

Internet of Things (IoT): Applications and Challenges

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Outlines

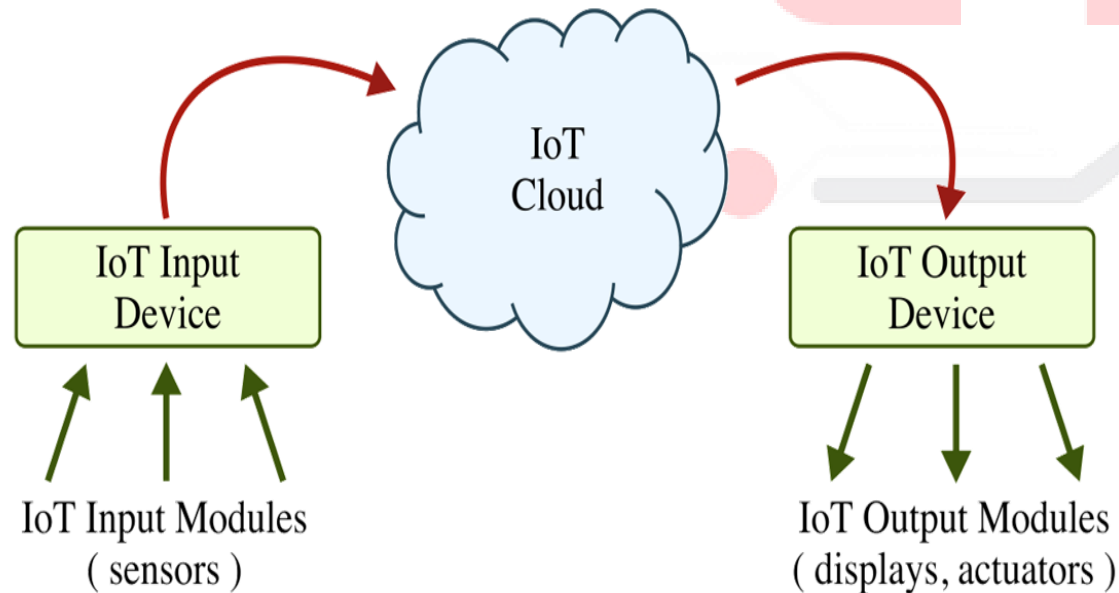
- Definition
- IoT Platform, operating systems, development tools
- Security issue in IoT
- Local applications in IoT

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Definition

The IoT is basically an interconnection of sensors, actuators, and computing devices. It emphasizes that “things” (devices) are connected and communicate rather than peoples.



Information and Communication Engineering

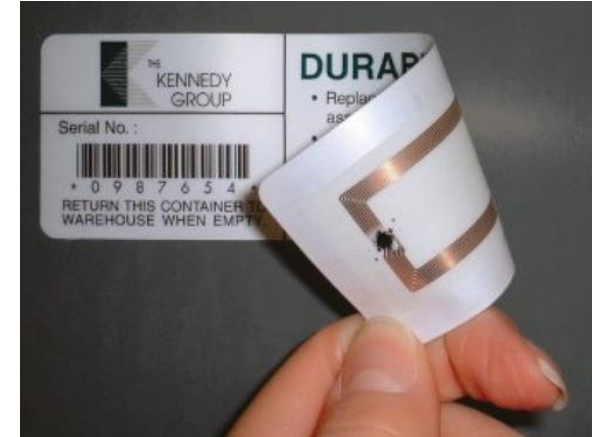
Three main waves in Information and communication technology in last three decades:

1. Internet
2. Mobile communication
3. Internet of things

Important aspects related to IoT

- **Radio frequency identification:**

A key role is played by RFID system composed of one or more readers and several tags which helps in automatic identification of anything.



- **Wireless Sensor network:**

Better track of the status of things, getting information about position, movement, temperature. Also it can be utilize in several areas like healthcare, government and environmental services, defense, etc.



