

NIGERIA INTERNET GOVERNANCE FORUM (NiGF) 2016 EDITION

THEME:

**“HARNESSING INTERNET GOVERNANCE FOR INCLUSIVE DEVELOPMENT
AND SMARTER NIGERIA.”**

OBJECTIVE:

**TO FACILITATE STAKEHOLDERS INPUT INTO THE NATIONAL INTERNET
GOVERNANCE POLICY DIALOGUE ON INCLUSIVE DEVELOPMENT
INTERVENTION AND SMART CITY INITIATIVES IN NIGERIA”.**

TOPIC

“INTERNET OF MINDS....HOW DO WE RESPOND?”

FOCUS

“FRAMEWORK AND STRATEGIES FOR THE IMPLEMENTATION OF SOFTWARE OF THINGS IN NIGERIA”

BY

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**IEEE World Forum
on Internet of Things**

IEEE WFIoTUSA 2016

Theme: "Internet of

Things: Smart Innovation for Vibrant Ecosystem"

WELCOME TO THIS PRESENTATION ON INTERNET OF THINGS (IoTS)

TOPIC

"INTERNET OF MINDS....HOW DO WE RESPOND?"

FOCUS

"FRAMEWORK AND STRATEGIES FOR THE IMPLEMENTATION OF SOFTWARE OF THINGS IN NIGERIA"

**By Chris Uwaje (FNCS)
Chairman Mobile Software Solutions Ltd.
Africa Chair: IEEE-WFIoT 2016**

• **WHY IS THE EMERGENCE OF INFORMATION SOCIETY UNSTOPPABLE?**

• **BECAUSE IT IS PRACTICALLY -**

'IMPOSSIBLE FOR THE HUMAN MIND TO THINK ABOUT NOTHING!'

• **CONSTRUCTIVE INFORMATION REASONING HAS LED TO INNOVATION**

• **IN THE DIGITAL WORLD, THIS INFORMATION REASONING HAS CREATED THE INTUITIVE INTERACTION BETWEEN THE FOLLOWING:**

❖ **SENSORS**

❖ **CONNECTIVITY**

❖ **PROCESSES.....AND**

❖ **PEOPLE**

❖ **THIS ECOSYSTEM CREATE NEW SMART APPLICATIONS & SERVICES**

• **IN THIS ECOSYSTEM RESIDES OPPORTUNITIES ,BENEFITS AND ABUNDANT RISKS**

• **HOW DO WE RESPOND?**

WHAT MUST NiGF DO?

THE COMPASS

- GLOBALIZATION STARTED WITH THE COMPASS
- THE COMPAS IS A PIECE OF TECHNOLOGY INNOVATION
- THE COMPAS FOUND OUR FORE-FATHERS
- THE COMPASS WAS RESPONSIBLE FOR THE SLAVE TARDE – THAT RAPED AFRICA?
- WHAT IS INTERNET OF THINGS AND WHAT ARE THE OPPORTUNITIES AND RISKS FOR AFRICA/NIGERIA?



IEEE World Forum on Internet of Things

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Theme:

“Internet of Things: Smart Innovation for Vibrant Ecosystem”

