



# The Internet of Things (IoT)

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**Director of Assistive Technology**

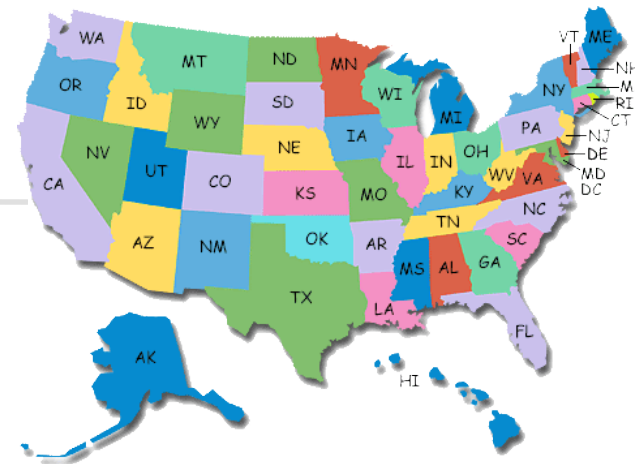
**Joshua Anderson, ATP**  
**Manager of Clinical Assistive**  
**Technology**



# The Assistive Technology Act

of 1988 as amended in 1994

TECHNOLOGY-RELATED ASSISTANCE FOR INDIVIDUALS WITH DISABILITIES ACT OF 1988 AS AMENDED IN 1994, US Public Laws 100-407 and 103-218.



There are 56 of these projects in the United States and US territories

## INDiana Assistive Technology Act (INDATA)

# AT Act Overall Goals

of 1988 as amended 1994

Spread the word!



Get AT in the hands of people who need it.

## INDiana Assistive Technology Act (INDATA)

# Education and Outreach Activities

## Information & Referral

888-466-1314

[tech@eastersealscrossroads.org](mailto:tech@eastersealscrossroads.org)



## AT Hour

One hour (or so) talks with hands-on AT experiences



## Guest Lectures

Lecture at several of Indiana's Colleges and Universities



## Full Day Training

4-5 times/year with streaming



## Social Media

Blog, YouTube, Facebook, Twitter, Pinterest



## Podcasts

Assistive Technology Update  
Accessibility Minute  
ATFAQ

# Spreading the Word

# Access & Acquisition Activities



## Device Demo

To your door  
State wide



## Device Loan

30 day loans  
2500+ items



## Equip Reuse

Donated  
computers given  
away state wide



## AFP

Low interest,  
extended term  
loans for AT

# Getting AT into People's Hands



## **Started in 1979**

Blind Services, Rehab  
Engineering and  
Workplace  
Accommodation Grants  
through Vocational  
Rehabilitation



## **Geography**

Statewide services  
- All 92 counties in  
Indiana

## **Who do we serve?**

All inclusive  
- Physical impairments  
- Cognitive Impairments  
- Sensory impairments  
- Developmental Disabilities

## **Ages**

All Ages  
- Mostly adults

## **Qualifications and Experience**

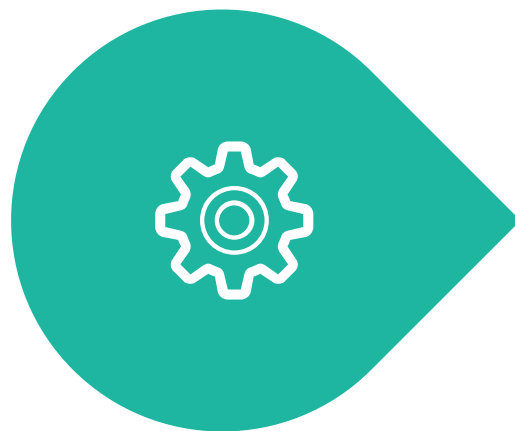
RESNA Certified (ATP)  
CATIS Certified  
The Back School Certified  
(CEAS)  
Certified Autism Specialist  
(CAS)  
CARF Accredited  
Comprehensive Service  
Offering

