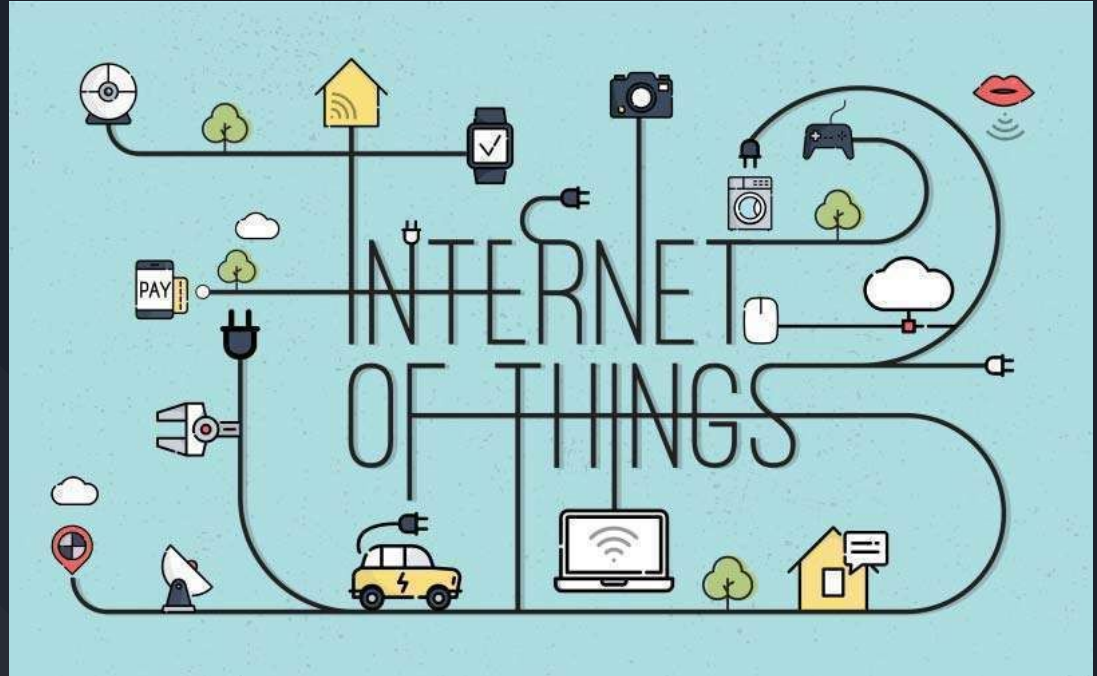


Internet of Things (IoT)



What is IoT?



The internet of things is a system or network of wirelessly connected devices

“A thing” could be any device that can transfer data without human interaction.

- Smart Watch
 - Can send fitness / health data to phones
- Rotimatic
 - Communicates through app with phones to let owner know if it's low on any ingredients
- Smart Fridge
 - Lets user know if there is no milk



How does IoT work?

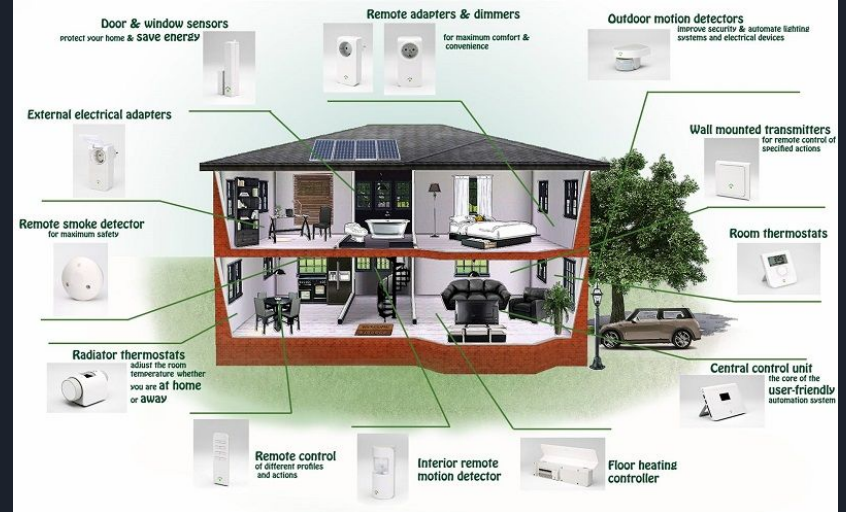
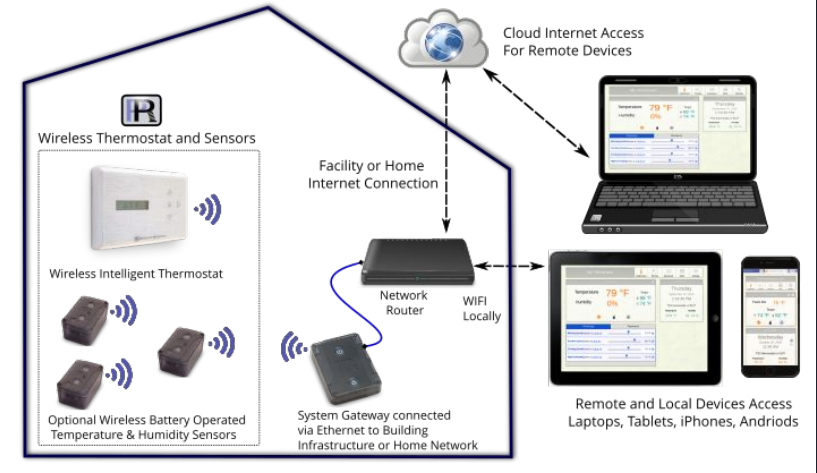
Devices collect data through sensors and pass that information onwards remotely.

