Build Your Own IoT Weather Station

IEEE Northern VA Section Hands-On Workshop Series

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Internet of Things

- An Internet development in which **everyday objects** have network connectivity.
- It uses **existing network infrastructure** to allow objects send and receive data.
- It is a mixture of **hardware, software, data and service.**
- Estimated to consist of almost 30 billion objects by 2020. 212 billion sensors = 28x total world population
- "Any object that can be usefully connected to the Internet will be connected in the next few years."

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Examples of IoT "Things"

- Things are any physical object with a device that has its **own IP address** and can connect to and send / receive data via a network
- Wearable healthcare & activity monitoring devices
- Home security, power control & comfort systems
- Monitor farm livestock and irrigation
- Measure traffic congestion, car maintenance, etc.

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THE IMPACT OF IoT

BILLIONS OF DEVICES

- More than 50 billion in 2020
- Heterogeneous architectures
- Big Data and broadband communications

Source: Intel

MANY APPLICATION DOMAINS

- Consumers (i.e., wearable, home automation, wellness)
- Commercial (i.e., retail, building, logistics)
- Industrial (i.e., manufacturing, energy, transportation)
- Public Sector (i.e., Smart Cities and regions, public safety, security, healthcare)

Source: Beecham

DIFFERENT BUSINESS APPROACHES

- Intelligent services
- Open ecosystems
- Different value chains
- Many different business models
- New actors (e.g., Makers)

Source: Freescale

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The IoT is Driving Markets

Connected-home device shipments will grow at a compound annual rate of 67% over the next five years...and hit 1.8 billion units shipped in 2019 – BI Intelligence

IoT-connected wind and solar installations will grow at a CAGR of 21% from 2014 -2020 with total number of connections growing from almost two million in 2014 to 6.3 million in 2020 - ABI Research

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The Global Internet of Things

Be part of the sweeping convergence of technologies, markets, applications, and the Internet through the IEEE Future Directions Internet of Things (IoT) Initiative

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You are a piece of the IEEE IoT Success

IEEE IoT is one of IEEE's important, multi-disciplinary, cross-platform Initiatives. It serves as a home for engineering and technology professionals working on IoT in industry, academia, and government.

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Interest Is Not Limited To IEEE

- ITU Internet of Things Global Standards Initiative
  - http://www.itu.int/en/ITU-T/gsi/iot/Pages/default.aspx
- IETF Standards and Guidance
  - https://www.internetsociety.org/publications/ietf-journal-april-2016/internet-things-standards-and-guidance-ietf
- NIST Draft Framework on IoT
  - http://www.hldataprotection.com/2015/09/articles/consumer-privacy/nist-releases-draft-framework-on-the-internet-of-things/
- W3C Web Of Things
  - https://www.w3.org/WoT/
- OASIS Committees
  - https://www.oasis-open.org/committees/tc_cat.php?cat=iot

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Questions?

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