IoT & IT Standards

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Today's Agenda

Step 7 : Conclusion.

Step 6: Future options ,Courses and certification in Market

Step 5 : Special for Practicing Engineers.

Step 4 : Security Essentials and IT standardization.

Step 3 : Why IOT standardization requires continual Improvement

Step 2 : Facts of IOT and available IT Frameworks

Step 1 : Short overview of IoT and IT standards.

Step into the fantastic world of the IoT

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Step 1

Short overview of Internet of Things and IT standards.

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What is IoT ?

Today's internet is made up for people to search the latest news, watch videos, Using social media and download music etc

The Internet of Things is different. Instead of people, IOT enables 'things' to access data and talk to one another.

In Simple words Devices with sensors that connect to one another and interact using the internet called IoT.

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IOT Examples

Smart Home Devices

Smart Retail Devices

Point of Sale **(POS)** Machines

Connected Cars

OLA

UBER TAXI

Wearable's

Health Monitoring

Smart Pills Boxes

Heart Beat Sensors

Weight Scale Meter

Blood Pressure Sensor

Blood Sugar Sensor

Smart city

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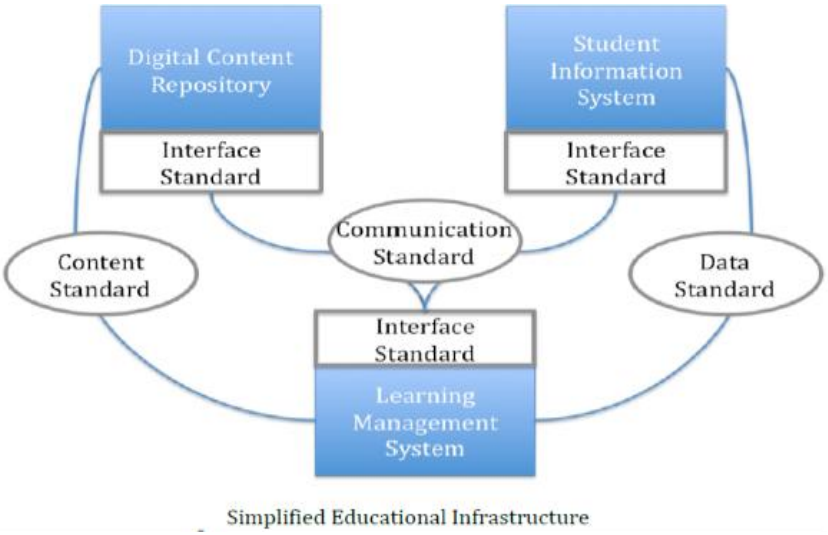
Information Technology Standardization

Why Technical Standards ?

Technical standards instituted for compatibility and interoperability between software, systems, platforms and devices.

E - Learning Example



Simplified Educational Infrastructure

All standard must be used with Learning Management system to get the desired output

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What are IT Policies, Standard and Framework ?

Well-written policies should spell out who's responsible for security, what needs to be protected, and what is an acceptable level of risk
Ex: All email communication must be encrypted

Standards are much more specific than policies. standards are tactical documents because they lay out specific steps or processes required to meet a certain requirement enforced by policy. They are guidelines of how to go about implementing a policy
Ex: Use Encryption that is not yet proven to be breakable in less than 30 minutes.

Practices are procedures that implement the policy with desired standards. They give a step by step description of how to go about the implementation known as Framework..
Ex: Provide WiFi router with AES Encryption connected to a manageable switch

Policy are statement / Standard are specification / Practices are procedure or Framework. So we can use frameworks or standard documents to standardize the requirements.

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Step 2

Facts of IOT and available IT Frameworks

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Facts of IoT

Forbes says it is hugely an unknown term for people in general. 87% of people actually have no idea of what it means or what it stands for.

ATMs are considered some of the first IoT objects, and went online as far back as 1974.

some predict that by 2020, the number of Internet-connected things will reach or even exceed 50 billion.

we already have cars that can drive on their own - Google's self-driving cars currently average about 10,000 autonomous miles per week.