IoT Top Platforms



Google Cloud Platform



Cloud Platform



Microsoft Azure
IoT Platform



amazon
web services

ORACLE®

INTERNET OF THINGS
CLOUD SERVICE



IoT Cloud



Bosch IoT Suite



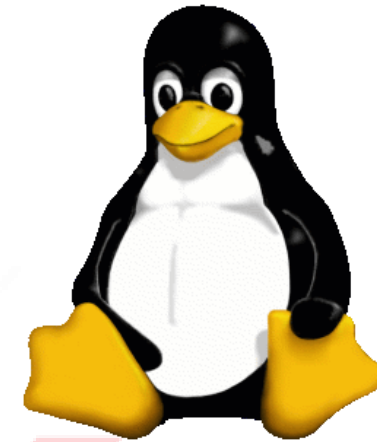
Top IoT Operating Systems



ARMmbed

Contiki

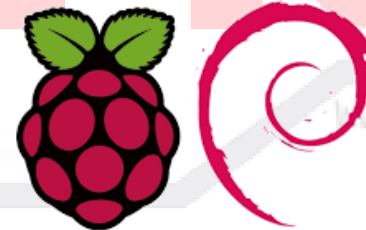
The Open Source OS for the Internet of Things



RiOT

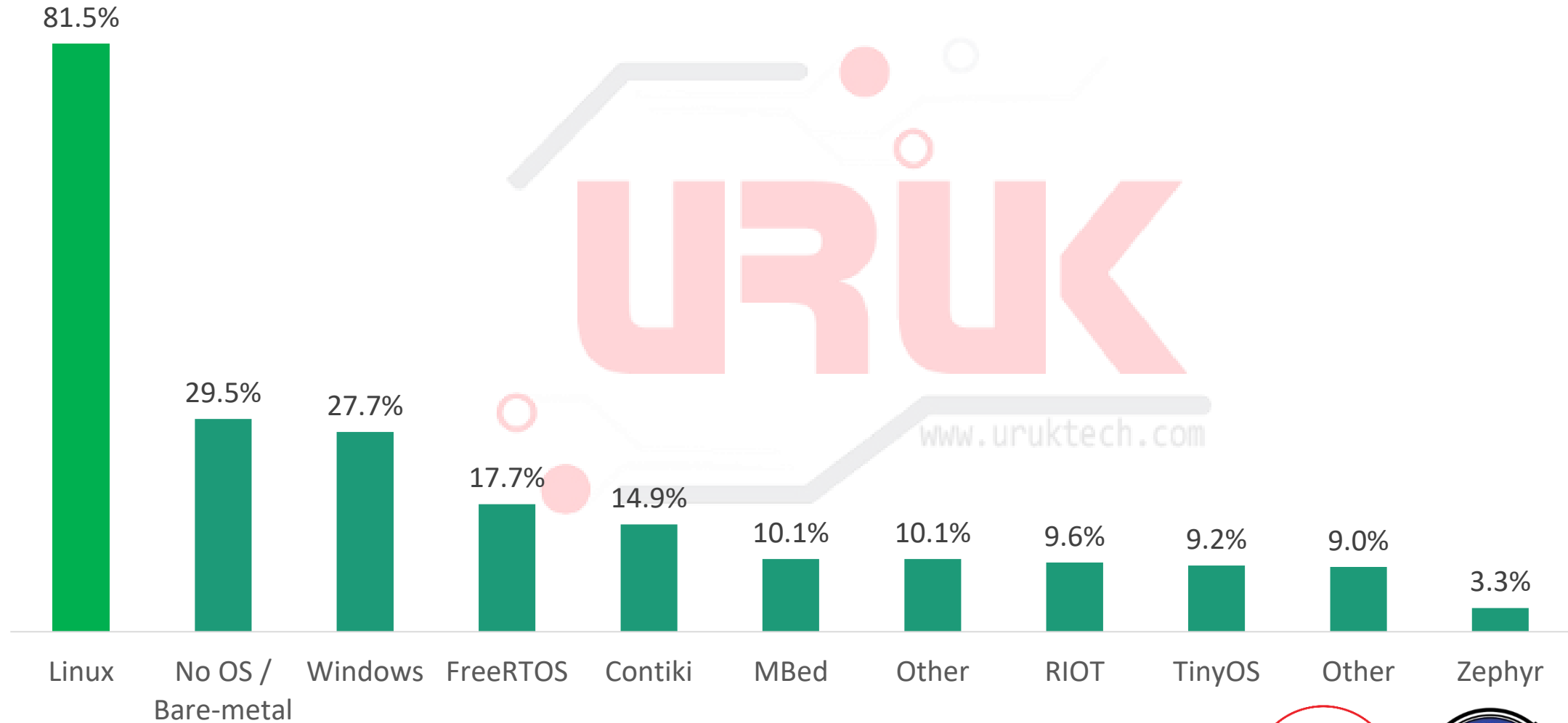
ubuntu[®]

