

# Environmental Control Through Consumer Products for People Living With ALS



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# Objectives



- Understand the role of the Input Device, Control Unit and Appliance in Environmental Control
- Identify 3 consumer products that can be used as the Input Device
- Describe the difference between individual smart devices and device hubs

# Goal



- Educate health professionals on consumer-based environmental control technology and how it can be used by individuals with ALS
- Everyone will use this information!

# Disclosures



- Nothing to disclose
- Brands/Brand names will be used for examples throughout the presentation, it is not possible to name all of the products available

# Smart Home

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- A home that uses internet-connected devices to enable management of appliances and systems
- Requires electricity, internet and WiFi

# Components



- Input Device
  - Determines how you control the appliance
- Control Unit
  - Central processing unit
  - Receives the input (signal) and translates the information into an output (command)
- Appliance
  - Receives the output signal and performs the desired command, such as turn on/off

# How Do You Make a Smart Home?

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- Commercially Installed Systems
- Integration with Durable Medical Equipment (DME)/Assistive Technology (AT)
- Do It Yourself (DIY)
- Consumer Products

# Commercially Installed Systems



- Gold Standard for Electronic Aids for Daily Living (EADLs)
- Evaluation to determine individual's capabilities and access
- Designed, engineered, manufactured and installed by trained professionals
  - Entire home or residence
  - Customizable
  - Able to keep up with changes in technology
  - Technical support



# Commercially Installed Systems



- Promixis Environment Automation Controller (PEAC) [www.peacautomation.com](http://www.peacautomation.com)
  - ALS Residence Initiative [www.alsri.org](http://www.alsri.org)
    - Steve Saling and Dapper McDonald ALS Residences at the Leonard Florence Center for Living
  - The Team Gleason House for Innovative Living in St. Margaret's at Mercy
- SAJE [www.sajetech.com](http://www.sajetech.com)
- Quartet [www.qtiusa.com](http://www.qtiusa.com)
- Control 4 [www.control4.com](http://www.control4.com)

# Integrated Assistive Technology



- Augmentative and Alternative Communication (AAC) Devices/Speech Generating Devices (SGDs)
  - TobiiDynavox [www.tobii.com](http://www.tobii.com)
    - Infrared (IR) control



# Integrated Assistive Technology



- Power Wheelchairs

- Permobil <https://permobilus.com>
- Quantum <http://www.quantumrehab.com>
- Invacare <http://rehab.invacare.com>

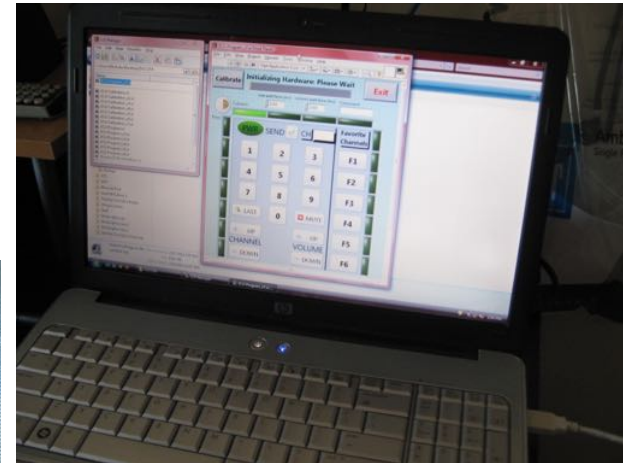
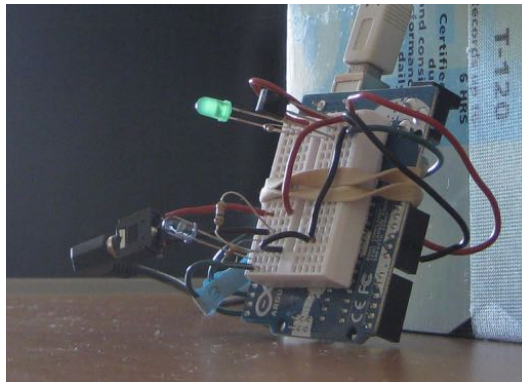
- Bluetooth
- Enhanced displays for IR control
- Add-on EADL devices



# Do It Yourself



- Retail
  - Initial smart home products were much more DIY
  - X10 –used electrical wires in the home
- Maker
  - Build homemade smart devices
  - Arduino/Genuino

