Internet of Things (IoT)

Data Science Dojo

What is the Internet of Things?

- Connecting any device with an on and off switch to the Internet (and/or to each other)
  - Examples: cell phones, coffee makers, washing machines, headphones, lamps, wearable devices, and almost anything else you can think of
  - This also applies to components of machines, for example a jet engine of an airplane or the drill of an oil rig

Gartner predicts that by 2020 there will be over 26 billion connected devices

The IoT is a giant network of connected “things” (which also includes people).

Scenario

- You are on your way to a meeting
  - Your car accesses your calendar and already knows the best route to take
  - If traffic is heavy, your car might send a text to the other party notifying them that you will be late

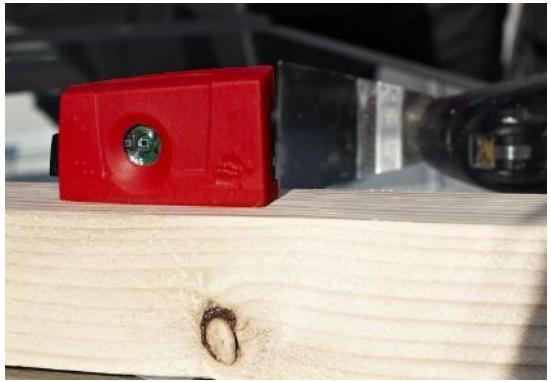
Potential Impact of IoT

- Your alarm clock wakes up you at 6 am and then notifies your coffee maker to start brewing coffee for you
- Your office equipment knew when it was running low on supplies and automatically re-ordered more
- The wearable device you use in the workplace tells you when and where you were most active and productive and shares that information with other devices that you used while working

IoT Hack Day Project

TI Sensor Tag

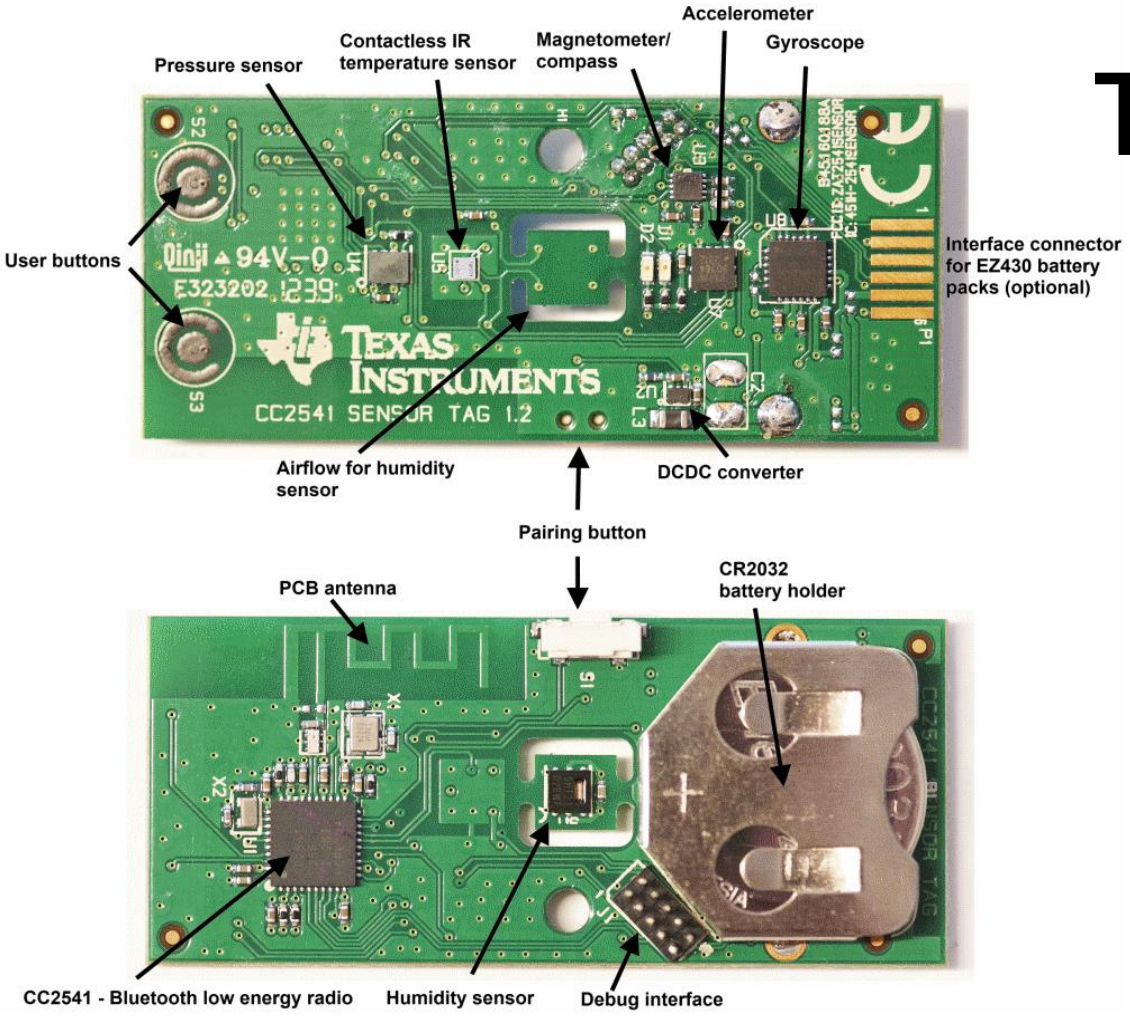
Put it near your coffee to see if temperatures rise.



