All about The Internet of Things

Professor Paul DeCarlo

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Who am I?

Paul DeCarlo | @pjdecarlo

- Sr. Technology Evangelist
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Fun Stuff

- Current Hometown of Houston, TX
- Sing in a Band
- Love the outdoors
- Met Satya Nadella (CEO of MSFT)

IOT Hacks Are Cool

HelloHolo – Real Time Translating Hologram TechCrunch Disrupt 2015

Internet of Trees

What is the “internet of things”

Internet of things

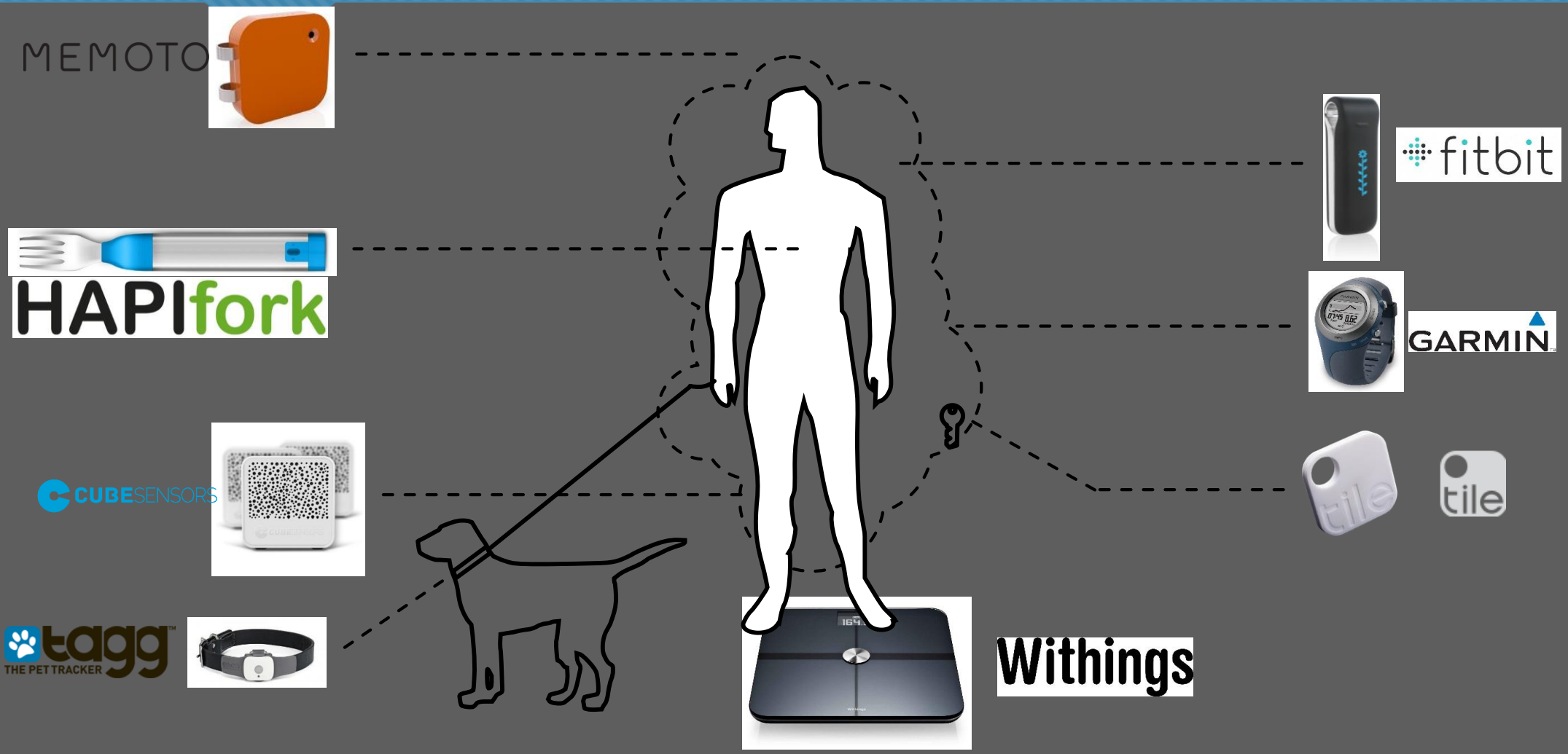
Syllabification (Inter•net of things)

