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An Overview of Home Automation

(a condensed version of a longer APCUG
presentation by Bill James, Computer Club of
Oklahoma City)

Home Automation

- **The automatic and electronic control of remote-enabled household devices – lights, appliances, thermostats, sensors, etc.**
- **Typically Requires: Internet, WiFi Router, smartphone/tablet as user interface, enabled devices**
- **Optional: voice operated controller, like Alexa or Google Home**

Reasons for Home Automation

- **Convenience** – avoid doing daily actions manually; allow controlling devices with irregular but frequent changes remotely
- **Security** – give house with few occupants a more lived-in appearance
- **Efficiency** – let automation turn off lights when no longer needed

Device Approach

- **Doesn't have to involve Internet**
- **Direct control of device from smart device app or special controller via RF, Wi-Fi, Bluetooth, IR, etc.**
- **Can be a mix of different protocols – Can quickly get confusing if many remote controllers or apps required for many different devices.**

Intertek

- **Simple RF controlled device – 3 (I, II, III) controlled by one remote**

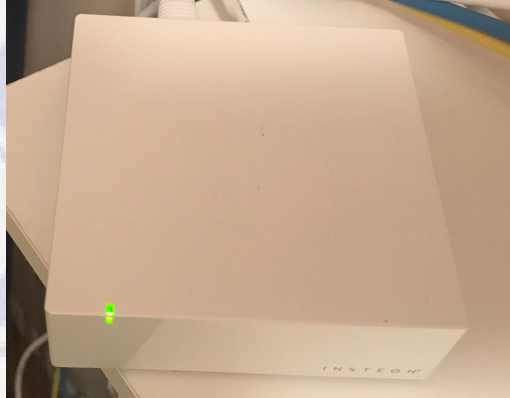


System Approach

- **A central controller or "hub" talks to the devices – you use a remote app or controlling device to talk to the hub rather than directly to the devices – typically "hub" is connected to WiFi and may be accessible via Internet**
 - centralized automation and scheduling
 - IF This Then That (IFTTT) actions
 - Some hubs able to support multiple device protocols – strong incentive to choose new devices that are compatible
 - Protocols: Zigbee, Z-Wave, Insteon, WeMo, Bluetooth, Audio iOS, X10

Insteon Hub

- **Can control & schedule remote plug-in plugs, enabled switches, outlets; monitor sensors. Using both RF and power signaling, control via LAN and smart devices.**



Insteon Device

- **Ungrounded Dimming Light Controller**



Implementation Strategies

- **Professional Installation**
- **Do It Yourself**



Professional Installation

- **Choices: ADT, Vivent Smart Home, Cox Home**
- **Associated Costs**
 - Installation, Equipment, and activation charges
 - Monthly Fees

Do It Yourself (DIY)

- **Can start small and automate most useful things first**
- **Obviously requires more research and planning on your part to avoid needing multiple apps or devices that are hard to set up**
- **Standalone devices may work if only a few devices needed, but may need to replace with system approach as number of devices grows**
- **Associated Costs**
 - Typically only the initial cost of hardware

Types of Devices

- **Lighting Devices**
- **Thermostats**
- **Doorbells**
- **Door locks**
- **Smart plugs**
- **Household appliances**
- **Controlled plugs**
- **Controlled switches**
- **Leak monitors**

Types of Protocols

- **X10 Networking – since 1978 – many devices – primarily uses power-line signaling**
- **Insteon – uses combination of power-line & RF signaling with all insteon devices also able to relay signals (more reliable)**
- **NOTE: Devices using power-line signaling should NOT be powered from UPS battery backup outlets.**

Hubs



Types of hubs or controllers

- Hubs (controlling multiple devices)
 - Samsung Smart Things or
 - Logitech Harmony
- Supplied controller (i.e. Hue Hub)
- Speakers (Voice Recognition)
 - Google Home or
 - Amazon Echo, Dot or
- Hybrid – Amazon Echo Plus
- Cost - \$50 to \$200

Reference

- <https://www.youtube.com/watch?v=EzP7iTtYY1M>
"Home Automation" by Bill James (47 min), VTC 8
Feb 2020, APCUG Advisor Region 8, Computer
Club of OKC.