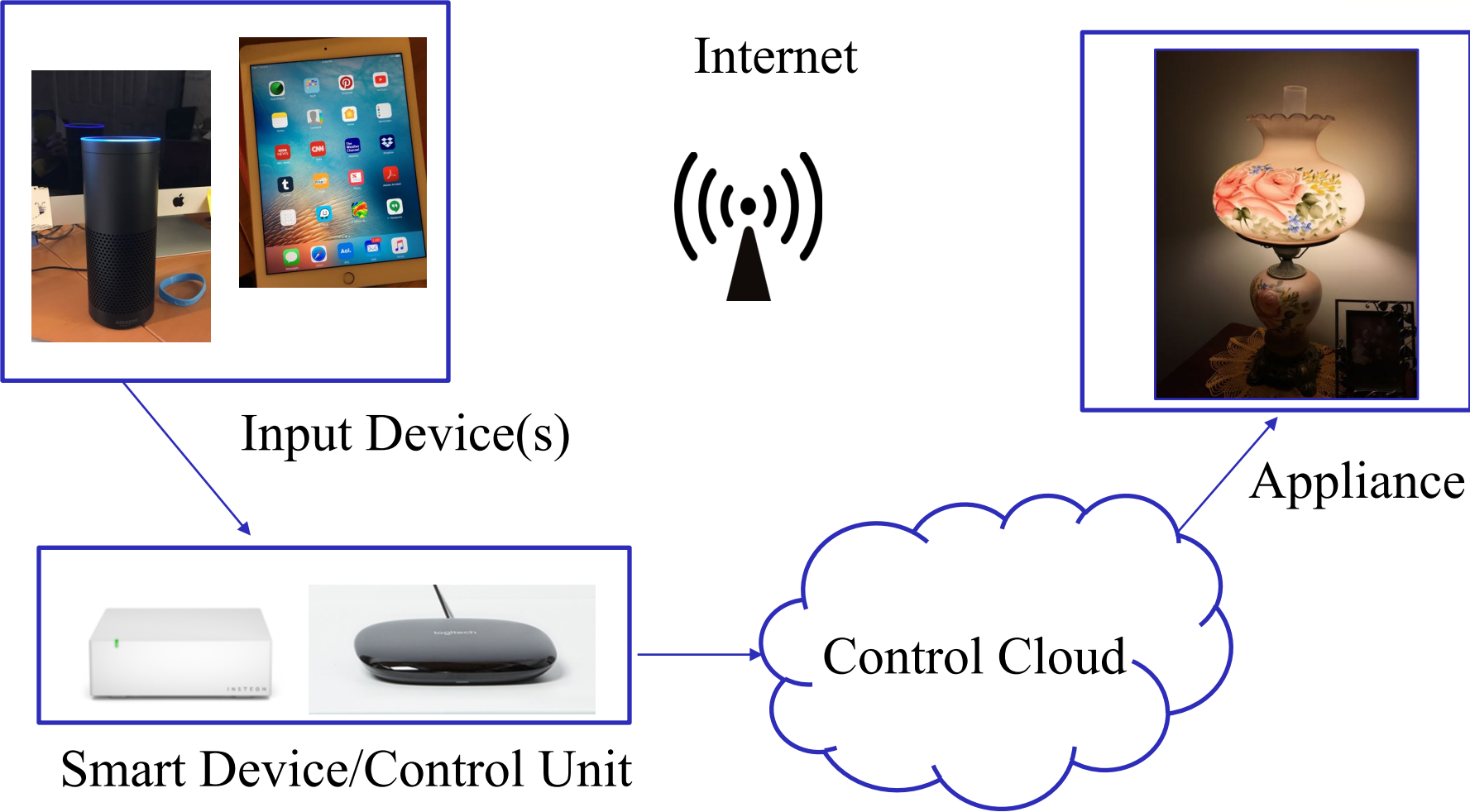


# Consumer Products



- Input Devices
  - Tablets/Smartphones
  - Smart Speakers/Home Assistants
- Control Unit
  - Individual Smart Device or Hub
- Appliance
  - Direct –Wifi enabled
  - Indirect- Outlet

# Consumer Products



# Tablets or Smartphones

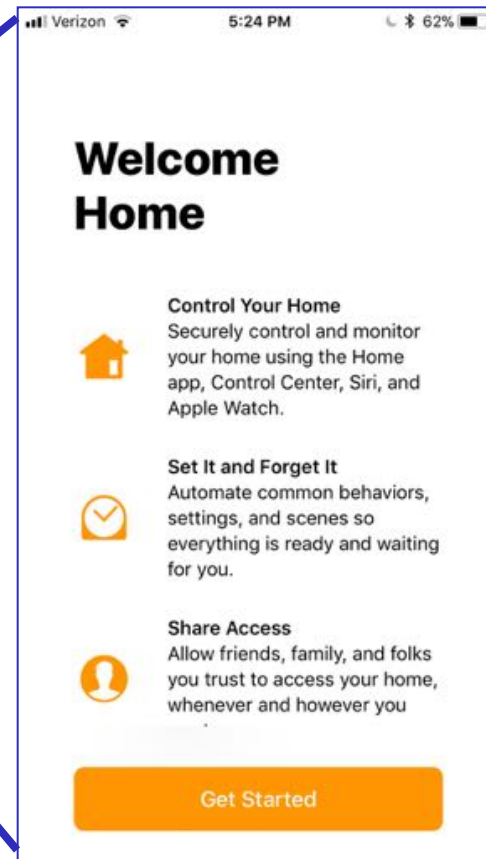
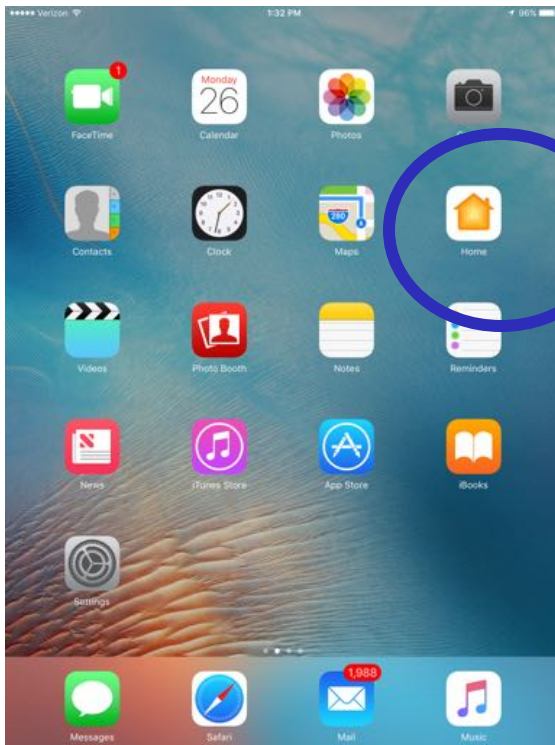