# Clinical Assistive Technology

# Clinical Services

How we do those things we do

## Evaluation



**Comprehensive  
evaluations to  
access a  
consumers needs.**

## Training



**One on one training  
to help individuals  
achieve their goals  
and increase  
independence.**

## Support



**24 - hour  
technical  
support line**

## All Things AT

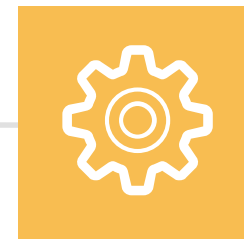


**Ergonomics,  
Communication,  
Computer Access,  
You Name It!**

# Clinical Assistive Technology

# What is Assistive Technology

**Assistive Technology is an umbrella term that includes assistive, adaptive, and rehabilitative devices for people with disabilities and also includes the process used in selecting, locating and using them.  
(WIKI)**



**Assistive technology promotes greater independence by enabling people to perform tasks that they were formerly unable to accomplish, or had great difficulty accomplishing, by providing enhancements to, or changing methods of interacting with, the technology needed to accomplish such tasks.  
(WIKI)**



For a person without a disability, technology makes life easier.



For a person with a disability it can make things possible.

# Easier or Possible

# Internet of Things (IoT)

**The inter-networking of physical devices, vehicles, buildings, and other items embedded with electronics, software, sensors, actuators and network connectivity which enable these objects to collect and exchange data.**



