

### Window Security System

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#### Introduction: Creating a Simple Security System



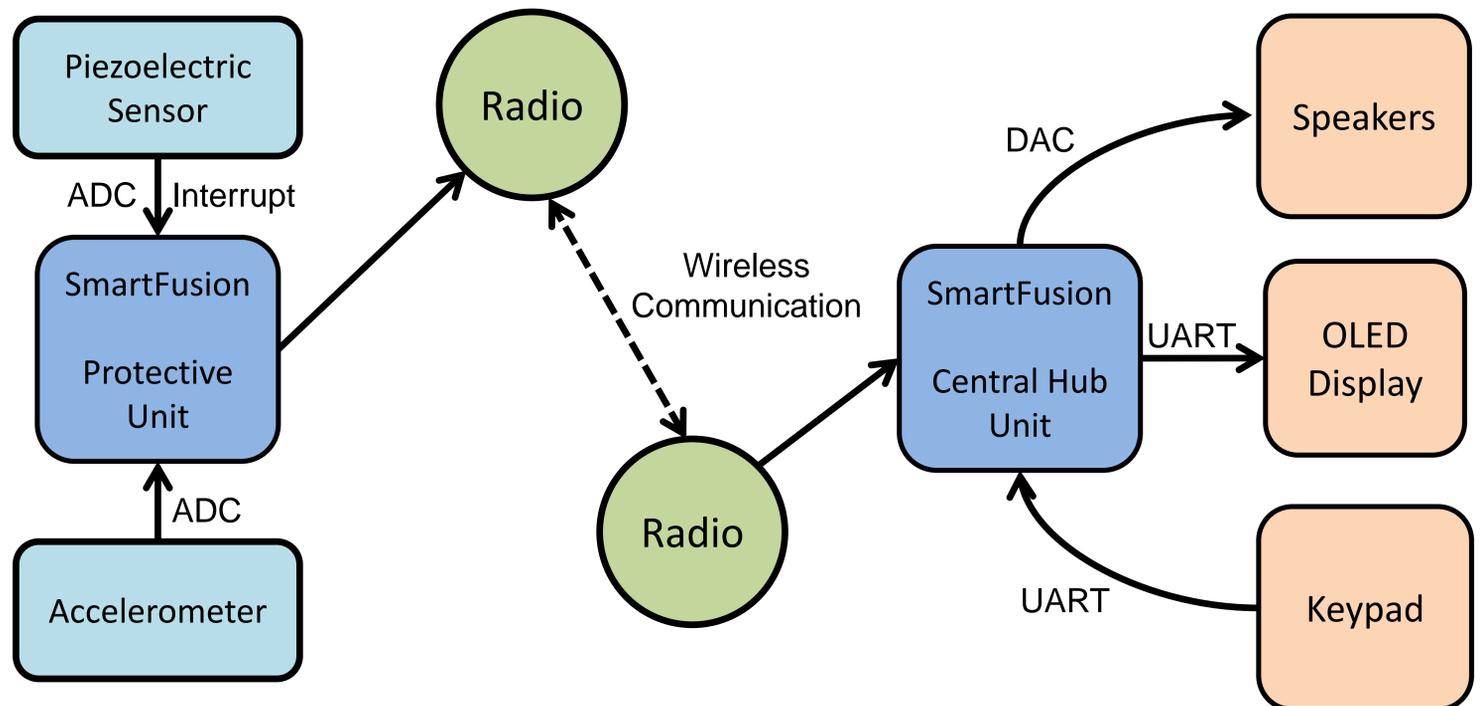
A variety of security systems exist today; many of them require a monthly service fee and hefty installation fees. Is it possible to create a simple yet effective system that is also affordable?

#### Problem Description: Build a Simple and Effective Home Security System

- System must be able to detect forced entry from multiple entry points throughout a home
- Central unit must be user friendly but also protect unauthorized users from disabling the alarm
- Protective units should only consume significant power when an intrusion is detected

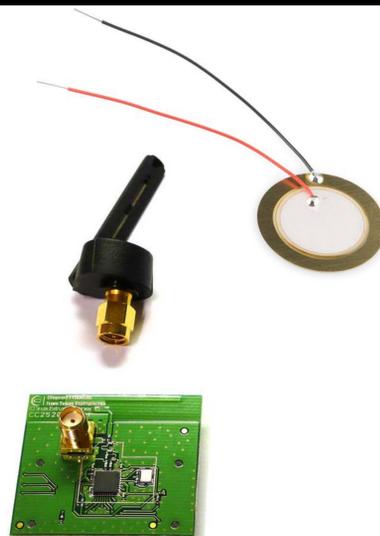
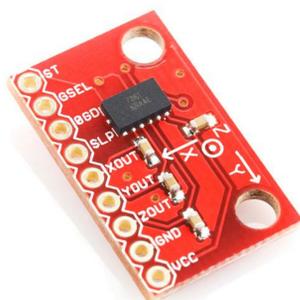
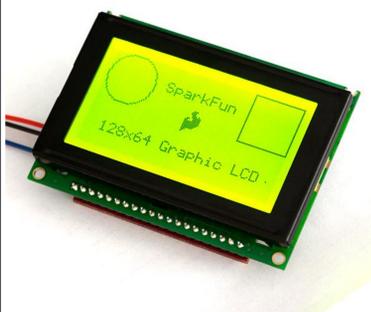
#### Proposed Solution: Central Hub Unit with Multiple Protective Units

The protective units have a piezoelectric microphone that monitors an entry point of the home for excessive vibrations. Upon detecting vibrations, another sensor is woken to detect forced entry. In the case of a window unit, this alternate sensor is an accelerometer that detects if the window is being opened after being shattered.



#### Communication & Sensors

- UART communication
- Analog to Digital Conversion
- Wireless communication



#### Conclusion

Through the usage of wireless communication, two units are able to interact with one another to protect a window or other entry point from criminals. Detection of a forced entry event is done using a mixture of vibration and acceleration detection. Multiple sensing units can be added for a full home security solution.