TinyOS

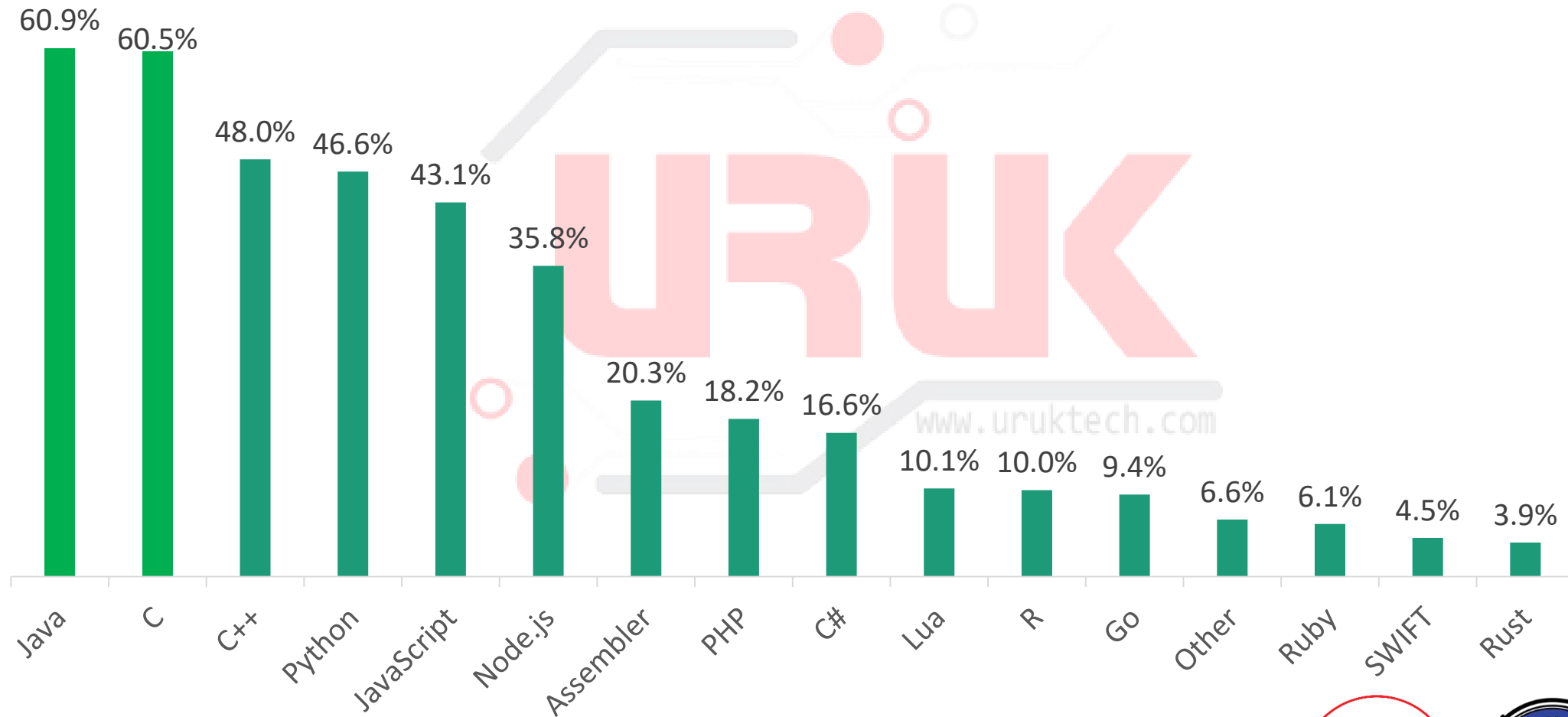


Raspbian

Top IoT Operating Systems



Overall Summary of Language Usage



Potential issues in using IoT

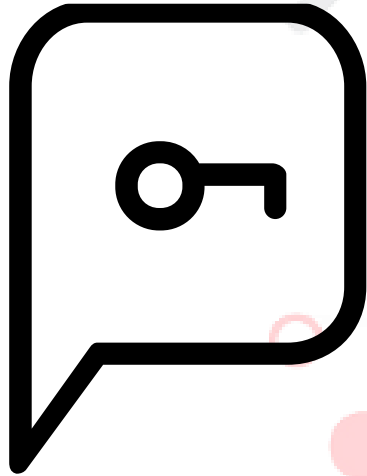
- **Security and privacy:**

When devices are connected to internet, then location would not be an important issue for intruders where they can attack these devices from anywhere in the globe.