# Internet of Things (IoT) - continued



**Experts estimate the IoT will consist of about 30 billion objects by 2020.**

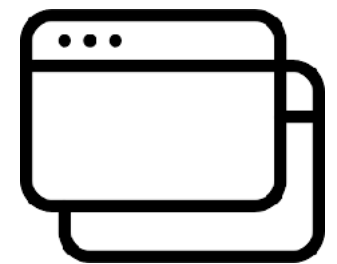
# Internet of Things - continued

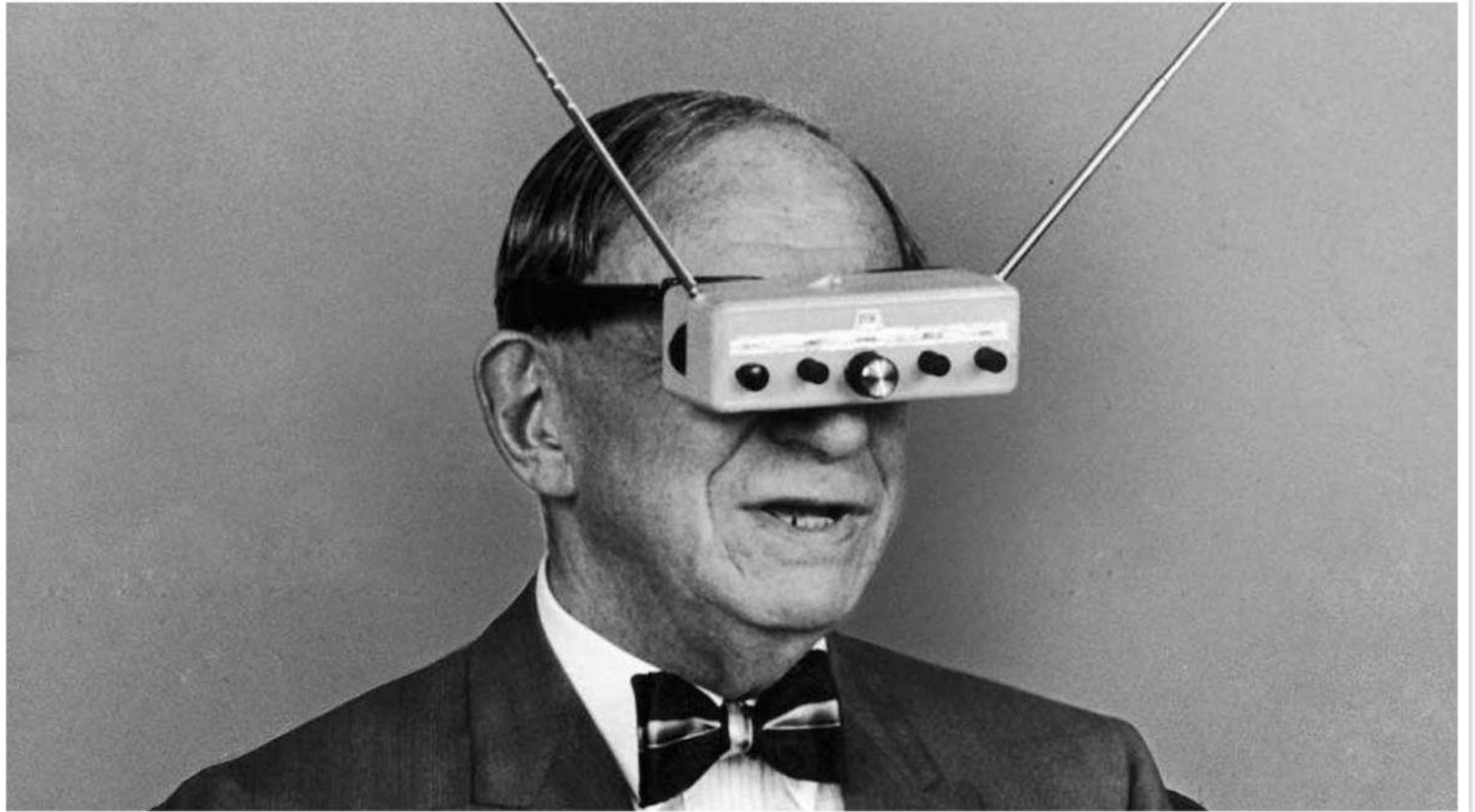
**Wearables**

**Smart Devices**

**Smart Homes**

**Apps, Apps,  
Apps**





# Wearables



# Smart Watches



**Samsung Gear S2**

**Apple Watch**



# Wearables



# Smart Watches



**Watches that connect to a cell phone via bluetooth and allow for calls, texts, emails, calendar appointments, health apps and other informant to be displayed on the user's wrist.**

**Feature haptic feed back, GPS, heart rate monitors and accelerometer. Many different shapes and sizes to chose from. Newest Apple Watch does not require connection to a phone.**