- ❖ **SENSORS**
- ❖ **CONNECTIVITY**
- ❖ **PROCESSES.....AND**
- ❖ **PEOPLE**

The Internet of Things

- Is in Reality:
**THE INTERNET OF
MINDS (IoMs)**



IoT: CONCEPTUAL AND DEFINITIONAL ISSUES



Sensors

Digital Nervous System

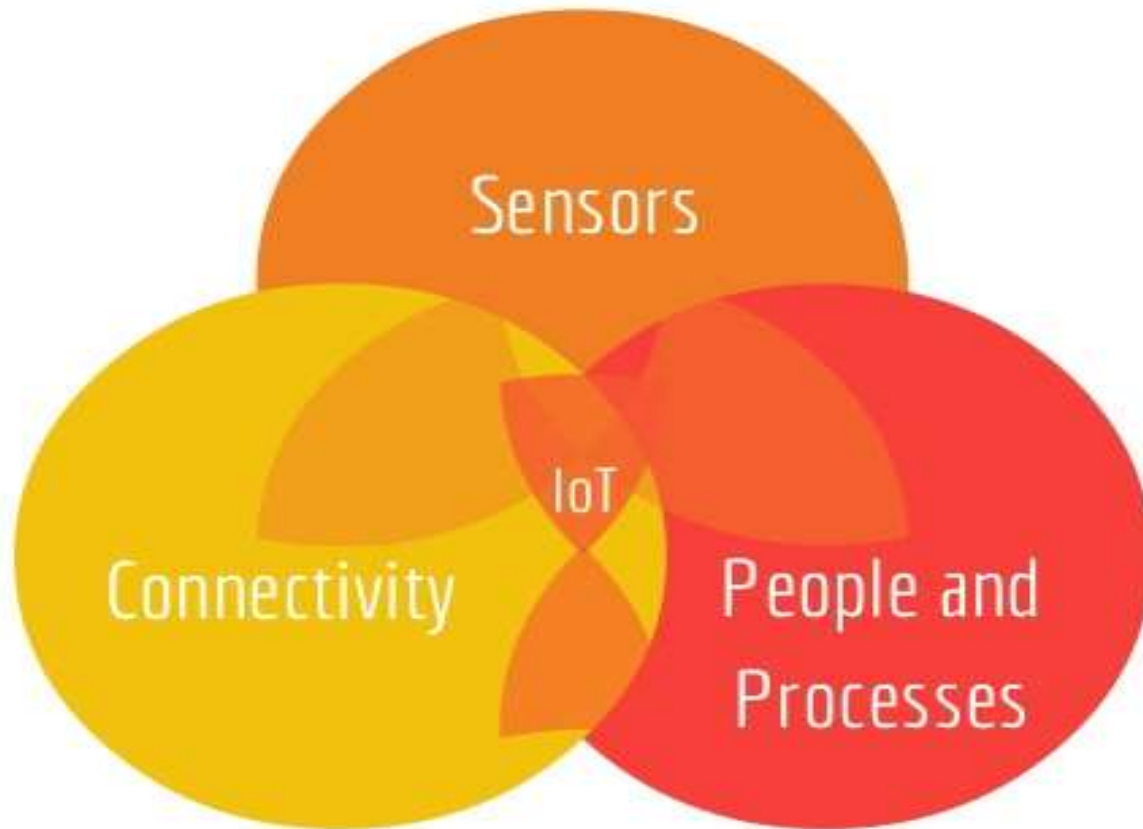
Location Data using GPS

Eyes and Ears = Cameras & Microphones

Digital Sensory Organs

Everything from Pressure to Temp Changes

The Internet of Things is a combination of:





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THE DIGITAL NERVOUS SYSTEM.....SHAPE OF THE NEW WORLD

- **FUTURE HOME = CONSUMER**
- **TRANSPORT = MOBILITY AND MOBILE GOVERNANCE AND ECONOMY**
- **HEALTH = HUMAN BODY & NANO OF THINGS**
- **BUILDING= CRITICAL INFORMATION INFRASTRUCTURE**
- **CITIES = INDUSTRY (Smart Cities & Smart Industries)**

IoTs.....SERVICES:

SMART HOMES= SENSOR DRIVEN DEVICES” TV, FRIDGE, WASH MACHINE, KITCHEN ETC.