noun

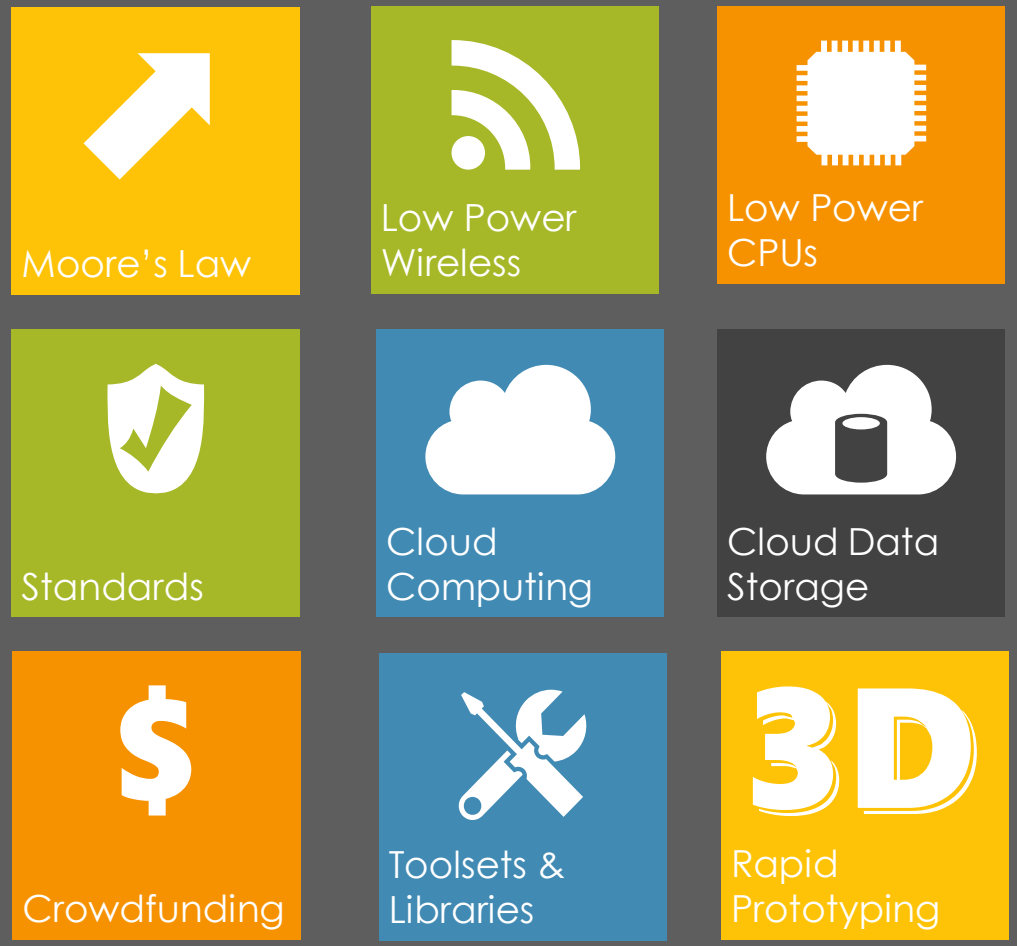
A proposed development of the Internet in which everyday objects have network connectivity, allowing them to send and receive data:

Source: Oxford Dictionary, yep, it’s really in the Oxford Dictionary. It got added at the end of August, 2013

Examples


MEMOTO
HAPIfork
CUBESENSORS
tagg
THE PET TRACKER
fitbit
GARMIN
tile
tile
Withings

