



# Summary of eNigeria conferences (2010 - 2014)



NATIONAL INFORMATION TECHNOLOGY  
DEVELOPMENT AGENCY



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# Forward

Considering the potential and possible impact ICT can have on society, the National Information Technology Development Agency (NITDA) is focused on enabling the deployment and exploitation of ICT for socio-economic development. A major aim of NITDA is to facilitate the emergence of Nigeria as a key player in the global and African information society by using ICT as an engine for sustainable development. To realize the nation's potentials and achieve the vision of making Nigeria one of the top 20 economies in the world, by year 2020 through the development of an information and knowledge-based economy and society, the role of NITDA is increasingly important.

In furtherance of this vision, NITDA organizes eNigeria, an Information Technology (IT) development summit, annually in collaboration with relevant stakeholders from the private and public sector as well as non-governmental organizations. Through the eNigeria forum NITDA builds bridges with stakeholders to fast track leverage on ICT to meet real development needs such as wealth creation, job creation, poverty reduction, economic growth and education, while improving opportunities to compete and participate in the global network economy.

This publication covers e-Nigeria conferences organized by NITDA in 2010, 2012, 2013 and 2014. The highlights of each conference are constituted, summarizing many of the discussions and presentations, plenary sessions as well as conclusions and recommendations contained in each communiqué and outcome.

eNigeria from 2010 to 2014 publication is more than a report on yearly conferences. It is a unique snapshot of ICT developments across Nigeria, going beyond statistics, promoting strategic vision and policy imperatives, assessing and fostering ICT sector growth and giving representation to Nigerians and organizations in Nigeria involved in ICT and ICT enabled activities in key sectors. The publication highlights the role and commitment of NITDA in facilitating the development, deployment and exploitation of ICT as a development accelerator for creating an inclusive digital economy.

This compilation is therefore expected to serve as a veritable resource for teaching, learning and research

– Peter Olu Jack  
Director General/CEO, NITDA



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# Introduction

The digital age has witnessed rapid globalization underpinned by huge increases in technological advances. Information and Communication Technology (ICT) is today a crucial growth enabler with enormous impact. The nature of governance, business, education and social engagements is speedily and dramatically changing. ICTs offer phenomenal prospects and amazing opportunities for growth and development, providing opportunities for developing countries to address developmental challenges and transform their societies and economies.

To realize the nation's potentials and achieve the vision of making Nigeria one of the top 20 economies in the world, by year 2020 through the development of an information and knowledge-based economy and society, the role of NITDA is increasingly important.

In furtherance of this vision, eNigeria is a veritable platform that brings experts, key stakeholders and government officials together to resolve issues relating to ICT awareness creation, developing appropriate frameworks and setting goals for best practices in positioning Nigeria strategically in the global information society. Organized annually under topical and development oriented themes, several editions of the eNigeria summit have been held with each contributing to the level of development of the IT sector in the country. For instance, IT deployment has improved in the Federal Public Service; Frameworks have been developed for capacity building in core IT areas while some schools and local government areas have also benefitted.

Annually the three day eNigeria conference is declared open by the President of Nigeria, or his representative. The opening ceremony features a keynote speech based on the conference theme by a distinguished and high profile personality. eNigeria is essentially structured into several plenary sessions featuring relevant presentations. In 2014, the program comprised over 20 presentations in 6 plenary sessions. Vast ranges of topics across the ICT for development spectrum are explored under the conference theme and sub-themes.

In addition to the President or his representative, the conference has benefitted from the presence and input of Ministers, and high level representatives from major government (Ministries, Departments and Agencies (MDAs), private sector and development organizations. Over 1000 delegates attended eNigeria 2014.

## Presentations and Sessions

The conference is organized to enable a wide range of national and international experts, government officials, specialists, researchers and consultants share experiences, enhance knowledge and gain insights about strategies, education, projects and initiatives relating to the conference theme. Through discussions and presentations presenters and participants each bring their unique backgrounds and perspectives to the table. Parallel sessions are also hosted during the conferences. The hallmark of eNigeria conferences is the interactive nature of the event. Audience participation is healthy and lively. Varied opportunities are offered to interact, compare ideas, make informed analysis and develop local, international and industry contacts.

Since eNigeria 2012, the conference has been showcasing demos from business start-ups and young entrepreneurs in the ICT sphere as a way of meeting the needs and aspirations of the next generation while at the same time recognizing and encouraging innovation and enterprise amongst young people.