TRANSPORT = SMART CARS, AND MOBILE DEVICES

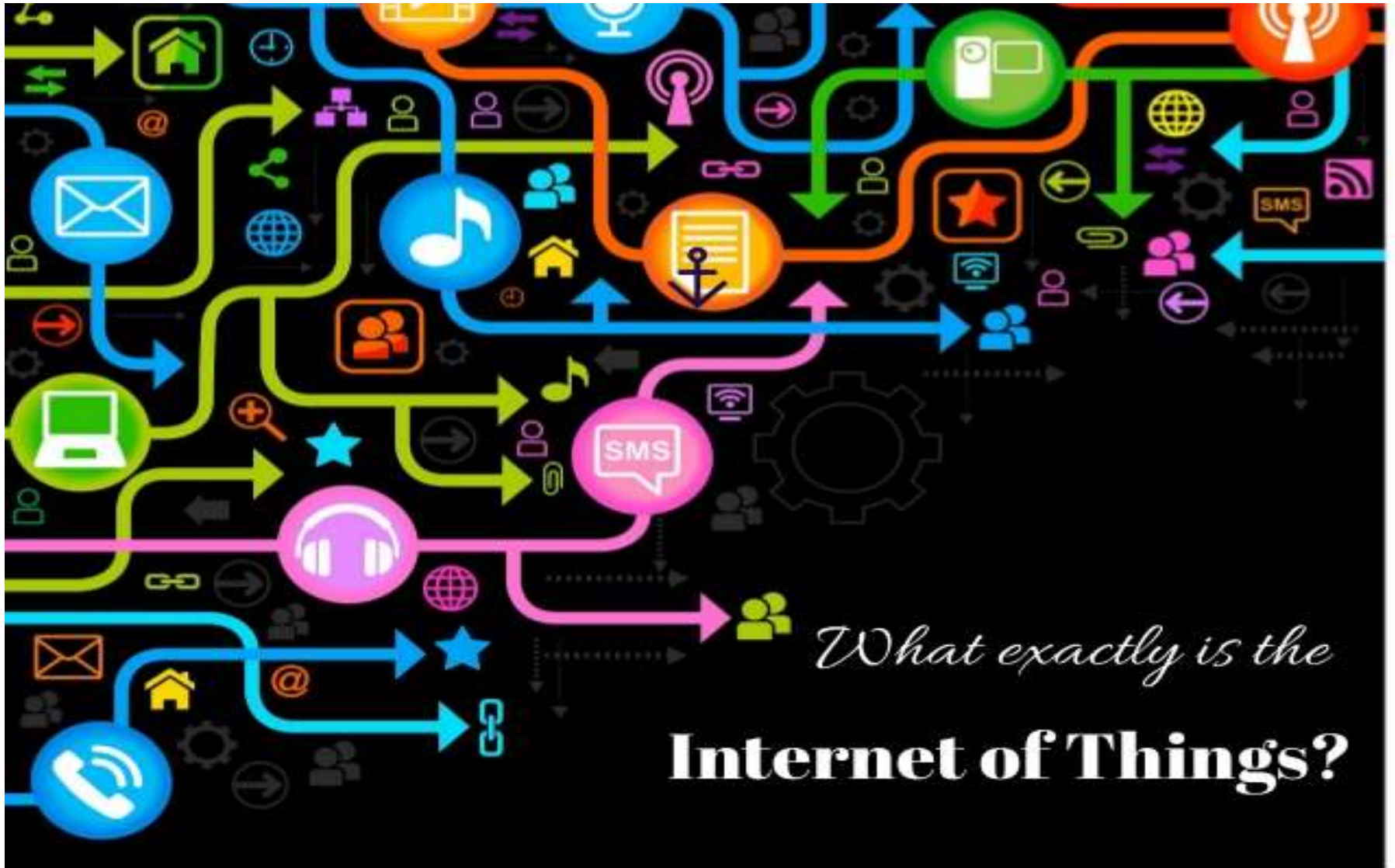
CITIES= PARKING SENSORS

BUILDING= SMART EVERYTHING

HEALTH= SMART HOSPITALS AND ACTIVITY TRACKERS

EDUCATION = INFORMATION REASONING

WHAT EXACTLY IS INTERNET OF THINGS



IoT: SENSORS AND THE NEW DIGITAL WORLD

Connectivity

Sensors are digitized and

placed into networks.



IoT Enabling Technologies - 1

- 5G Networks and IoT
- Software Defined Network (SDN) and IoT**
- Sensor and Actuator Networks
- Ultra-low power IoT Technologies and Embedded Systems Architectures
- Wearables, Body Sensor Networks, Smart Portable Devices**
- Design Space Exploration Techniques for IoT Devices and Systems
- Heterogeneous Networks, Web of Things, Web of Everything
- IoT Protocols (IPv6, 6LoWPAN, RPL, 6TiSCH, W3C)**
- Named Data Networking for IoT
- Internet of Nano Things**
- Sensors Data Management, IoT Mining and Analytics
- Adaptive Systems and Models at Runtime
- Distributed Storage, Data Fusion**
- Routing and Control Protocols
- Resource Management, Access Control
- Mobility, Localization and Management Aspects
- Identity Management and Object Recognition**
- Localization Technologies
- Edge Computing, Fog Computing and IoT
- Machine to Machine (M2M)/Devices-to-Devices communications and IoT**
- Industrial IoT and Factory of Things and Internet of Things