- Data can be sent to other devices
- Data can be sent to the cloud
- Data can be used for analysis

The data can then be passed on further or used by the device


RCS (Remote Comfort Sensing)

- Multiple temperature sensors across the house send temperature information to the central thermostat
- Allows for temperature control in specific zones



Importance and Benefits of IoT

- Automates many process which cuts costs and reduce waste
- Helps automate homes
 - Smart appliances
- Makes life easier overall
 - Transfer of data faster
 - Easier to make predictions about the future
 - Save costs and resources
 - Help make better business decisions
- Saving lives
 - Monitoring devices can detect abnormalities in people and immediately notify medics
 - Smart smoke detectors can alert firemen about a fire
- Reduce Waste
 - If no one is at home, a thermostat should turn off and not keep running



***“The Internet of Things
has the potential to
change the world,
just as the internet did,
maybe even more so.”***

*-Kevin Ashton,
Father of IoT*

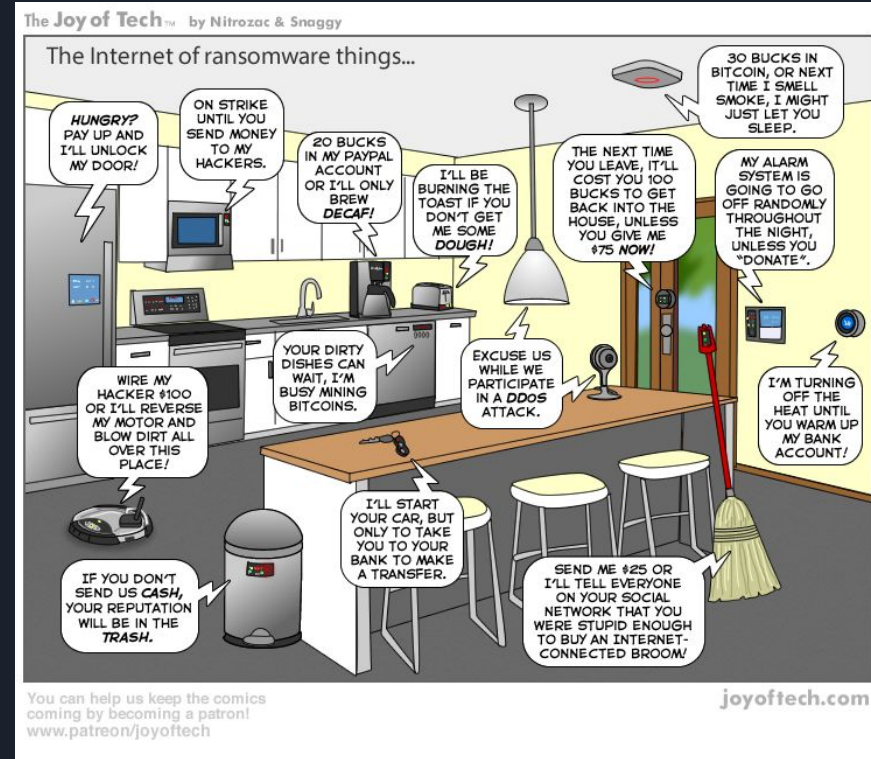
IoT in the real world

- Amazon Web Services (AWS) IoT for business
 - [AWS IoT Video](#)
- Google Brillo & Weave for residential
 - Open Source Protocol
 - Allows for communication between Nest devices through many different connectivity methods
- IoT Frameworks
 - LiteOS
 - Used in wireless sensor networks and development
 - LoRaWAN(Long Range Wide Area Network)
 - Used for connection of millions of devices in city-like settings



Safety and Security concerns

- Hackers can disrupt data and lead to disastrous consequences.
 - IoT connected devices can be the target of ransomware attacks
- Streams of data are going to be huge and harder to manage and store
- Malfunctions can be hard to pinpoint and even harder to fix
 - When there are millions of devices connected to each other, one bug in one device can affect all the rest of them
- Newer concept / idea
 - Laws / Regulations are not formal yet



The Future of IoT

- So far, different devices have different IoT protocols
 - Doesn't allow for mixing ecosystem (ie. Google & Apple devices without WiFi in homes)
- New protocol
 - Matter
 - Allows for communication between devices from multiple brands
 - Companies that have joined in so far: Apple, Google, Comcast, Huawei, etc.