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Information Technology Frameworks

ITIL: Information Technology Infrastructure Library

COBIT: Control Objectives for IT

Agile : Scaled Agile Framework, Scrum framework

CMMi : Model framework

NIST Framework: A cyber Security Framework

Few other framework

ISF standard of good practice(SOGP), GAIT and GAISP ,COSO and turnbull guidance, SAS 70 , Joint EU Framework (ISO/IEC 27001:2005, ITIL and cobit) etc.

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Step 3

Why IOT standardization requires continual Improvement

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Why IOT standardization requires continual Improvement

When computers have just been invented or Internet has just been put into use, we cannot compare the way's to implement. Every innovator has used them in their own way by creating a positive impact. Present wave is IoT. Every organization / inventor will use in their own way to make a positive impact with continual improving process and present standards and framework available to them.

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IoT tech improvements expected

- Improving cell area coverage up to seven times
- Improving building penetration
- Extending the battery life of the sensors (expect up to 10 years)
- Reducing module costs (expect less than $5)
- Improving reliability (no interference concerns as in unlicensed networks)
- Improving the management and visibility of wireless devices

* Not requiring new infrastructure (since it operates on today's highly secure LTE networks)

* Increasing scalability to globally support billions of devices

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Step 4

Security Essentials and IoT standardization

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Security of IoT Devices

Can be divided by

- Huge Range of Industries
- Huge Range of Use Cases
- Scaled from single Constrained device
- Massive cross platform Deployment
- Embedded Technologies
- Cloud Systems
- Real Time connection Using Sensors

All The areas needs to be covered from beginning of design

A security framework

provides a foundation for evaluating and verifying the security capabilities of IoT devices

All The areas needs to be covered from beginning of design

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Step 5

Special for Practicing Engineers.

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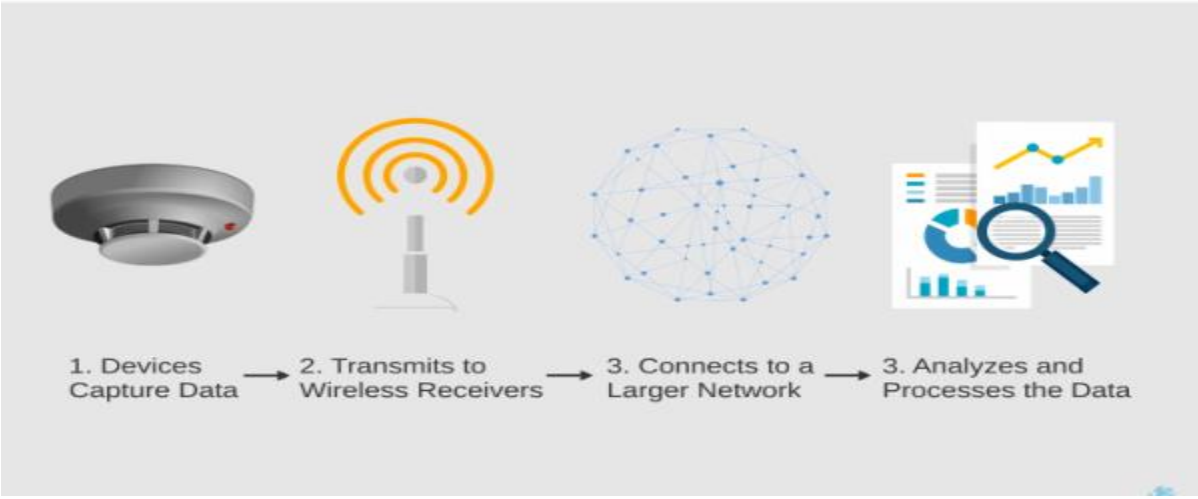
Understand IoT Steps How it works ?