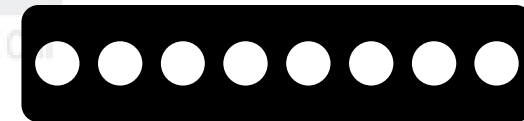
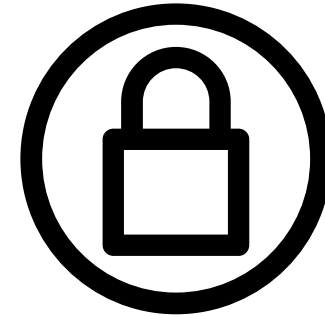
- **Quality of Service (QoS) :**

sharing workload between different nodes will offer more available resources, hence improving QoS. Such collaborative work is a promising mechanism in IoT.

Key IoT Security Technology

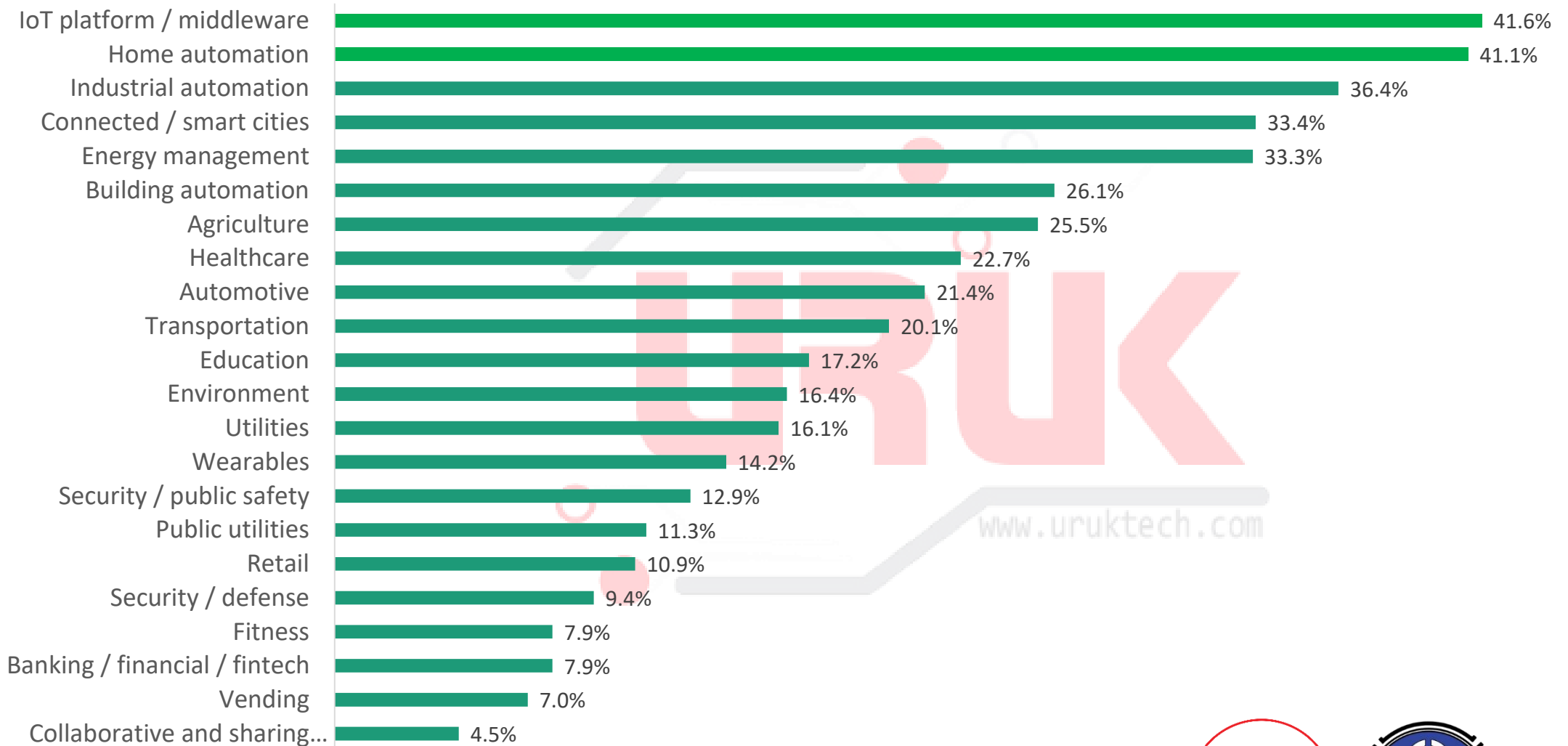


COMMUNICATION SECURITY
(TLS, DTLS, ...)