Integral to every eNigeria conference is the parallel exhibition space. Featuring exhibitors from all over Nigeria and other countries, the exhibition area is always a hub for the latest technological innovations. Participants are able to see and practice with most recent technologies, as well as to learn about new tools and techniques, while suppliers could present their products and services to conference delegates.

On the final day of each eNigeria event, all delegates agree on a communiqué summarizing discussions, recommendations and conclusions.



## eNigeria 2010

### Introduction, Themes and Objectives

The eNigeria 2010 Conference organized by the National Information Technology Development Agency (NITDA) took place at the Shehu Musa Yar'Adua Centre, Abuja from May 18 - 20, 2010. The theme of the 2010 edition was "ICT4D Plan and Global eRanking: Implications for Vision 20-20-20".

The Opening Address was delivered by Special Guest of Honour, Dr. Goodluck Ebele Jonathan, GCON, President and Commander in Chief, Federal Republic of Nigeria who was represented by Prof. M.K. Abubakar, Hon. Minister, Federal Ministry of Science and Technology.

Other dignitaries at the event were Senator Jubril Martins-Kuye, Honourable Minister, Federal Ministry of Commerce and Industry and Prof. Clement Dzidonu, United Nations Economic Commission for Africa's Coordinator for Nigeria ICT4D plan who delivered the Keynote Address titled, "An Overview of Nigerian ICT4D Plan". The Welcome Address was delivered by Prof. Cleopas O. Angaye, Director-General, NITDA.

Also present were Presidents, Nigeria Computer Society (NCS), Institute of Software Practitioners of Nigeria (ISPON), Association of Telecom Companies of Nigeria (ATCON), Information Technology Association of Nigeria (ITAN) and Computer Professionals Registration Council of Nigeria (CPN).

The Information and Communications Technology for Development, ICT4D plan document was launched by the President, who directed that all Ministries, Departments, and Agencies should commence immediate implementation of areas of the Nigerian ICT4D plan that are relevant to their respective mandates.

The conference witnessed participation from the highest level policy decision makers at the three tiers of government in Nigeria, the international community, ICT equipment manufacturers and solution providers.

### Themes

The choice of theme was aimed at examining how Information and Communication Technologies (ICTs) could be used to drive the Federal Government's Seven Point Agenda towards achieving Vision 20-20-20 and facilitating the upward movement of

Nigeria in the global e-readiness ranking.

In this regard, eNigeria 2010 was used to create awareness and present the ICT4D Plan document to all Nigerians. Several resource people and stakeholders involved in the development of Nigeria's ICT4D plan participated and delivered presentations during the event.

There were five (5) plenary sessions with a total of 19 papers presented based on the following sub-themes:

1. Sectoral Application of ICT4D in Nigeria
2. Sectoral Application of ICT4D 11
3. Pre-requisites for Implementing the Nigerian ICT4D
4. eGovernment and Payment Systems: Experience Sharing
5. Private Sector Participation in ICT for Development

#### Objectives

- Provide a framework on the application of IT to drive federal government's 7-point Agenda in order to achieve vision 20 - 2020;
- Plug into Global, Regional and National Policies or Initiatives aimed at reducing Poverty and advancing Human Development;
- Identify and explore ICT opportunities for Human Capital Development, Trade, Investment and Finance;
- Use ICT as a tool for a wide range of applications, such as Agriculture, Governance, Health, National Security and Legislation; and
- Create an enabling environment that will facilitate and encourage Private Sector investment in all sectors.

## PLENARY SESSION 1 PRESENTATIONS

The first plenary session of the eNigeria 2010 conference under the conference sub-theme, "Sectoral Application of ICT4D 1" raised awareness and promoted the merits of sectoral ICT4D initiatives in addition to addressing associated challenges.

### Presenters

- The Nigerian ICT4D Plan and Vision 20-2020 by Dr. Armstrong Takang, Chairman, Nigerian ICT4D Plan Committee and Managing Director, Alteq Inc
- ICT and Youth Empowerment in Nigeria by Mr. Jim Ovia, Managing Director, Zenith Bank
- The Role of ICT Deployment for National Security by Hakeem Ajijola, Office of the National Security Adviser
- Re-engineering Teaching and Learning in Nigeria using ICT by Prof. C. Akinyokun, Federal University of Technology, Akure

Dr. Armstrong Takang's presentation, "The Nigerian ICT4D Plan and Vision 20-2020" provided an extensive and insightful overview of the ICT4D plan and how it can be used to attain an ICT enabled Vision 20-2020. He started by acknowledging the momentous efforts of past and present principal officers of NITDA and the resource persons. The plan, he pointed out is a Strategic Action Plan developed within the context of Vision 20-2020, the 7-Point Agenda and other relevant national policies focused on fostering rapid, sustainable, widespread and inclusive social and economic growth and ensuring Nigeria becomes an information and knowledge society in which the benefits of the information revolution can be tapped and exploited.