- Tablet or Smart phone will be the input device or controller
- Need
  - Smart Device or Hub
  - App
  - Appliance
- Input Device → Control Unit → Appliance

# iPhone/iPad Example

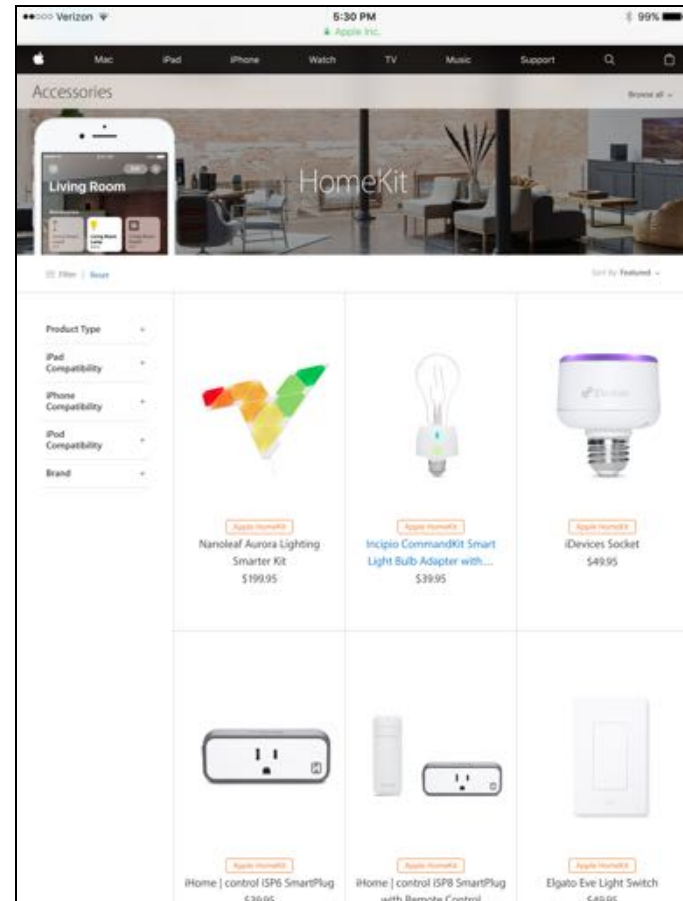
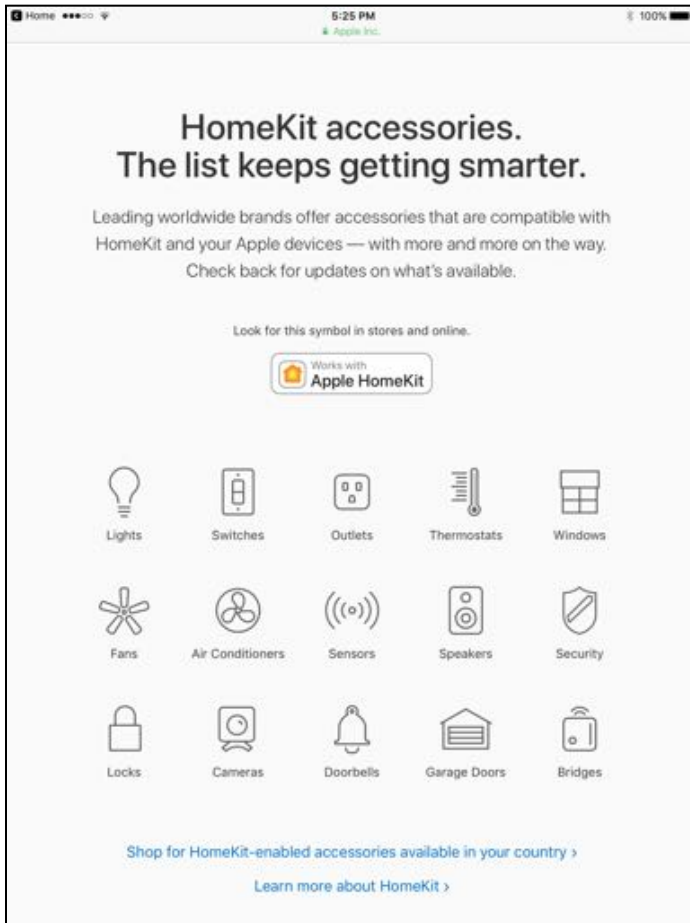


- Apple HomeKit App





# Apple HomeKit



What you can control

# Apple HomeKit



- Smart Plug



Insignia

- Purchase a device with that is compatible with Apple Home Kit
- Plug it in to an outlet
- Plug in the appliance you want to control