## Wearables

# Smart Watches - Fitness



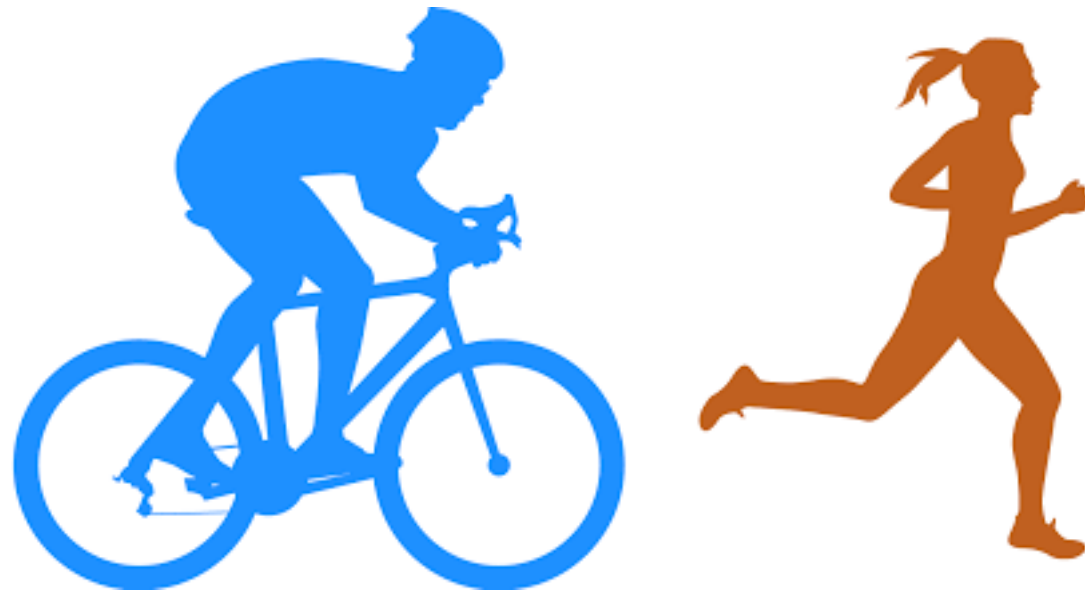
**Samsung Fit 2**

**Garmin Vivofit 2**



# Wearables

# Smart Watches - Fitness



**Much like other smart watches but more geared towards fitness and exercise.**

**Feature haptic feed back, GPS, heart rate monitors and accelerometer like other smart watches but may not allow as many apps or features. Can track sleep, food, activity, water, caffeine, etc.**



# Wearables

# Lechal Hepatic Footwear

[www.lechal.com](http://www.lechal.com)



**GPS guided footwear that allows you to know where you are going without the need to look at your phone.**

**Comes as insoles, buckles and pods and connects via Bluetooth. Items can hold charge for 15 days and work offline.**



## Wearables



# Sensoria Fitness Smart Socks

[www.sensoriafitness.com](http://www.sensoriafitness.com)

**Sensoria Smart Socks pair with a bluetooth anklet and smart phone to track step counting, speed, calories, altitude and distance.**



**Device can also track cadence and foot landing techniques as a user walks or runs to improve running style and minimize injuries. Includes virtual coach via smart phone app.**

