AFRICAN ADVANCED LEVEL TELECOMMUNICATIONS INSTITUTE (AFRALTI) & POSTAL & TELECOMMUNICATIONS REGULATORY AUTHORITY OF ZIMBABWE (POTRAZ)

TRAINING WORKSHOP OUTLINE

COURSE OUTLINE

Title:	**Internet of Things - Promoting Business Innovations**
Date:	**12th - 16th June 2017**
Duration:	**5 Days**
Venue:	**Vic Falls, Zimbabwe**
Tuition Fee:	**AFRALTI Member States USD1,200; Non-Member States USD1,440**

OVERVIEW:

The Internet of Things (IoT) is the network of physical objects accessed through the Internet. These objects contain embedded technology to interact with internal states or the external environment. In other words, when objects can sense and communicate, it changes how and where decisions are made, and who makes them.

It is estimated that by the year 2020 there will be about 50 billion objects interacting with the physical world by way of sensors be they temperature, movement, frequency, humidity, light, sound, pressure, chemical properties, and many others. These smart digital devices will need to communicate over the Internet infrastructure with the people, collect data using the sensors, and respond to instructions and situations.

TARGET AUDIENCE:

This course is intended for professionals interested in gaining understanding of the new trends in the constantly changing ICT domain and their impact in business, namely, IT/IS Professionals, Business/Data Analysts, Project Managers, Business Development officers, Risk Management professionals, Internet Cloud Services professionals, Entrepreneurs, among others.

LEARNING OUTCOMES
- Understand the concepts of IoT and its impact on business & government organizations
- Understand the various components and architecture of IoT
- Understand the role of cloud computing (deployment and service models, architecture, private cloud infrastructural
- concerns, security and privacy concerns) in IoT
- Understand the role of data mining, business analytics and big data technologies in IoT

- Analyze and explore the security and privacy challenges in IoT

PRE-REQUISITES
Professional training and experience in the ICT domain and/or data or business analysis.

COURSE CONTENTS:

1. Introduction to IoT
• What is IoT?
• Effects of IoT
• Skill set for IoT
• Challenges and barriers to IoT
• Functional Requirements of IoT

2. Overview of IoT
• Communication aspects involved in IoT system
- Wired connectivity and technologies
-Wireless connectivity and technologies
• Power and Energy Management & Optimization
• Network Topologies for IoT
• IoT Protocols
• IoT – Technologies & Software

3. Components & Elements of IoT
• Components of IoT
• Elements of IoT
— Radio Frequency Identification (RFID)
— Wireless Sensor Networks (WSN)
— Addressing schemes
— Data, storage and analytics
— Visualization
— Security

4. Architecture of IoT system
• Internet of Things—Architecture – IoT-A
• The IoT-A Reference Model
• Cloud Computing
— Cloud Computing in Internet of Things
— Internet of Things with Cloud Architecture
— IoT-related Cloud Security Issues
— IoT-related Cloud Computing Privacy Issues
— Building a Private Cloud to enable IoT
• Business Analytics
— Business Analytics in IoT Architecture
— IoT and Data Mining
— Data Warehouse in IoT
— Data Visualization and Tools in IoT
— Data Mining Tool
— BA Techniques to empower IoT's Analytical & Decision Making Capability

• Big Data Technologies
— Internet of Things and Big Data
— The IoT Process and its challenges
— Understanding Big Data
— Hadoop and MapReduce
— Apache HBase

5. Databases for IoT
• Big Data turning into "HUGE DATA"
• SQL Databases
• NoSQL Databases
• Cloud Databases

5. Mobile integration to enable IoT
• Mobile Middleware
• Omni-Channel Retailing
• Mobile Loyalty
• Mobile Point of Sale
• Mobile Inventory
• Real World Mobile Integration Examples

7. Security Aspects of IoT
• IoT Security Aspects
• IoT features leading to security issues
• Security Issues in IoT based on RFID
• Design Considerations for IoT Technologies

8. Privacy Aspects of IoT
• Privacy Analysis
• Data Loss – RFID, Bluetooth, Big Data
• Mechanisms to Prevent Privacy Hack
• Popular Privacy Legislations
• Privacy Enhancing Technologies (PET)
• Approaches to IoT Privacy
• Practical tips to Handle IoT Privacy

9. IoT Applications – Use Cases
• Smart Cities
• Smart Environment
• eHealth
• Smart Agriculture
• Smart security and emergencies
• eHealth

FACILITATOR'S PROFILE

Mr. Stephen Gachogu holds a Master of Science degree in Information Systems from the University of Nairobi, Bachelor of Science degree in Computing and Information Systems from the University of Portsmouth, United Kingdom and a Diploma in Education and has over 15 years experience in the ICT industry.

Mr. Gachogu has undergone extensive ICT training and undertaken a lot of research work on the design and implementation of enterprise IP networks. He holds certificates on Network Security, Wireless LANs and Security, WIMAX, VoIP, Backbone Routing, Internet Development Tools awarded by various institutions including USTTI-USA, IIT-Canada. He has attended other ICT courses in Kenya, South Africa, United Kingdom and the USA.

Mr. Gachogu is a qualified Information Systems Auditor (CISA-ISACA), Certified Ethical Hacker (CEH), and holds other active certifications in Cisco Certified Network Professional (CCNP), Cisco Certified Network Associate (CCNA), CCNA Security, Cisco Quality of Service Certified and is Cisco Networking Academy Instructor Trainer.

His area of specialization is in the design, implementation and security of local and wide area enterprise IP networks utilizing multilayer switching and advanced routing technologies. He has expert knowledge of Ethernet technology, Wireless LANs technologies and TCP/IP protocol suite. Mr. Gachogu also specializes in deployment of enterprise security, IPv6, MPLS and VOIP technologies.

For more information, please contact us on

AFRALTI	POTRAZ
Mr. Jonathan P. Mwakijele **Head of Training, Consultancy and Research Unit,** Email: jmwakijele@afralti.org **Tel: +254 718 860 897**	Ms. Norah Zaranyika **Public Affairs Officer,** Email: zaranyika@potraz.gov.zw **Tel: +263 712 871 341**