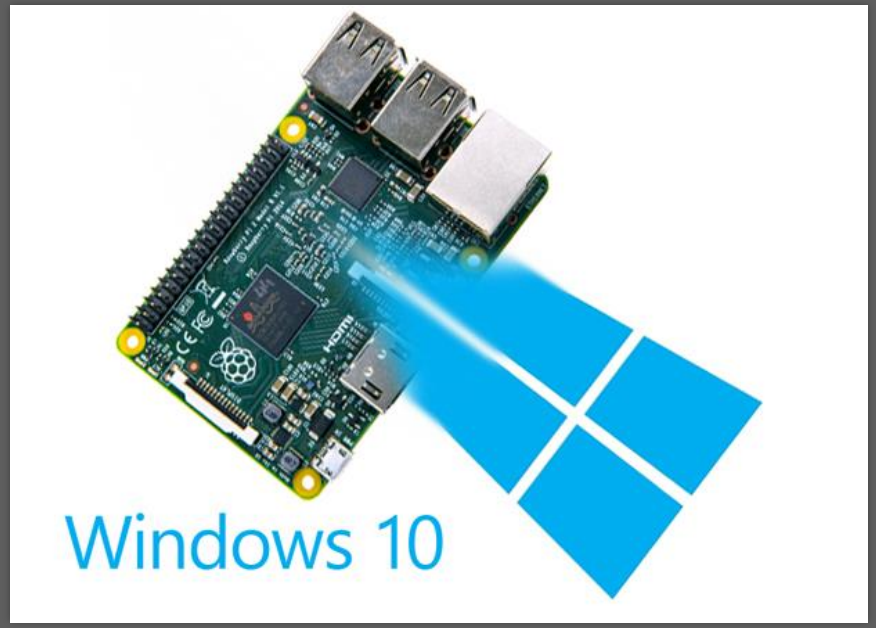
Enablers


Moore's Law
Low Power Wireless
Low Power CPUs
Standards
Cloud Computing
Cloud Data Storage
Crowdfunding
Toolsets & Libraries
3D
Rapid Prototyping

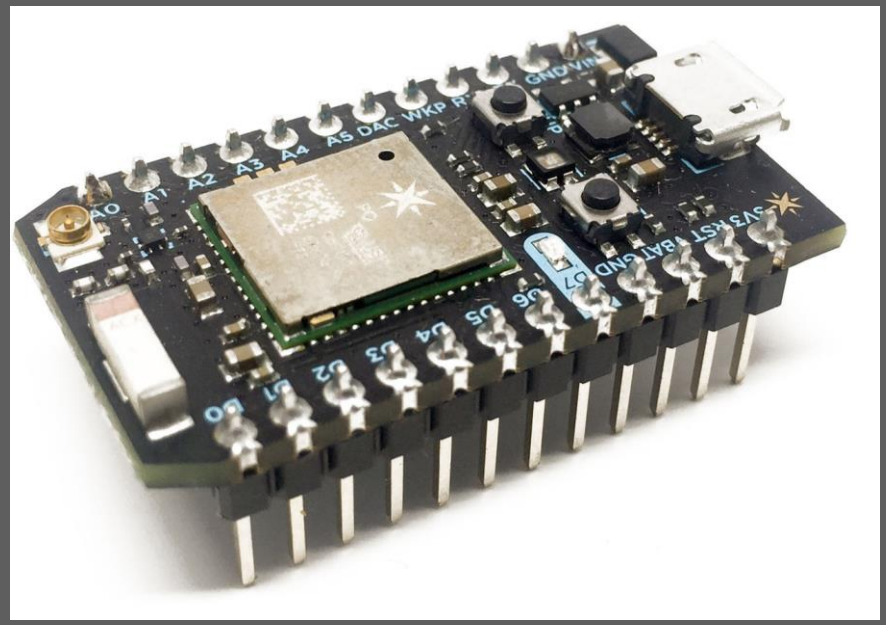
Building a Better Mousetrap

Source: "TEDx Warwick – Andy Stanford-Clark – Innovation Begins at Home"