## Wearables

# Other Wearables

## Blind and Low Vision

- OrCam
- ESight
- Jordy



## Cognitive Impairments

- Pressure Vests
- Watchminder



Too Many to Name and More  
Coming Every Day



# Wearables





# Smart Devices

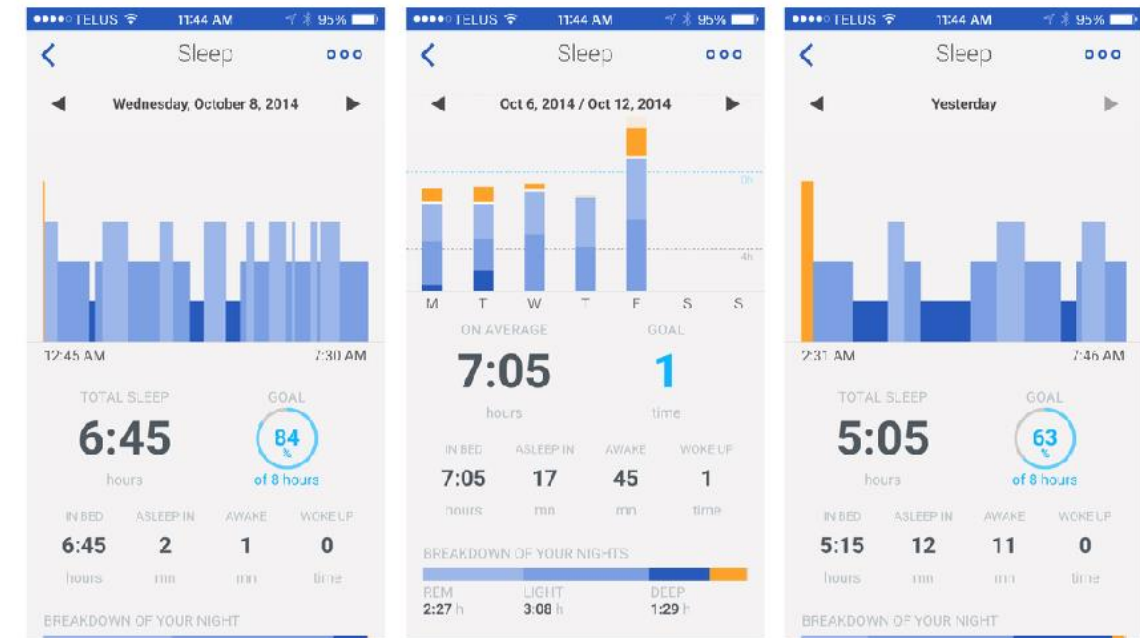
# Withings Aura Total Sleep System

[www.health.nokia.com](http://www.health.nokia.com)



**Lights and music change to assist falling asleep and waking up at the perfect time in the sleep cycle.**

**Use the iOS app to track how well you are sleeping for improved rest and better all around sleep.**



## Smart Devices

# Kardia Mobile

[www.store.alivacor.com](http://www.store.alivacor.com)



**Kardia Mobile can monitor heart rate and rhythm and email the results to the user or their doctor. FDA approved.**



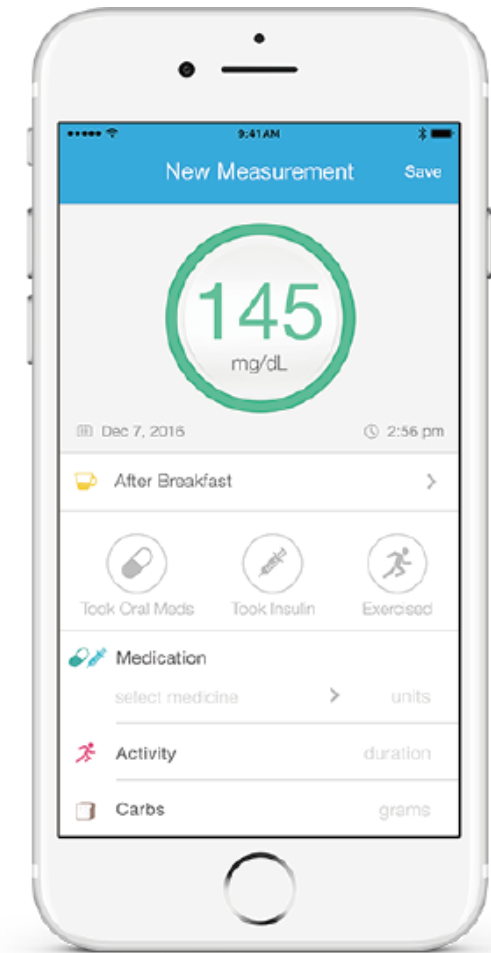
## Smart Devices



# Health Smart Wireless Glucose Monitoring System

[www.ihealthlabs.com](http://www.ihealthlabs.com)

**The device takes readings like a normal glucometer, but then becomes a digital logbook with data in simple and easy to understand ways such as charts and graphs.**



## Smart Devices

# iHealth Feel Wireless Blood Pressure Monitor

[www.ihealthlabs.com](http://www.ihealthlabs.com)



**Quickly and easily take your own blood pressure at home with the iHealth Feel. Offers the same technology as a doctor's office, but wireless. FDA approved medical device.**

## Smart Devices

# Smart Temporal Thermometer

[www.health.nokia.com](http://www.health.nokia.com)

**Quickly and easily take your own temperature at home and link with the app. Allows the user to track temperature over time and set up different profiles for different family members.**



## Smart Devices



# Weight Guru BlueTooth Scale

[www.weightgurus.com](http://www.weightgurus.com)

**Fun and easy way to track weight and weight loss.**



**Can link to Gurus app or other fitness apps such as iHealth, FitBit and Garmin.**

## Smart Devices

# GPS and Bluetooth Trackers



## Tile Trackers

[www.thetileapp.com](http://www.thetileapp.com)



## TrackR Bravo

[www.thetrackr.com](http://www.thetrackr.com)