IoT Enabling Technologies - 2

- Cyber-physical systems, Context Awareness, Situation Awareness, Ambient Intelligence
- Collaborative Applications and Systems
- Service Experiences and Analysis
- Smart Cities, Smart Public Places, Smart Home/Building Automation
- e-Health, e-Wellness, Automotive, Intelligent Transport
- Smart Grid, Energy Management**
- Consumer Electronics, Assisted Living, Rural Services and Production
- Industrial IoT Service Creation and Management Aspects
- Crowd-sensing, human centric sensing
- Big data and IoT Data Analytics**
- Internet Applications Naming and Identifiers
- Semantic Technologies, Collective Intelligence
- Cognitive and Reasoning about Things and Smart Objects
- Mobile Cloud Computing (MCC) and IoT**
- Horizontal application development for IoT
- Design principals and best practices for IoT application development
- IoT Multimedia

IoT Enabling Technologies – 3

Security and Privacy for Internet of Things

- IoT Privacy and Security Concerns
- Identification and authentication issues
- Wireless sensor network for IoT security
- Intrusion detection in IoT
- Cryptography, key management and authorization for IoT
- Physical/MAC/Network Attacks in Internet of Things
- Cross-layer attacks in IoT
- Security with QoS optimization in IoT
- Privacy based channel access in IoT
- IoT forensic science
- Big data and information integrity in IoT
- Communication security in IoT
- Security standards in IoT

IoT Societal Impacts

- Human Role in the IoT, Social Aspects and Services
- Value Chain Analysis and Evolution Aspects
- New Human-Device Interactions for IoT, Do-It-Yourself
- Social Models and Networks
- Green IoT: Sustainable Design and Technologies
- Urban Dynamics and crowdsourcing services
- Metrics, Measurements, and Evaluation of IoT Sustainability and ROI

•IoT Enabling Technologies – 4

•IoT Experimental Results and Deployment Scenarios

- Closing the Gap between Research and Implementation
- Experimental prototypes, Test-Bed and Field Trial Experiences
- Multi-Objective IoT System Modeling and Analysis—Performance, Energy, Reliability, Robustness