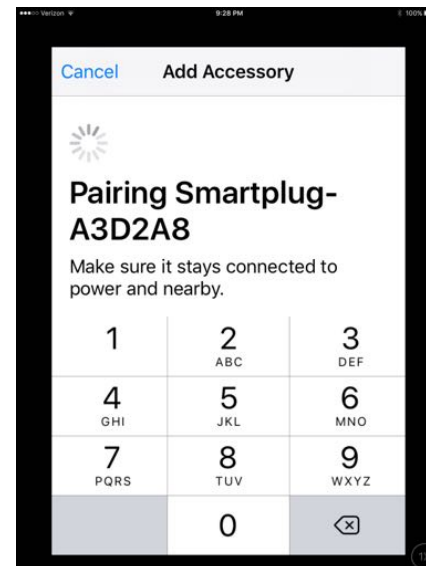
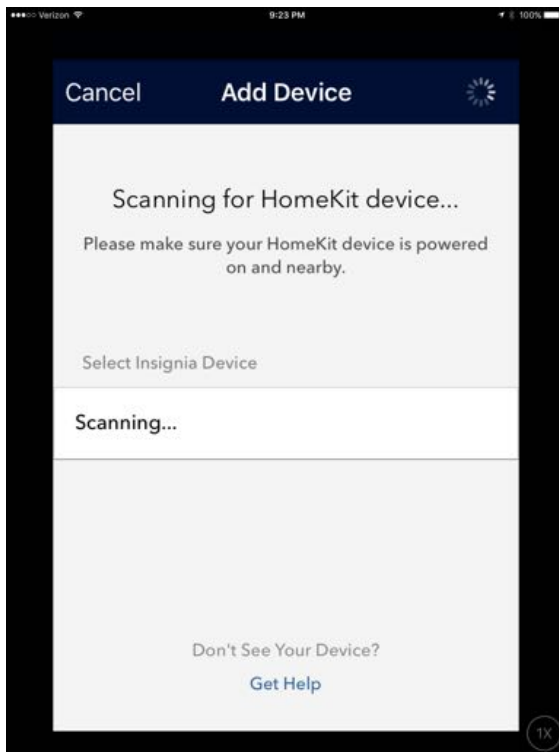


# Apple HomeKit



- Smart Plug continued

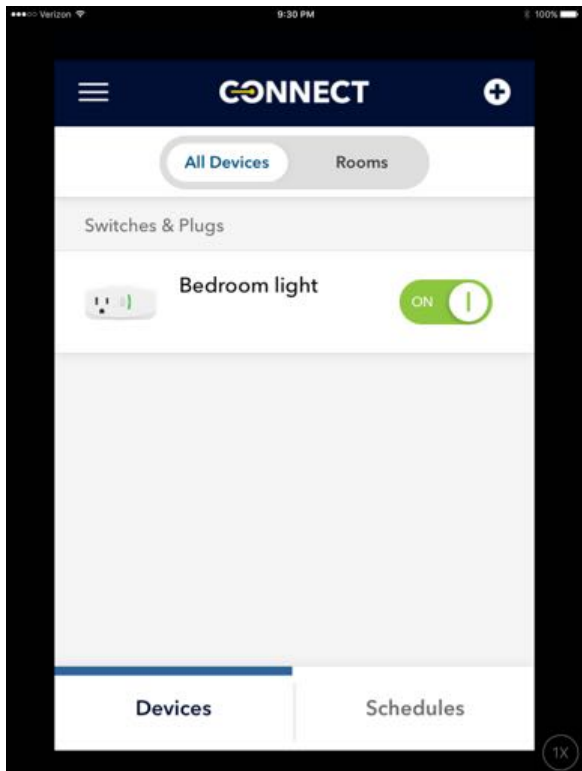
- Download App
- Register
- Pair with device



# Tablets or Smartphones



- iPhone and iPad turning a light on/off
- Voice Controlled (Siri)
- Accessible Switch



# Smart Speakers/Home Assistants



- Amazon Echo
  - Echo (\$100)
  - Dot (\$50)
  - Plus (\$150)
  - Spot (\$130)
  - Show (\$230)



Echo



Echo Dot



Echo Spot



Echo Show



Echo Plus

# Smart Speakers/Home Assistants



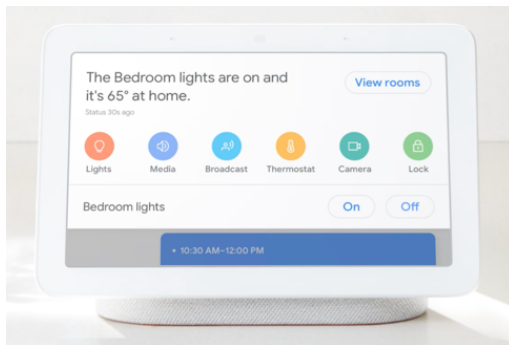
- Google Home
  - Home (\$129)
  - Home Mini (\$49)
  - Home Hub (\$149)
  - Home Max (\$399)



Google Home



Google Home Mini



Google Home Hub



Google Home Max

[https://store.google.com/us/category/connected\\_home](https://store.google.com/us/category/connected_home)

# Smart Speakers/Home Assistants



- Apple
  - HomePod (\$349)