## TraxPlay

[www.traxfamily.com](http://www.traxfamily.com)



# Smart Devices

# GPS and Bluetooth Trackers



**Small GPS enabled devices that can be attached to keys, wallets, electronics and anything that you want to track. Items can then be located using a app on the cell phone.**

## Smart Devices

# Indoor Navigational Tools - iBeacons



## iBeacon i8

[www.ibeaconstore.com](http://www.ibeaconstore.com)

**Device sends out targeted marketing to anyone in the area using the app. Used to promote sales, specials and anything else important to those closest to the action.**

# Smart Devices





# Smart Home

# Intelligent Personal Assistants *Amazon Echo*

[www.amazon.com](http://www.amazon.com)



***Echo Show***



***Echo Dot***

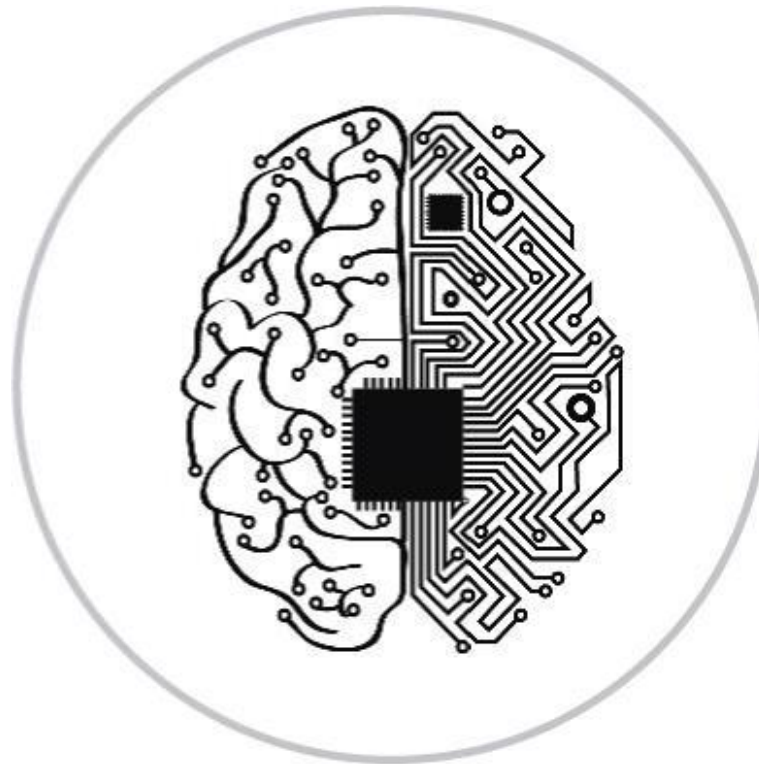
Smart Home



# Intelligent Personal Assistants *Amazon Echo*

[www.amazon.com](http://www.amazon.com)

**Hands-Free virtual assistant that can play music, make calls, send messages, check you calendar, order items, tell you jokes, control smart home devices and many other tasks.**



**Connects to WiFi and contains a speaker and microphone (screen on show model). Makes to commands with the word “Alexa”.**

## Smart Home

# Intelligent Personal Assistants

## *Google Home*

[www.store.google.com](http://www.store.google.com)



**Much like the Amazon Echo but with the power of Google. Able to answer any question with a quick search as well as do everything mentioned in the previous slide by saying, “Hey Google”.**

# Smart Home

# Smart Devices *Harmony Elite*

[www.logitech.com](http://www.logitech.com)

**Smart remote with the ability to link all of your smart devices and allow for one-touch automation.**



## Smart Home

# Intelligent Personal Assistants

## *Dash Wand with Alexa*

[www.amazon.com](http://www.amazon.com)

**Alexa enabled device that allows the user to scan or say an item and have it directly added to their shopping list or their cart on Amazon. It can also find recipes, convert measurements and do other helpful tasks in the kitchen.**