Accelerometer used as a construction leveler.

Magnetometer + Gyroscope = Compass

The Sensors



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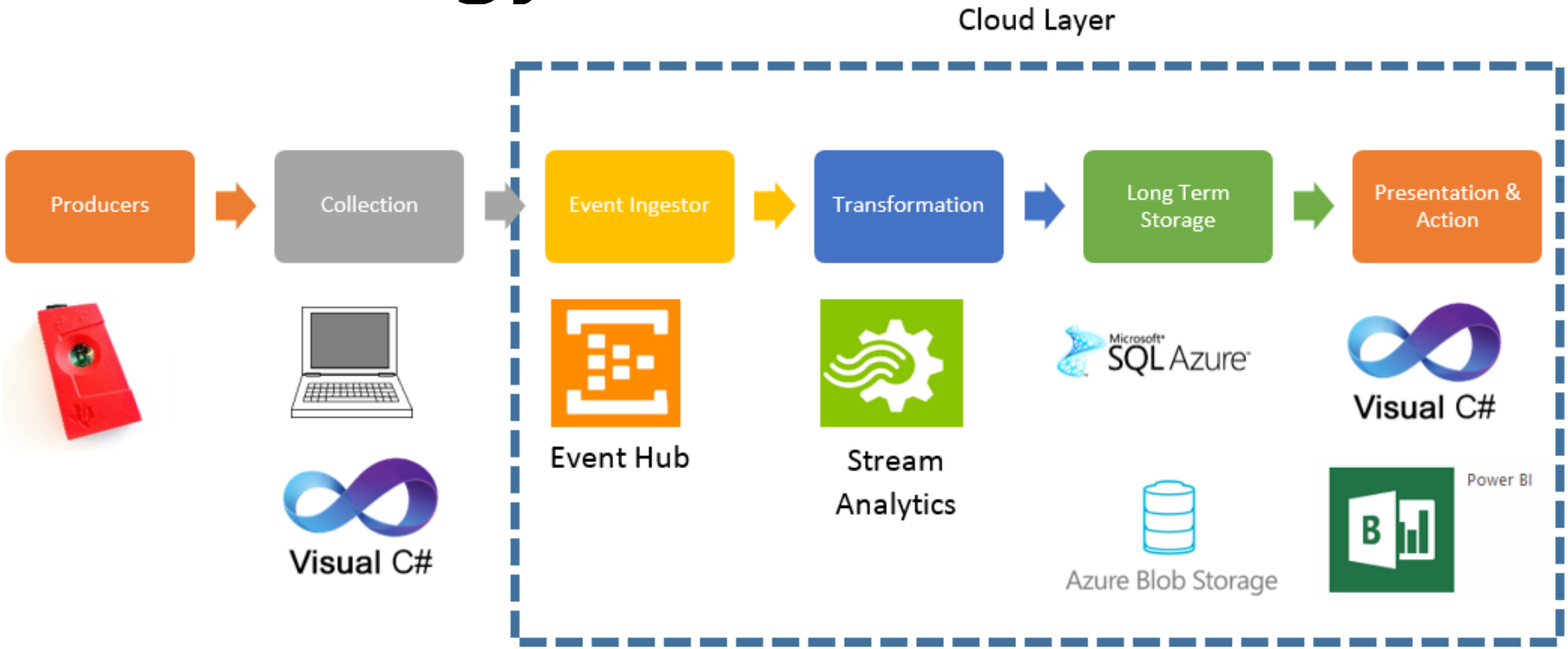
Technology Stack



Project Diagram

Event Hub

Stream Processor 1

Stream Processor 2

Stream Processor 3

Avg Temp/Humidity

Anomaly Filtering

All Data

Aggregate Event Hub

Anomaly Detection Event Hub

Room Aggregation

PowerBI Dashboards

SQL DB / Blob

Visual C#

View Live Anomalies via C# Dashboard

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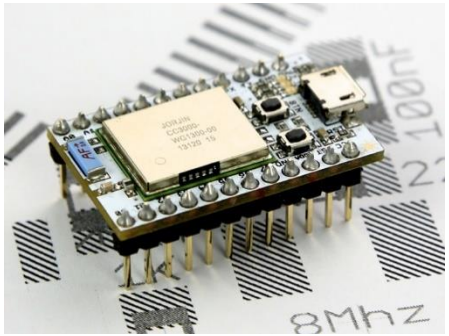
Other Devices (no gateway)

Intel Galileo

NETMF

Intel Edison



Spark Core

Windows Phone and Band

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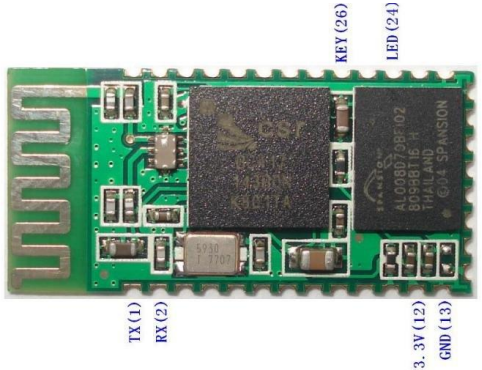
Other Devices (requires gateway)

Arduino Uno



BluetoothUART

TI Sensor Tag

QUESTIONS