Apple HomePod

<https://www.apple.com/homepod/>

# Smart Speakers/Home Assistants



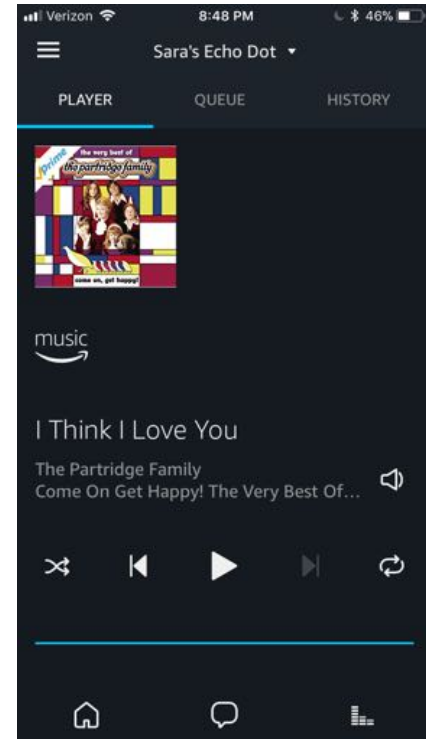
- Basic features
  - Built into smart speakers
  - First level of home automation
  - Ever changing
- Add Smart Devices
  - Increase ability to control environment
  - Makes it a Smart Home
  - Ever changing
  - Individual and Hubs



# Amazon Echo Example



- Basic features
  - Hands free speaker controlled with voice
  - Connects to **Alexa Voice Service**
    - Plays music
      - “Alexa, play country music”
    - Answers questions
      - “Alexa, how many inches in a meter?”
    - Provides information, news, scores, weather
      - “Alexa, what time do the Super Bowl Champion Philadelphia Eagles play Sunday?”
    - Make calls, send and receive messages



# Google Home Example

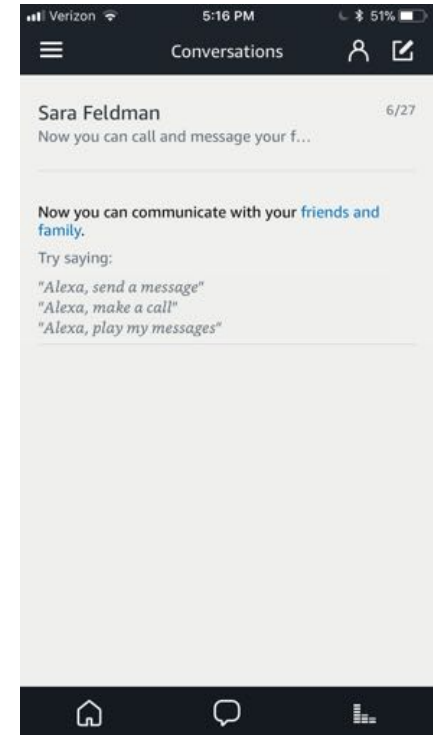


- Basic features
  - Hands free speaker controlled with voice
  - Connects to **Google Assistant**
    - Plays music
      - “OK Google, play country music”
    - Answers questions\*
      - “OK Google, what does the fox say?”
    - Provides information, news, scores, weather
      - “OK Google, what time do the Super Bowl Champion Philadelphia Eagles play Sunday?”
    - Make calls, send and receive messages

# Phone



- Amazon Echo
  - Calls numbers in your contact list
  - Echo Show does video calls
  - “Alexa, call...Hannah Banana”
- Google Home
  - Calls numbers in your contact list
  - “OK Google, call...Hannah Banana”
- Both can be set up for multiple users



# Add Individual Smart Devices

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- Outlets
  - Wemo Switch (\$40)
  - Insignia Smart Plug (\$25)
- Lights
  - On/off and dim
  - Philips Hue Lightbulbs (3 for \$150)
- Fans
  - Direct or switch
- Thermostats
- Doorbell
  - Ring (\$200)
- Smart Locks
  - August Home (\$150-\$250)
  - Schlage (\$200-\$300)
- Video/Security Cameras
  - Ring (\$200)
- Appliances

# Add Smart Device Hubs



- Hubs control multiple products
  - Samsung’s Smart Things Hub (\$100)
  - Wink 2 (\$99)
  - Logitech
    - Harmony Hub (\$100)
    - Logitech Harmony Elite (\$300)
  - Insteon
    - Hub (\$79)
    - HomeKit (\$149)
  - Nest (\$249)