# Smart Home

# Home Automation

**A smart appliance is an electronic device, generally connected to other devices or networks via different wireless protocols such as Bluetooth, NFC, Wi-Fi, 3G, etc., that can operate to some extent interactively and autonomously. (WIKI)**



## Smart Home



# Smart Devices

## *Nest Cam*

[www.nest.com](http://www.nest.com)



**WiFi, app enabled 1080p cameras that can alert the user to movement even when they are not at home on their cell phone. Provides video and audio feedback and available in indoor and outdoor models.**

# Smart Home

# Smart Devices *Nest Protect*

[www.nest.com](http://www.nest.com)

**Smoke and Carbon Monoxide detector that not only produces audible alerts, it can also alert the user via an app on their cellphone.**



## Smart Home

# Smart Devices *TP-Link Smart Bulbs*

[www.nest.com](http://www.nest.com)



**Smart, WiFi connected LED bulbs that allow a user to activate or dim the bulbs via an app or an intelligent personal assistant device.**

## Smart Home

# Smart Devices

## *Ring Video Doorbell*

[www.ring.com](http://www.ring.com)

**Doorbell that connects to WiFi and allows you to know who is at the door before answering. It can even ring your cellphone and allow you to see who is at the door, even when you are not at home.**



# Smart Home

# Smart Devices *Roomba Vacuum*

[www.irobot.com](http://www.irobot.com)



**Vacuuming robot with smart sensors that learn the layout of your home. Device can be activated using intelligent personal assistant or via an app to allow you to have the robot vacuum while you are away from home.**