Some Tools of the Trade

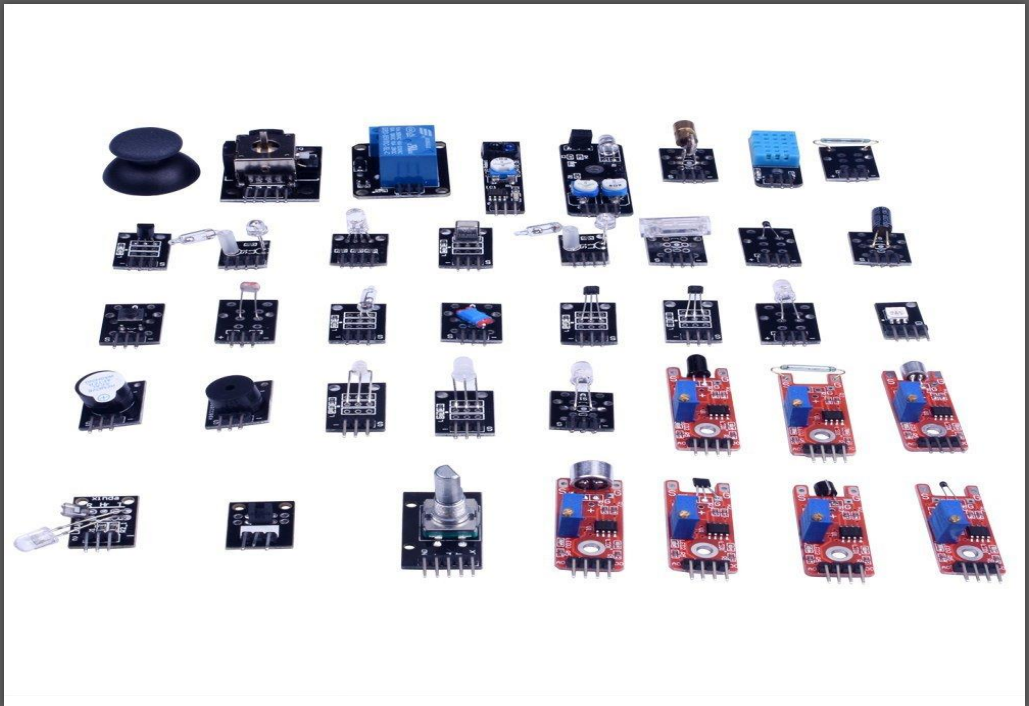


Raspberry Pi Microcomputer



Particle Photon Microcontroller

Sensors as building blocks



Common Scenarios:

User Input
Anomaly Detection
Data Logging
Control of external mechanism

How might you put them together?

Camera = eyes
GPS = location

Here's one idea, VR Drone Racing!

What else though?