DATA ENCRYPTION

Key Industries



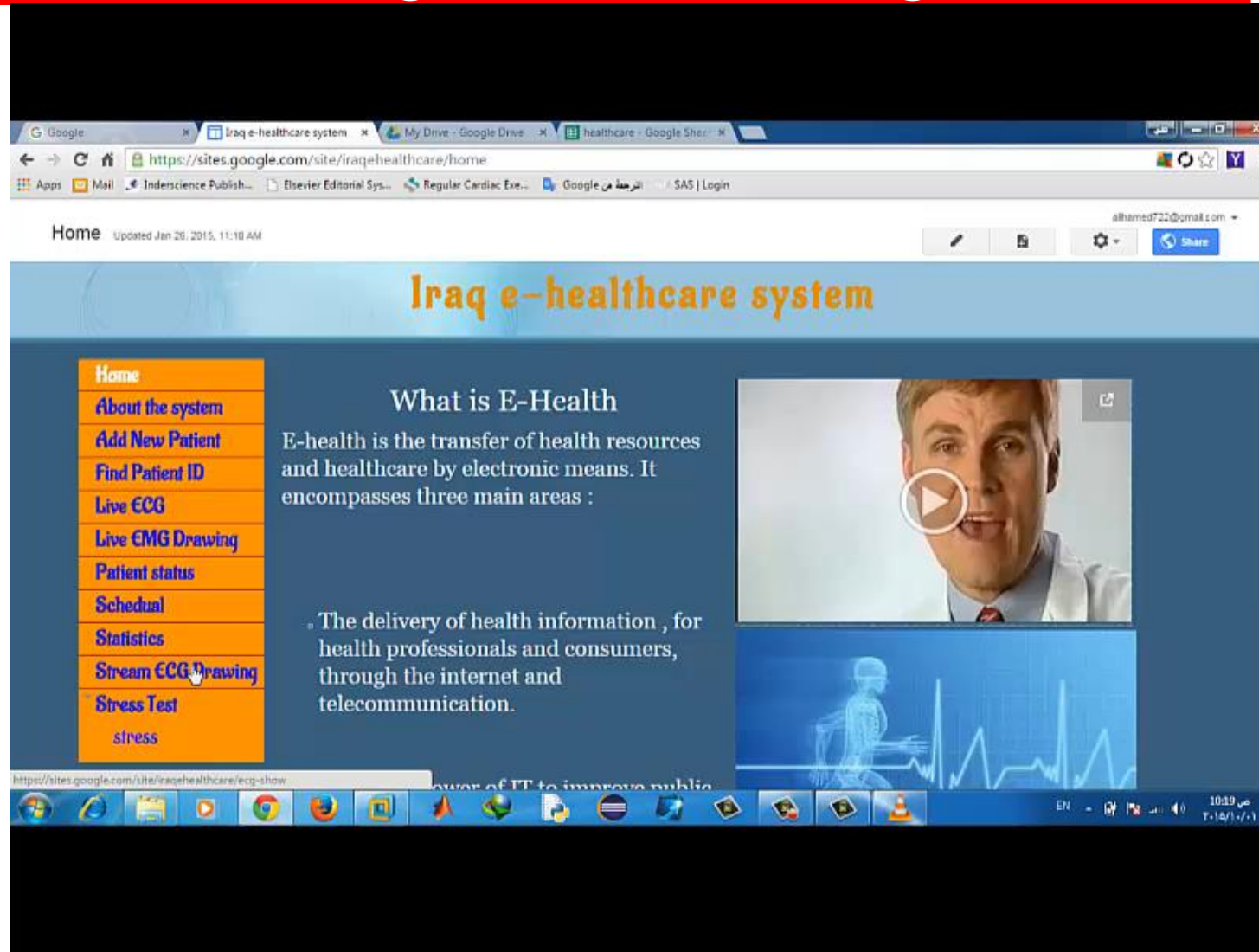
Internet of Things Based Secure Healthcare monitoring system using Wireless Sensor Network