# Device Hub



- Controls multiple products
  - Wink 2



# Individual Device Example



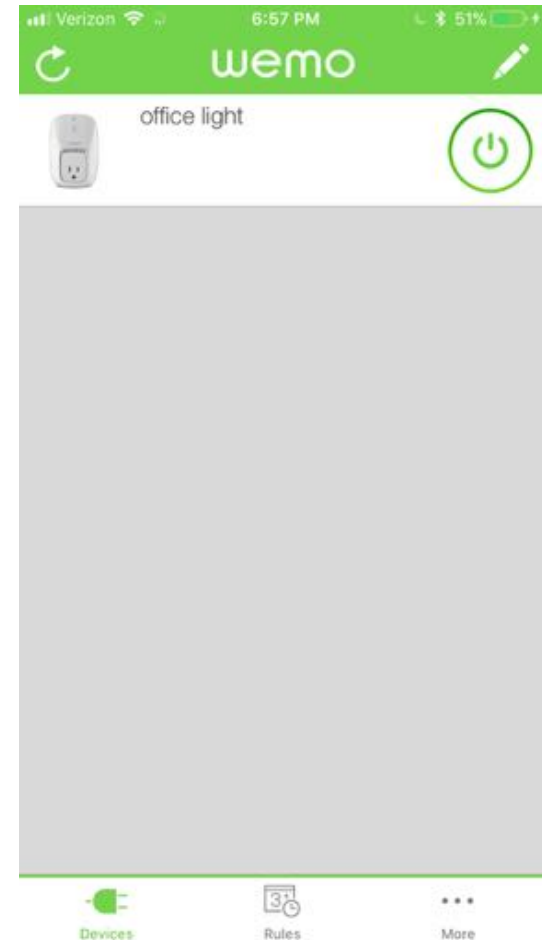
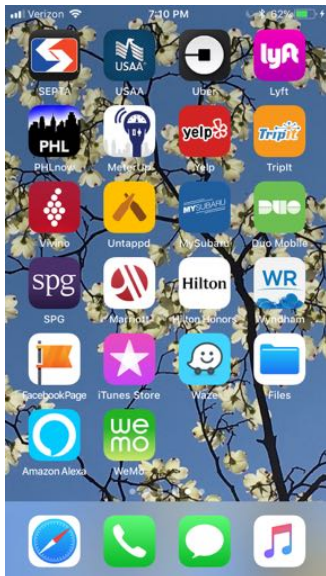
- Want to turn a light on and off
- Wemo Switch by Belkin
  - WiFi enabled plug
  - Controls on/off



# Individual Device Example



- Wemo Switch
  - Download App
  - Link device to Wifi and phone
  - Works via App

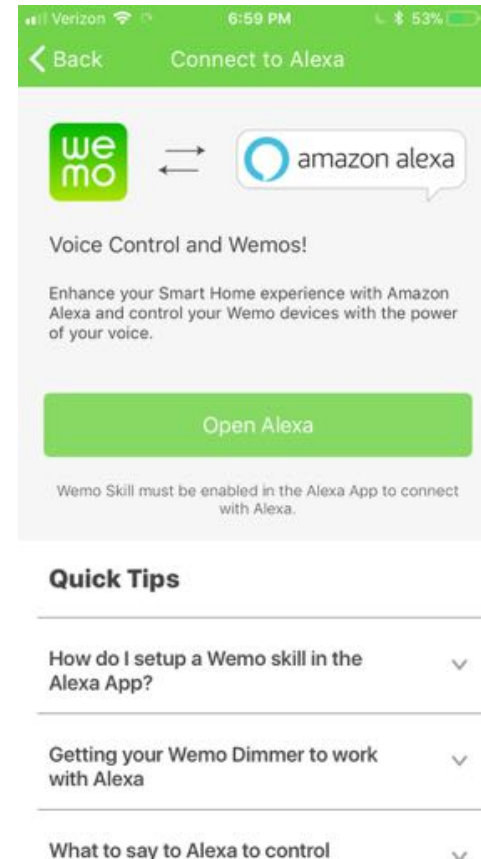
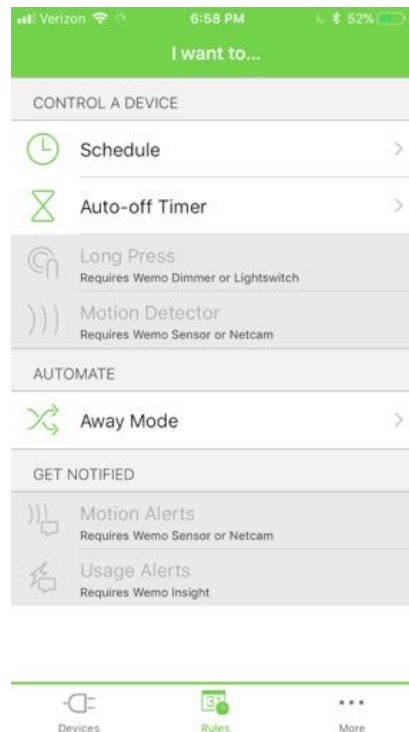




# Individual Device Example



- Wemo can also be automated and can connect to Amazon Echo



# Cameras and Monitoring

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- Place
  - Indoor
  - Outdoor
- Storage of Video
  - Cloud
  - Local
  - None

# Video Example

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- mydlink Video/Camera

# Television



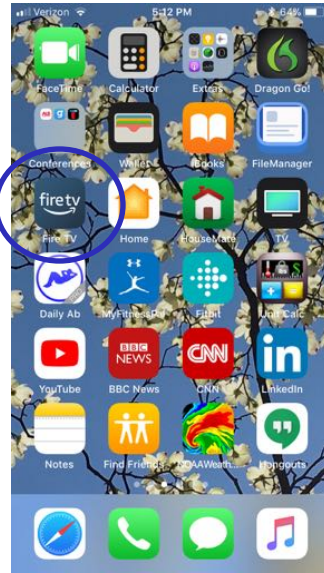
- Amazon Fire TV (\$40)
  - One-touch voice remote
  - Pair with Amazon Echo for voice
- Chromecast by Google (\$35)
  - Control with Apps on smartphone
  - Pair with Google Home to use voice
- Roku Streaming Stick (\$50)
  - Connects to smart phone
  - Voice remote with one-touch