Camera + GPS for navigation

Heat Sensor / Luminoscity sensor to detect hot zones

Gas Sensor to detect smoke

Liquid sensor to know when to replenish water

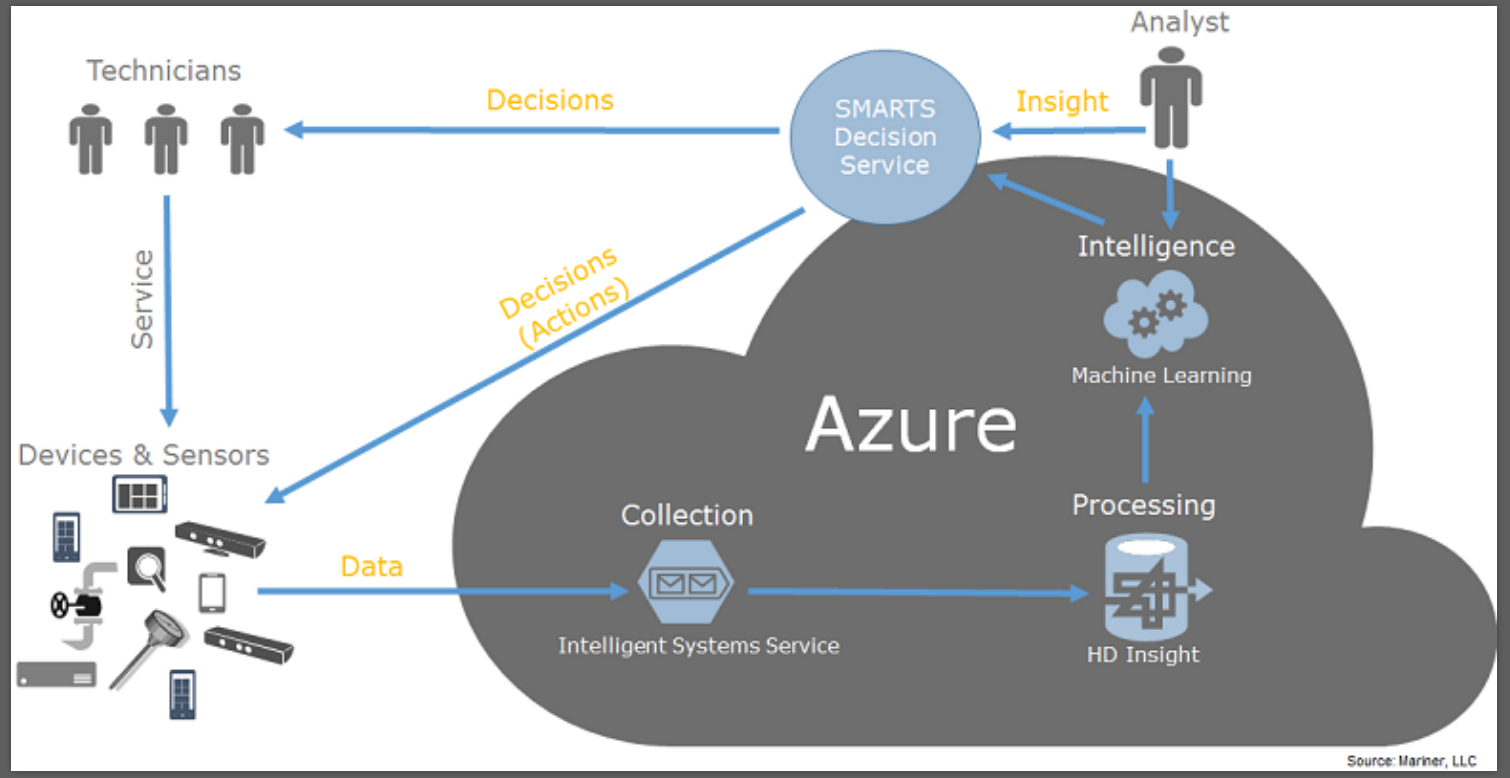
Your turn!