- Prototype system of a ubiquitous healthcare monitoring based on internet of things technology where the sensor nodes are connected to a cloud server

System Architecture Design



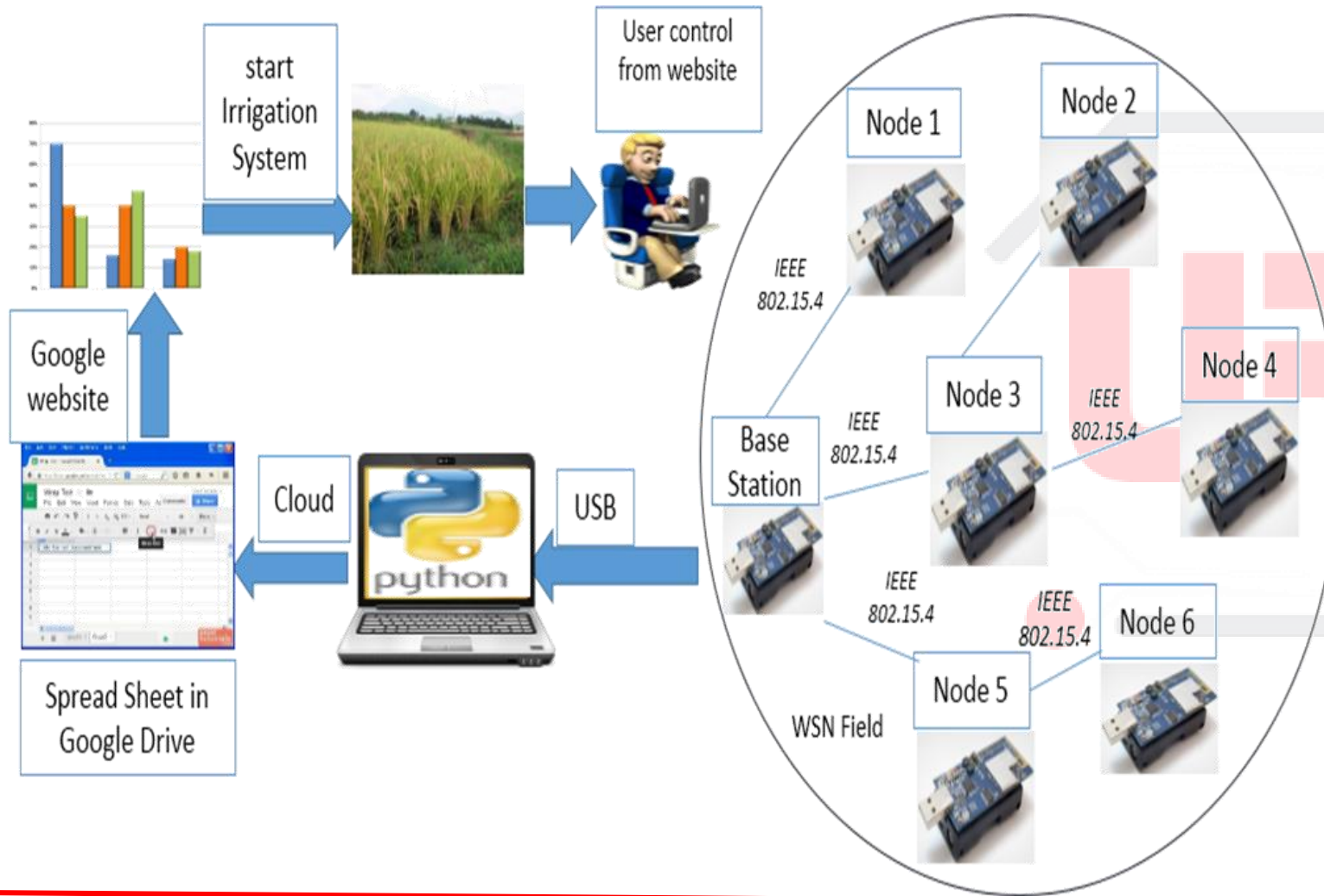