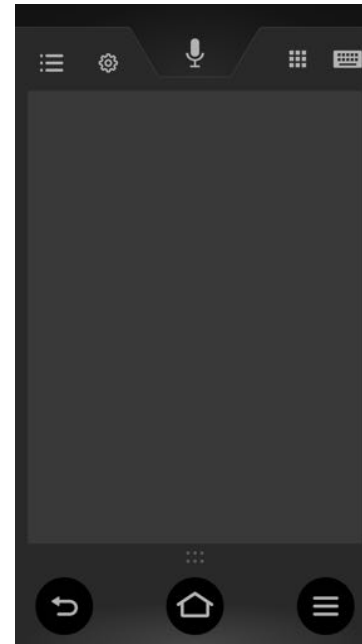
# Amazon Fire Stick with iPhone



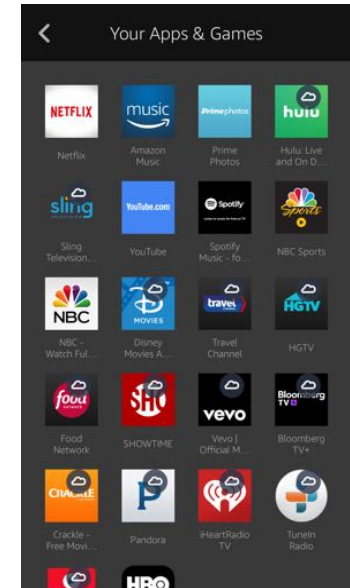
Fire Stick attached to TV



Fire TV App

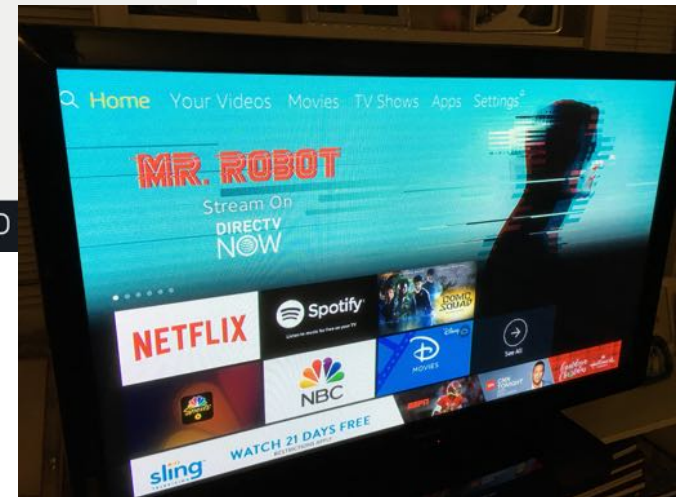
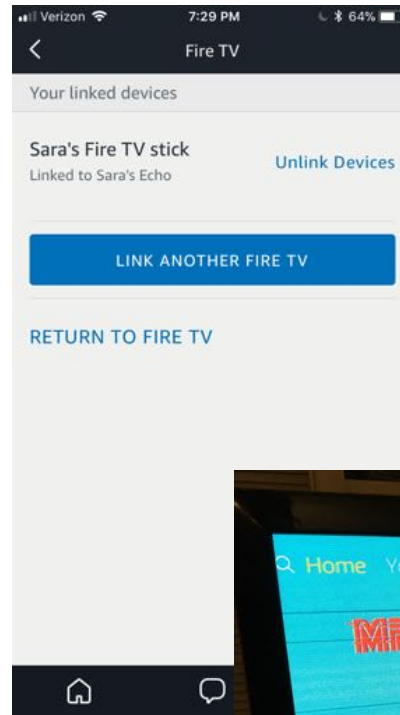
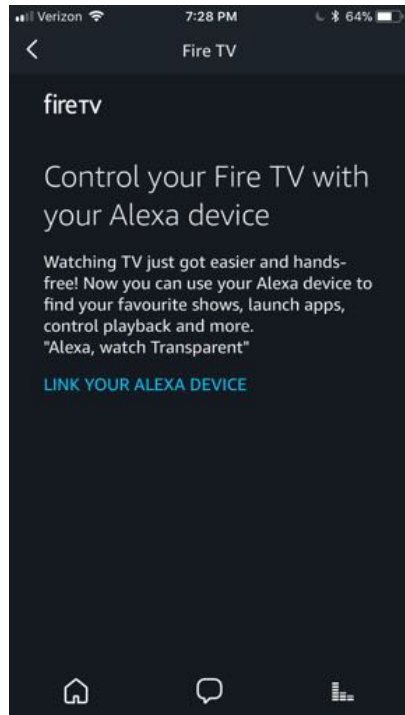
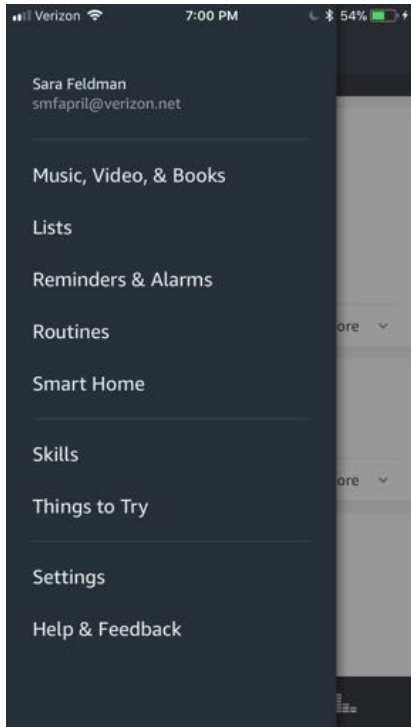