Demonstration

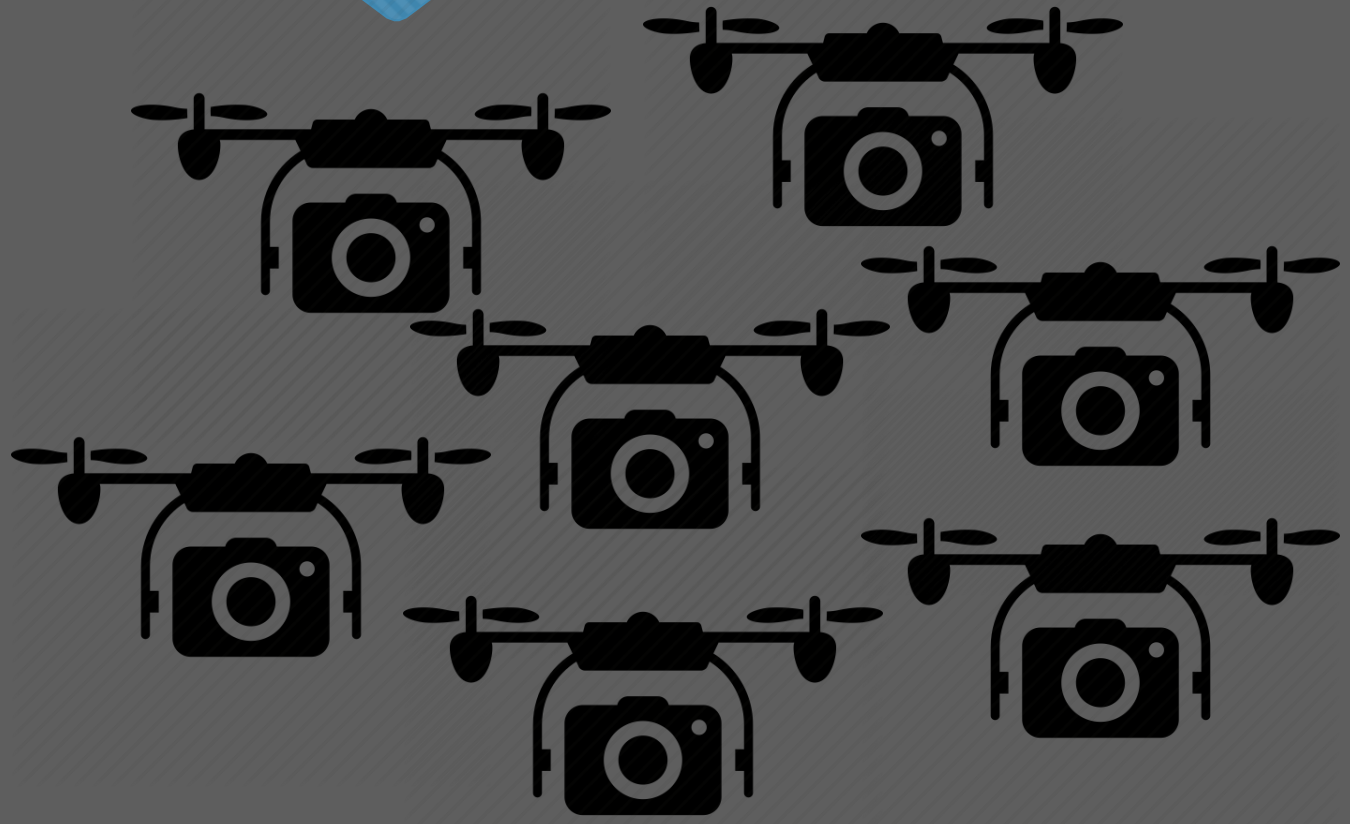
- Follow Along @
- http://connectthedotsdx.azurewebsites.net

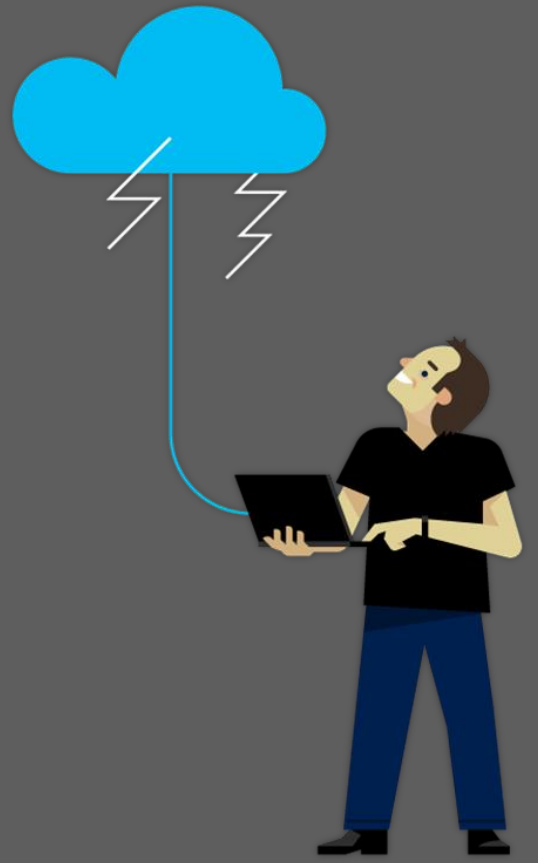
Extending IoT with the Cloud

- Fleet management
- Data Processing
- Predictive Modeling
- Anomaly Detection



How might you use IoT with the cloud?





Here's one idea, drone delivery drivers!

Now let's hear your ideas!

Conclusion

- IoT refers to Internet connected devices that capture and/or react to data online as well as the technologies which store and operate on that data
- IoT devices often employ sensors to sense the world around them, sometimes better than a human and other times in ways that humans can not even do
- IoT devices can collect data together and learn from each other using Machine Learning models, large datasets imply large computational power
- The Cloud allows for operating on large data sets received from IoT devices either in real-time or after the fact, often to create predictive insights

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