Stream ECG Signal with Diagnostic



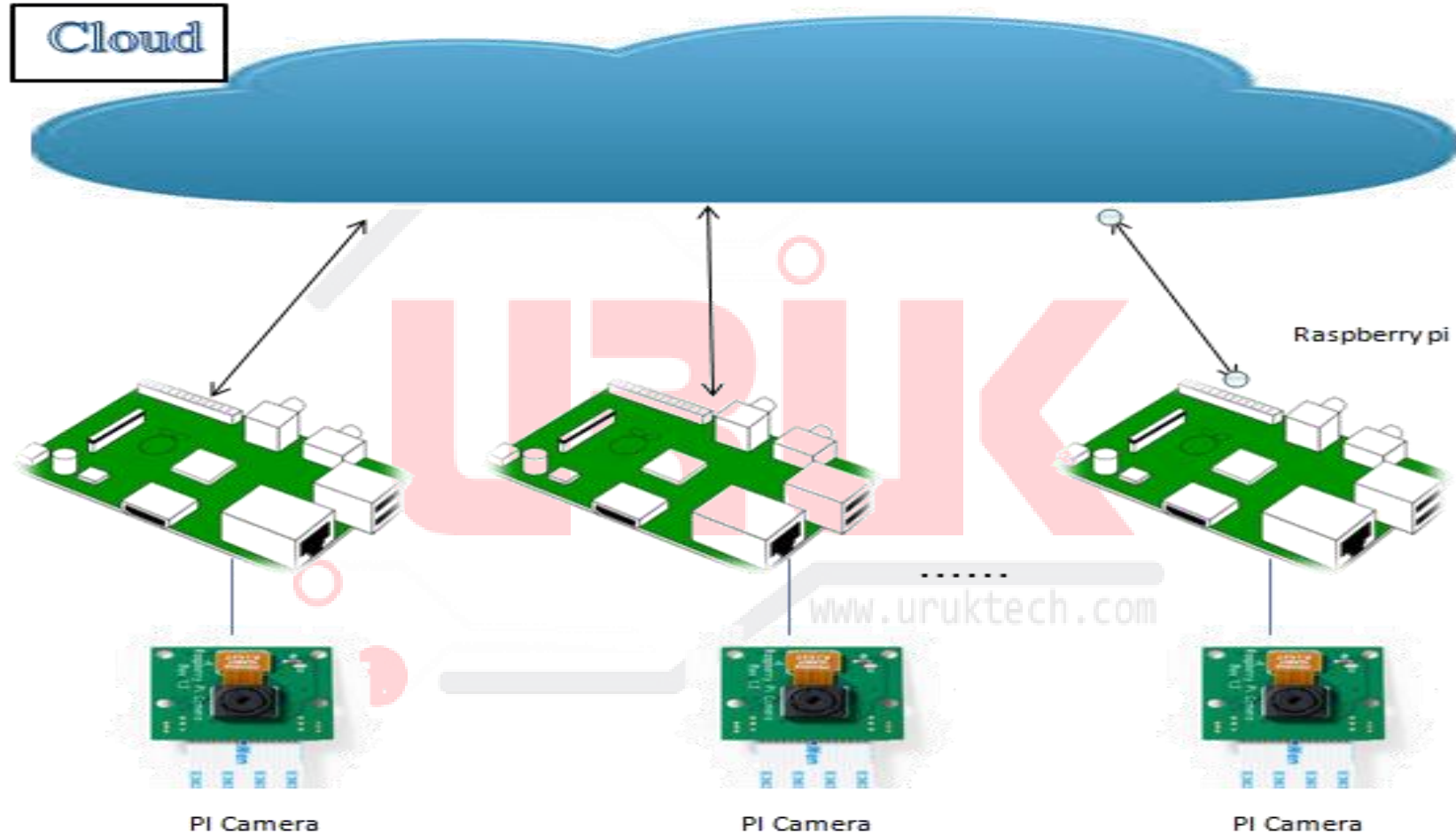
Encrypted ECG Signal



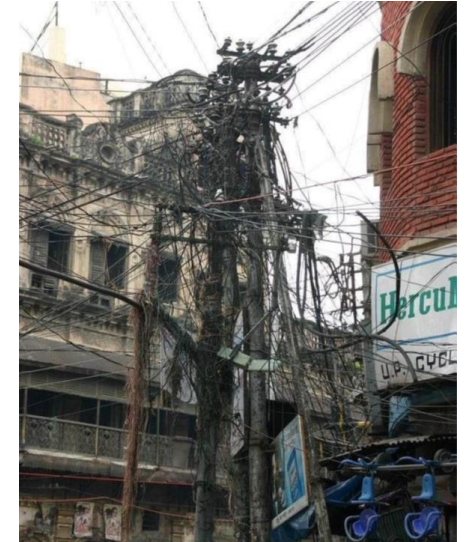
IoT based smart irrigation system....



