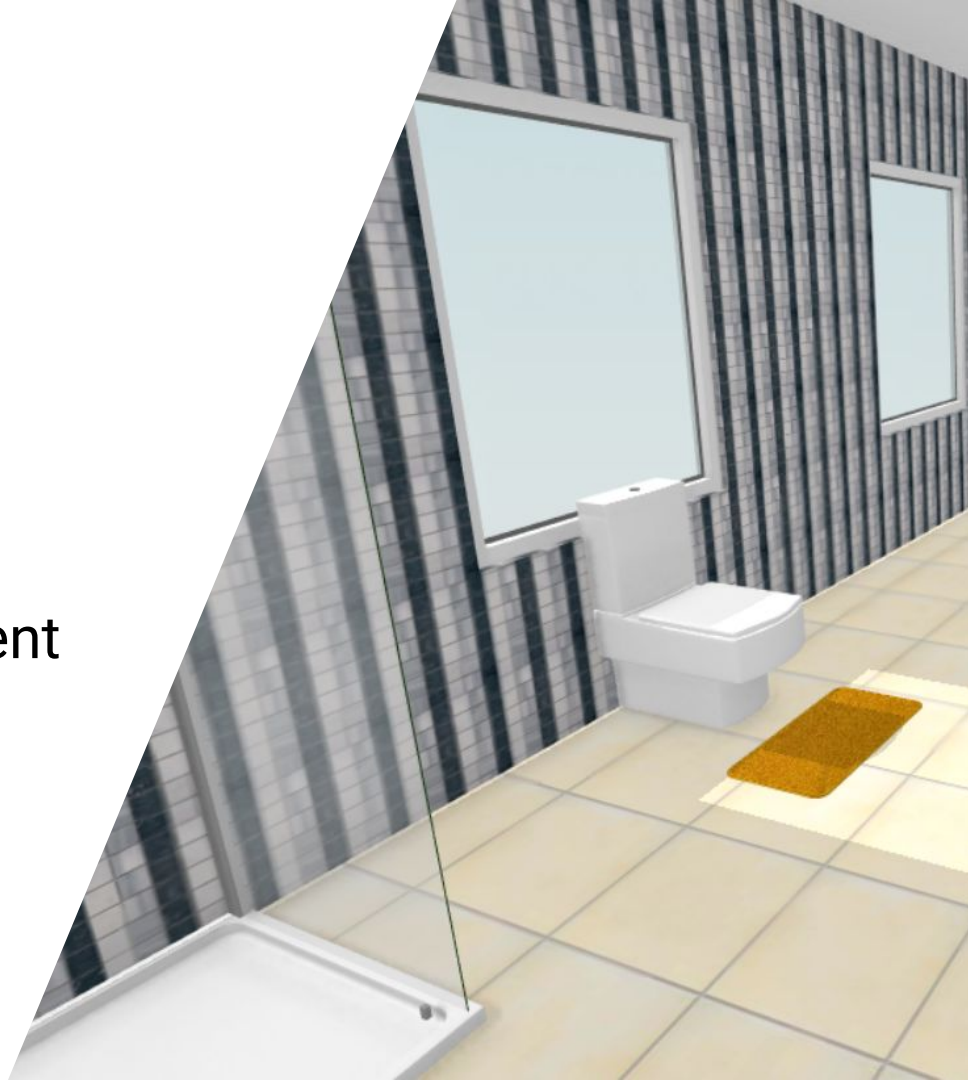
Outline

- Overview
- Current challenges
- Innovation and improvement
- Class diagram
- Layout of the house



Overview and systems included in the setup

- Device Manager: control communication of
- 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 firefighters in case of fire.
- Network-attached storage (NAS)/Home server: Local storage using intranet.
- 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.

Overview and systems included in the setup

- Smart toilet
- 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 only by authorized devices.
- Smart doorbell (with camera): can view through the app.