## Smart Home

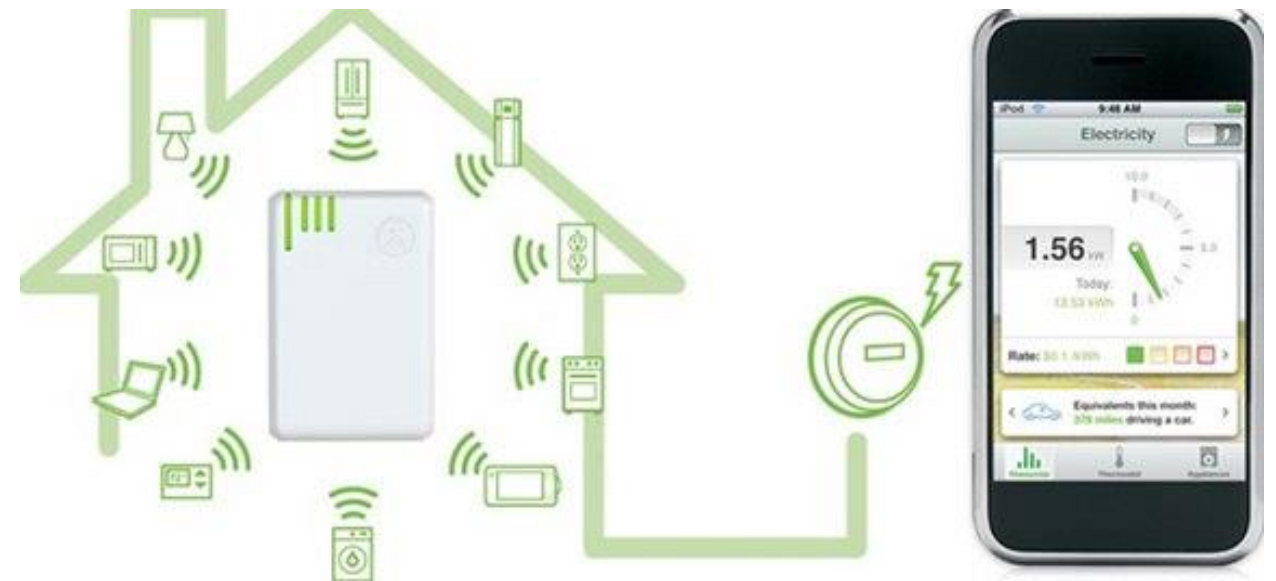


# Smart Devices

## *The List Goes On...*

**So many more devices, and more are being introduced everyday!**

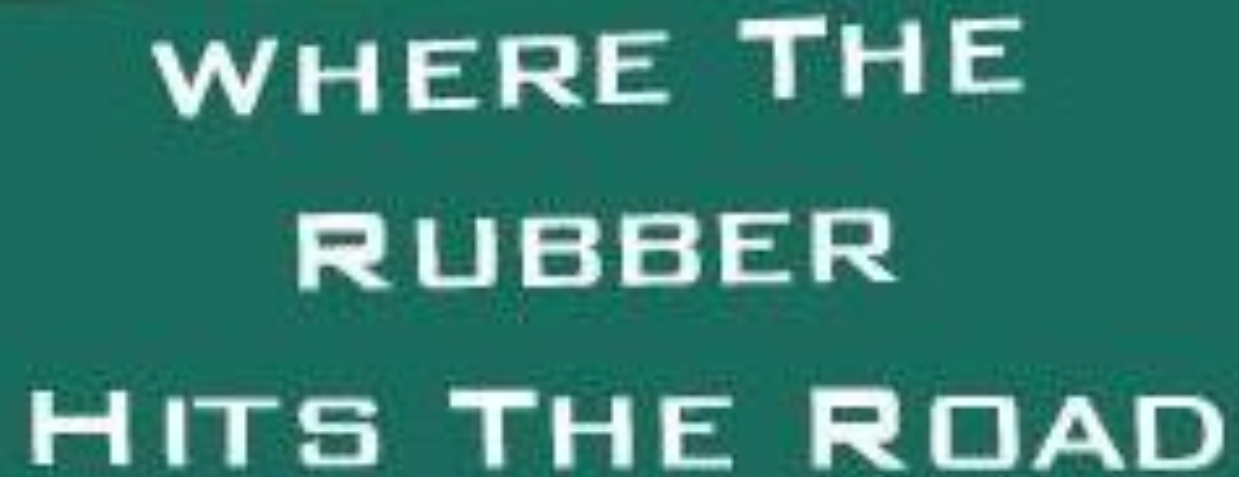
- **Thermostats**
- **Smart plugs**
- **Smart TVs**
- **Internet ready refrigerators**
- **WiFi garage door openers**
- **And so on, and so on, and so on!**



# Smart Home



Neat...but so what?



WHERE THE  
RUBBER  
HITS THE ROAD

Real Life Examples of IoT

# Steve

- **Profound Hearing Loss**
- **Anxiety Disorder**
- **Works at a Smoke Shop in customer service**
- **Cannot hear the bell when customers come in the store or to the drive-up window.**



## **Solution:**

**Using an indoor and an outdoor Nest Cam, Steve is able to have an alert sent to his cell phone whenever a customer arrives. Different vibration patterns are set to each camera so he knows if they are at the door or the drive-up.**

# Case Studies

# Jane

- **Traumatic Brain Injury**
- **Trouble staying on task and memory loss**
- **Lack of Stamina**
- **Works in the cafeteria at a university**



## **Solution:**

**Using a FitBit and an iPod Touch, Jane is able to set reminders and make list of tasks related to her job. The wearable device means that she does not need to look at the iPod to receive cues and reminders. The fitness apps also help her to build her stamina and improve her overall health.**

# Case Studies



# Frank

- **Complete vision loss**
- **Owns coffee shop**
- **Cannot read drink recipes or identify objects**
- **Cannot see temperature of drinks**



## **Solution:**

**An iPod Touch with adaptive apps allow Frank to identify items and input recipes. An iGrill Bluetooth Thermometer allows him to monitor the temperature of steamed milk to not burn his customers.**

# Case Studies



Questions?

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**Thank You!**