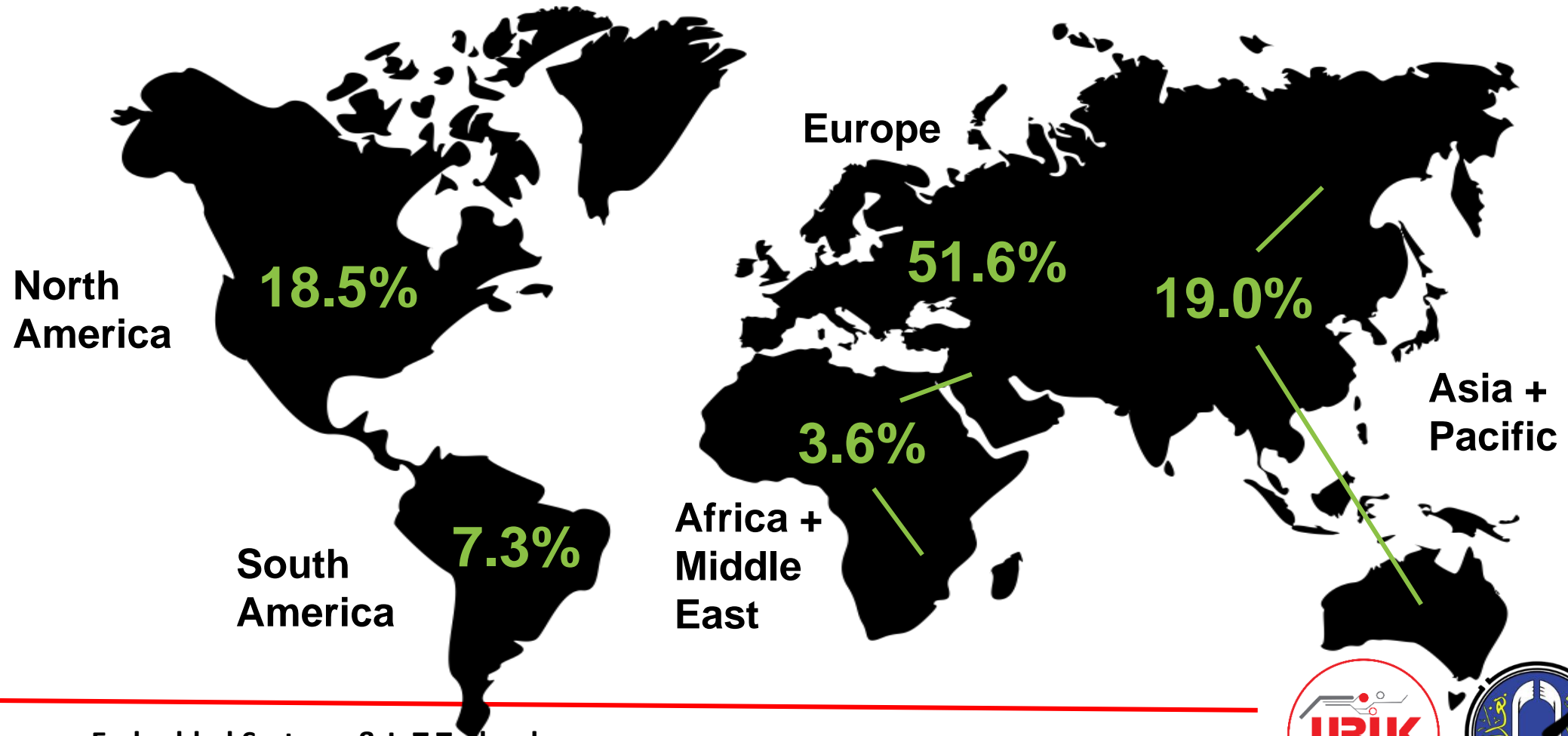
Design and Implementation of a Secure IoT Based Real Time Intelligent Video Surveillance



Infrastructure



Region



Thank you ...

Q&A