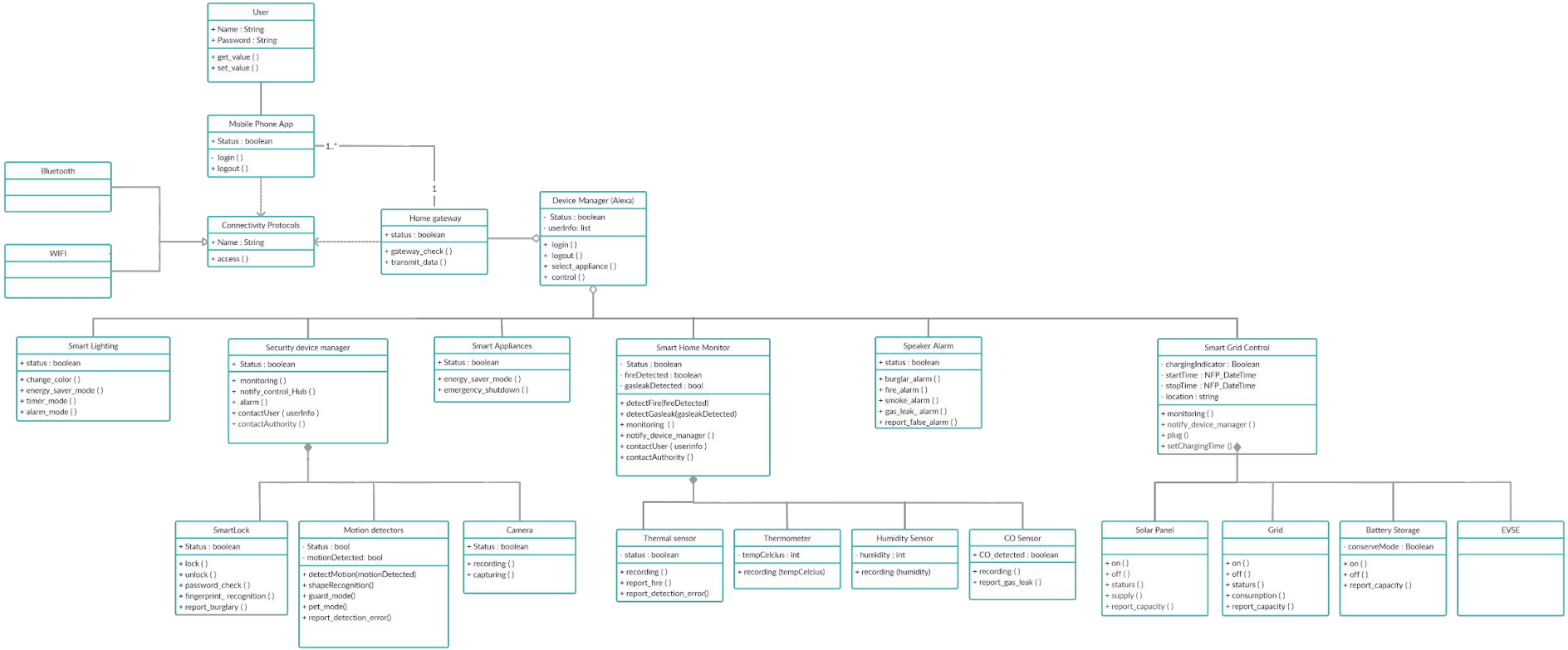
Current Challenges

- Complicated hardware setup
- Limitation of Wi-Fi network range
- Privacy & Security: concern over data breach
- False motion sensor detection
- Once the wifi password is changed, all the devices needed password change