•IoT Interconnections Analysis—QoS, Scalability, Performance, Interference

- Real case deployment scenarios and results

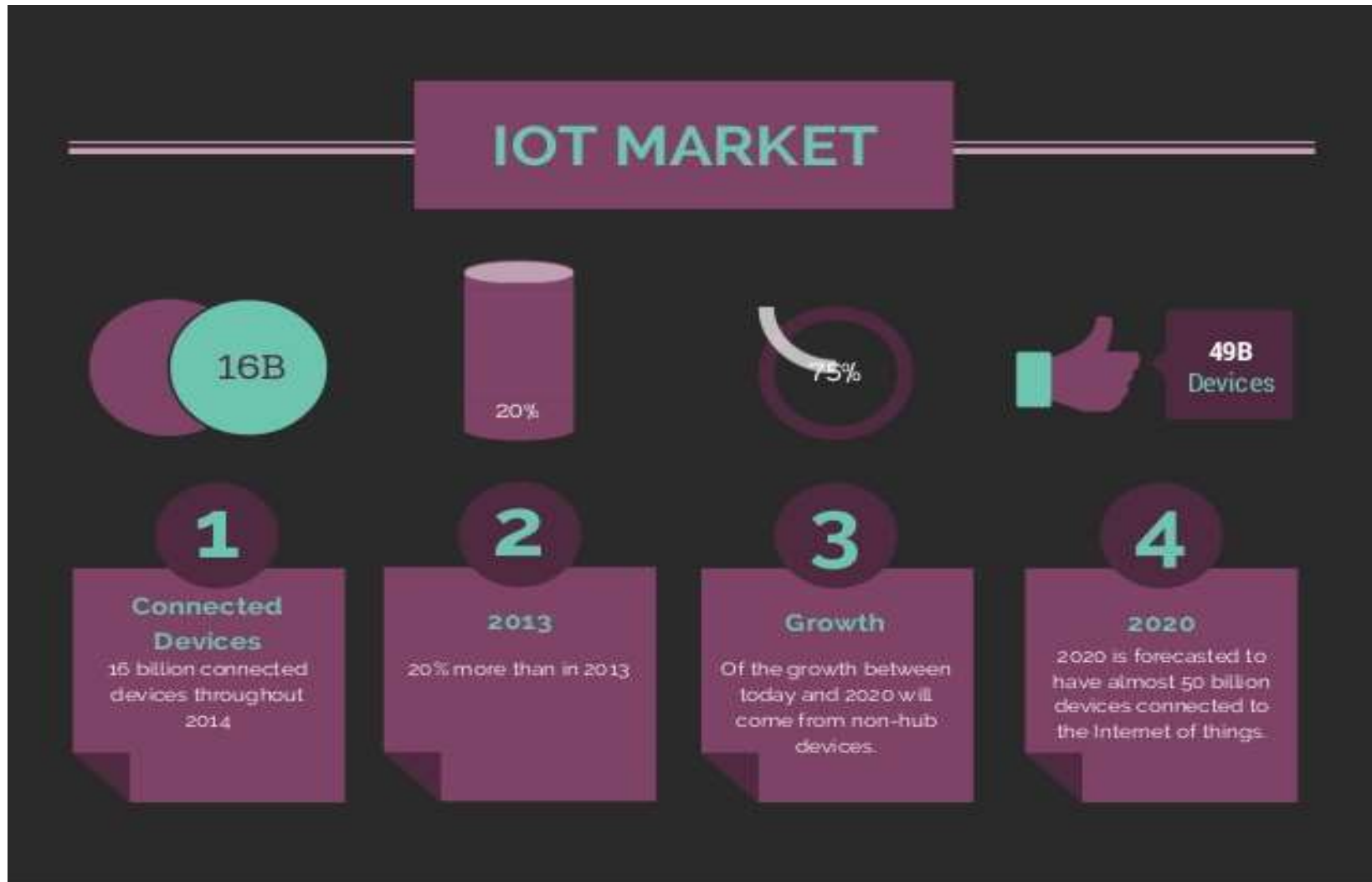
•IoT deployment at Government and ISPs

- IoT deployment on agriculture, retails, smart cities, etc.

•IoT Interconnections among ISPs Analysis—QoS, Scalability, Performance, Interference

- Gaps Analysis for real deployment
- IoT and Future Internet architectures
- Standardization and Regulation

THE IoT MARKET PLACE



THE IoT MARKET IN 2020

AN ESTIMATED
VALUE OF
\$19 TRILLION

HOW DO WE RESPOND?
CREATE OR CONSUME?
CONSUME AND PERISH!

The technology sector is already among the most volatile industries in terms of revenue and income.

Volatility of Returns by Sector (1962 - 2015)



Standard deviations of 12-month year-over-year returns and growth rates from 1/31/1962 through 1/31/2015. Equity universe is defined as the top 3,000 U.S. stocks by market capitalization, sector as defined by the Global Industry Classification Standard (GICS).
Source: Haver Analytics, Fidelity Investments, as of January 31, 2015.

THE INTERNET OF MINDS (IoM)

**CALL FOR THE AFRICA
SOFTWARE OF THINGS
ASoT**

WHAT IS ASoT ???

RECOMMENDATION: IoT FOR IGR

Internet Policies and IoT Strategies will become the greatest battle field of the 21st Century for Policy Makers and Leadership.

- 1. E-Government skill acquisition should be made mandatory for all government policy makers, strategists and Political Leaders.**
- 2. Establish Regional E-Government Academy and special National Research Laboratories on Embedded Systems Technologies – focused on IoT.**
- 3. Ensure that National ICT Conferences incorporate Ph.D Research Sessions on Internet Governance**
- 4. YOUR RECOMMENDATION AS STAKEHOLDER.....**
- 5. YOUR RECOMMENDATION AS STAKEHOLDER.....**

THANK YOU SO MUCH

AFRICA MUST BUILD SKILLED INTERNET GOVERNANCE CAPABILITIES.

THANK YOU ALL

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Contributions & Questions



How can you help us grow and sustain Internet Governance, Internet of Things and indeed, e-Government Leadership in Nigeria?