Remote on iPhone

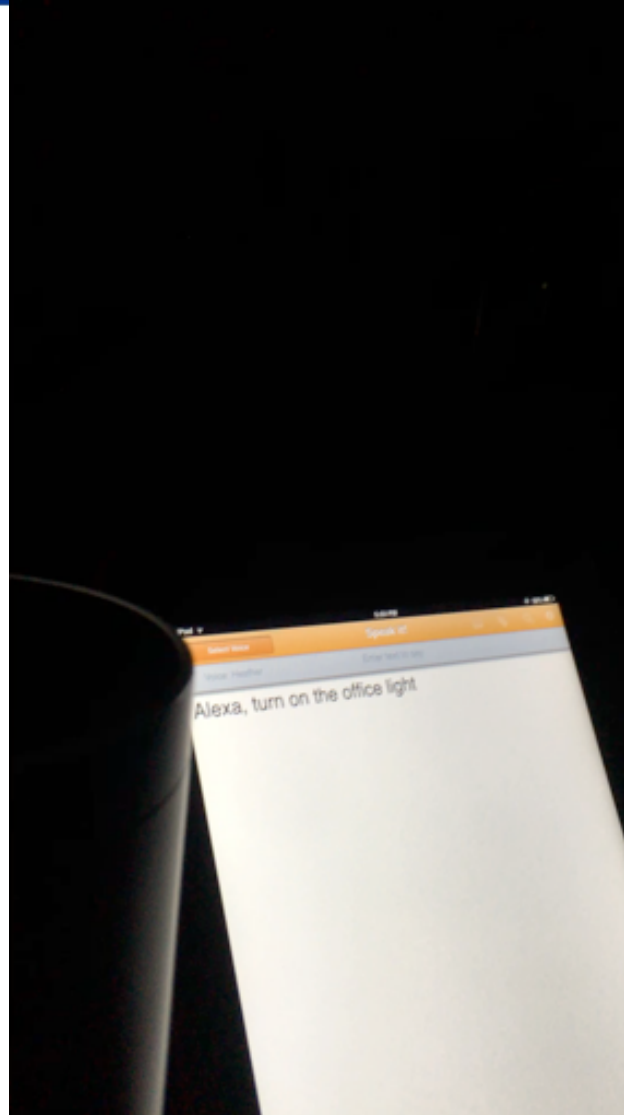


Available Apps/Options for TV

# Connecting Fire Stick to Echo



# Amazon Echo with text to speech



# Gaming Systems

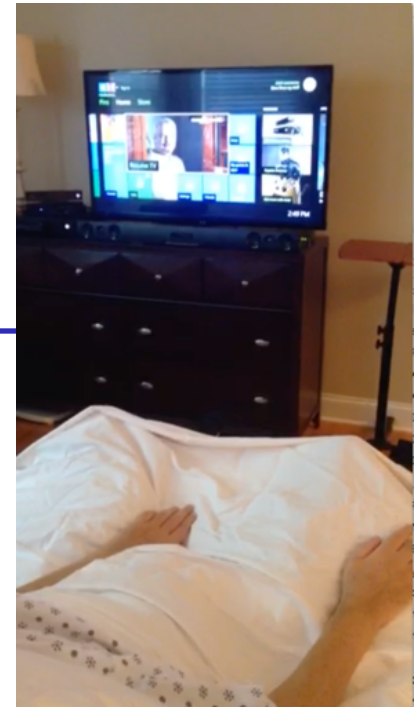


- Xbox One (Microsoft)
  - Voice Commands
    - Kinect “Xbox, on”
    - Cortana
  - Limited uses
    - Can’t interact with Apps or external devices
    - Options change with each version
    - Generally don’t recommend purchasing, but check into features if you already own one

## TV controls

- "Watch/go to TV."
- "Watch (channel name)."
- "Open/show OneGuide."
- "Volume up (number)."
- "Volume down (number)."
- "Mute."

**Note:** Some TV-specific commands require either the Xbox One S or Kinect's IR blaster to function.





# Cable System

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- Television
  - Alternate access options
  - Apps
- Security Systems

# Questions to Consider

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- What do I want to do?
- How will I access it?
- What do I already have?
- Will other people use it?
- How much tech support do I want/need?
- How much do I want to spend?

# Websites



- Jay Smith: Every 90 Minutes
  - [Every90minutes.org](http://Every90minutes.org)
  - Tech Guide
  - Video of Jay using his eyegaze device to control Alexa
- YouTube
  - Search for any device or term
- ALS Hope Foundation
  - Resources

# Acknowledgments



- Thank you to the individuals with ALS/MND who constantly challenge us
- Team at the MDA/ALS Center of Hope
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- ALS Hope Foundation/ Kevin O'Donnell Independent Living Initiative
- Christopher Reeve Quality of Life Grant

# Questions?



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