Innovation and improvement

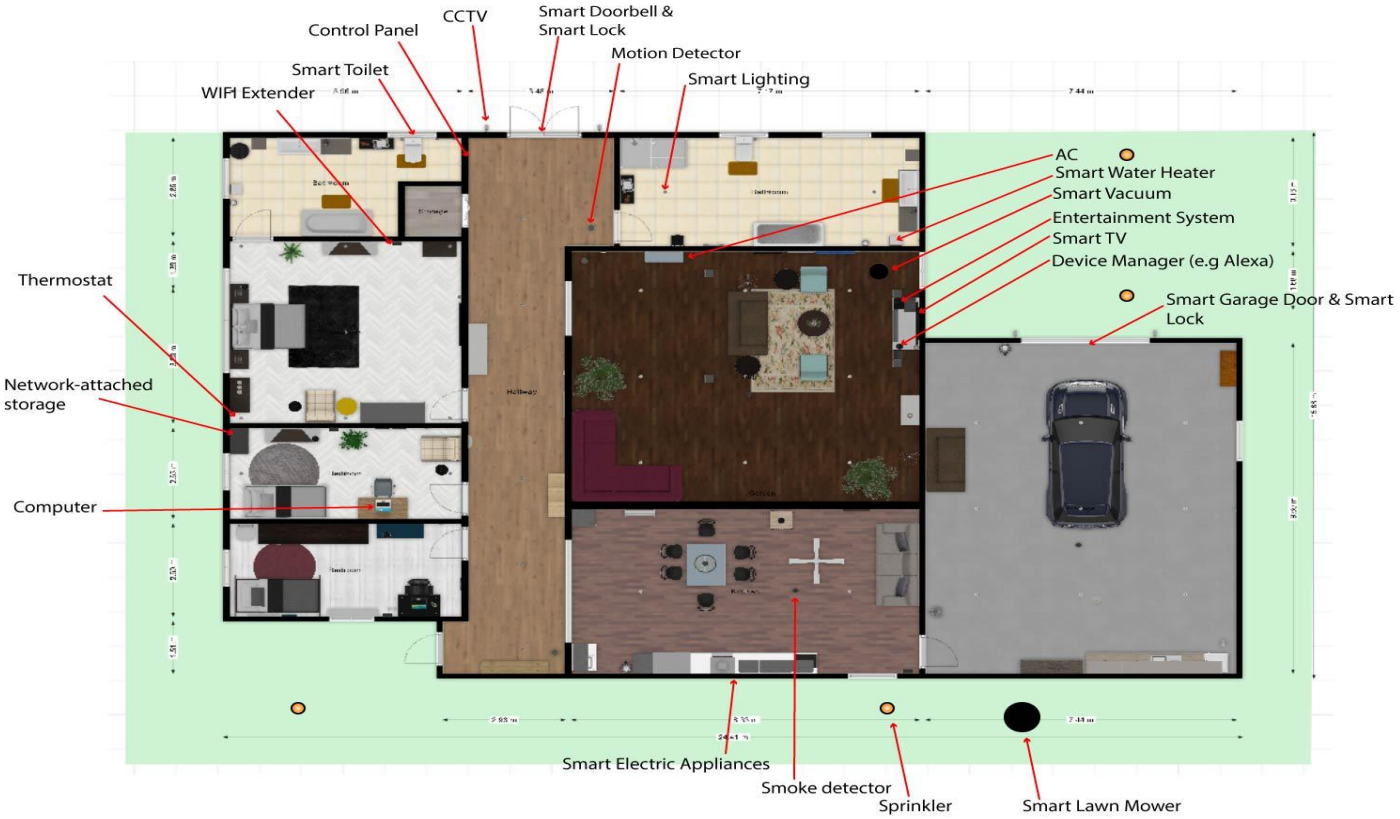
- Vacuum bot: Can load a layout file of the room to setup the most efficient cleaning route.
- Augmented reality: Can see all the information with class. In-person assistant.
- Security camera: Can detect different shapes to recognise humans or animals for more accurate warning. Can setup in different 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 and locks all of the doors.

Class Diagram



https://app.creately.com/diagram/2Txu2kvcwhV/edit

Layout of the house



Classifications

Smart Appliances (for Kitchen, for Bathroom, etc)
- Kitchen : electronics appliances
- Bathroom : electronics appliances
- Bedroom : electronics appliances

Smart Lightings:
- motion detecting sensors, led lights,

Smart Security:
- Surveillance camera, motion detecting sensors, smart lock, speaker/alarm

Smart Energy:
- Solar panel controller,TV,

Smart Monitor (smoke detecting, Thermostat, Firealarm):
- Thermostats, Smoke alarms, Speakers, TV,

Control Hub (The Total Device Manager) :
- sub device manager

House layout and design link: https://tinyurl.com/yydtcatq

3D Images of the house

Thank you for listening