Step 1: Device with sensor will capture the data

Step 2: Receiver will receive the data

Step 3: Connect to larger network

Step 4: Analyzes and Processes the data

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Protocol Used as per level of organization in IoT

Infrastructure (ex: 6LowPAN, IPv4/IPv6, RPL)

Identification (ex: EPC, uCode, IPv6, URIs)

Comms / Transport (ex: Wifi, Bluetooth, LPWAN)

Discovery (ex: Physical Web, mDNS, DNS-SD)

Data Protocols (ex: MQTT, CoAP, AMQP, Websocket, Node)

Device Management (ex: TR-069, OMA-DM)

Semantic (ex: JSON-LD, Web Thing Model)

Multi-layer Frameworks (ex: Alljoyn, IoTivity, Weave, Homekit)

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Tools Used in IoT

Munbo @munbo

mnubo is an SaaS solution providing a comprehensive Big Data platform catering to the Internet of Things via three solutions: mnubo smartobjects cloud, mnulabs and mnubo smartobjects analytics.

Oracle @OracleIoT - Free

Oracle's Java Embedded solutions aim to reign in the massive amounts of data required for and created as a result of the Internet of Things by facilitating seamless communications between all elements of the IoT architecture.

Swarm

Swarm is an IoT development platform that facilitates adding new services to products easily

http://buglabs.net/products/swarm

Axeda @Axeda

Axeda provides a comprehensive cloud-based platform for managing connected products and machines and implementing IoT and M2M applications.

Tools Used in IoT

OpenRemote @OpenRemotePro - Few Modules Free

An open-source middleware solution for the Internet of Things, OpenRemote allows you to integrate any device — regardless of brand or protocol — and design any user interface for iOS, Android or web browsers.

Etherios @Etherios - Developer account Free with 5 Devices

Etherios is a comprehensive suite of products and services fully supporting connected enterprises. The Etherios Device Cloud is a PaaS solution enabling you to connect any product or device and gain real-time visibility into your assets.

SAP Internet of Things Solutions @SAPTechnology@SAP

SAP's IoT solutions facilitate connectivity and multi-directional communication to enable users to interact with their devices in new ways.

Few Other Names are

Zatar	ThingWorx	Sine-WaveTechnologies	Ayla Networks
@Zatar IoI	@thingworx	@Sine Wave Tech	@aylanetworks

ETC.

Databases Used in IoT

SQL Databases

NoSQL Databases

Cloud Databases

Big Data Technologies Used to implement IoT

Hadoop and MapReduce

Apache HBase

Step 6

Future options and certification in Market.

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Career options / Where to start ?

IoT Have 4 Broad areas so start with any one

Assembly of the physical hardware:
This requires engineering skills, and is usually not completed by a developer. Most IoT devices use primarily pre-assembled boards and sensors connected on them.

Programming the device:
This requires programming skills to read the data from the sensors connected on the IoT device, and send them to the server.

Programming the server that will receive and store the data from the device: This requires the use of server side languages, like PHP, ASP.NET or Node.js, and database queries based on MySQL or some other SQL derivative.

Displaying data to the device user:
This involves creating the web page or app that will depict the collected data to the user, which requires web development knowledge of PHP, JavaScript, HTML, CSS, MySQL, or another framework.

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Industry oriented Certification for Partners

Microsoft IoT Program

For Partners Who Want marketing and sales support around bringing Azure's data collection, monitoring and analytics capabilities to IoT solutions.

AWS IoT Competency

For Partners Who Want a way to navigate multiple vendors' technologies while deploying an end-to-end IoT solution with data analytics and edge computing.

Cisco IoT Specialization

For Partners Who Want to double down on IoT in specific vertical markets or through operational technology.

Dell IoT Solutions Partner Program

For Partners Who Want to integrate Dell gateways and embedded PCs into full end-to-end differentiated IoT solutions.

AT&T IoT Partner Program

For Partners Who Want to better understand the opportunities for the channel around devices, software and applications, platforms and services, and connectivity.

GE Digital Predix Program

For Partners Who Want to double down on industrial IoT solutions.

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Certification and courses for IoT practitioner

https://www.jigsawacademy.com
Free Beginner IoT course available

https://www.brainbench.com/
Free AWS services, Citrix XenApp 6.0 Administration exams Available

https://www.futurelearn.com
Any one can register for upcoming online courses

Step 7

Conclusion.

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- Thank You