He informed participants that a strategic sub plan per sector was developed addressing unique challenges of each sector and that sectors covered by the plan are Health, Agriculture, Education, Research and Development, Human Resource Development, Governance and Legislature, National Security, eGovernment, Infrastructure and Private Sector. He shared sample sectors, programs, plan actions and objectives in fully describing the plan framework. In emphasizing ICT4D as a driver for Vision 20-2020, Dr. Armstrong Takang mentioned indicative parameters for Vision 20-2020 and highlighted opportunities for each of the sectors that would enable Nigeria to be one of the 20 largest economies in the world by 2020.

He used graphs and charts to illustrate relevant statistics of the leading economies in the world as well as trends, elements and segments of the Global ICT industry and relevant trends. While appreciating the ICT achievements of Nigeria as the fastest Growing Mobile Market in the World and having the 2nd highest internet penetration in

Africa, he expressed concern about the challenges of poor quality of telecom service, slow Internet speed, absence of equipment manufacture, low patronage of indigenous solutions and low penetration of ICT. For him, the challenges are in line with the digital divide between Africa and other continents, which he buttressed with displayed statistics.

He argued that Nigeria needs an ICT-enabled Vision 20-2020 because the World bank had projected that by 2020, the most critical factor that would separate developed economies from non-developed ones would be whether a country is an ICT have or ICT have-not country. While giving specific examples and describing several ways in which ICT provision directly impacts on improving the state of ALL the indicative parameters for Vision 20-2020, he asserted that "The ICT4D plan is an effective driver of social and economic revolution".

Institutionalization of the ICT4D Initiative, provision of appropriate political sponsorship and leadership, establish direct link between ICT4D and National Social/Economic Programmes, focus on sectors that help local job creation and the building of indigenous capacity, design and implement initiatives that drive up demand for ICT solutions and strengthen capacity of indigenous firms to fully participate in emerging business opportunities were some of Dr. Armstrong Takang's recommendations. He insisted on a clear understanding of required inputs to attain Vision 20-2020. Double digit GDP growth and job creation should be plan outcomes and speed is essential to beat the competition, he remarked.

Mr. Jim Ovia's concise presentation, "ICT and Youth Empowerment in Nigeria" spoke on how to empower the youths with ICT opportunities and create the required enabling environment. In acknowledging that young people represent the face and future of any nation, he noted that Nigeria has the 8th largest youth population in the world with about 45 million youths. Youth today, also adopt a digital lifestyle that is quite different from what obtained with youth one or two generations ago, he remarked.

He expressed concern that 47 years after the PC was introduced in Nigeria, PC penetration is still relatively low at about 10 million nodes or 7 per 100 inhabitants. Though Nigeria now has the largest online population in Africa with 24 million users, he observed that penetration remains relatively low at 16.1%. Nigeria has done better in telephony than in any other ICT area, he noted that the country is rated as one of the world's fastest growing telecoms market and largest telecoms sector in Africa. Huge population size, sector liberalization, years of yearnings for telecoms services, competitiveness and profitability of the sector and growing awareness about ICT indispensability are factors he credited for ICT growth in Nigeria.

According to Mr. Jim Ovia, the youth need to be empowered because the improvement of their knowledge base and exposure to ICT opportunities create wealth for themselves and the nation while increasing the nation's global competitiveness. He asserted that young people can meet their needs and develop to their full potential through ICT opportunities in education, health, communication, job

creation/employability and innovation/wealth creation. ICT challenges faced by young people he mentioned include inadequate infrastructure, high cost of ICT services, limited ICT access, especially in the rural areas, lack of protection for intellectual property rights, cybercrime, the use of ICT for unethical practices and poor ICT capacity and orientation within the educational system.

He however insisted that youth empowerment requires the sharing roles by government, private sector and parents. His expectations are for government to provide an enabling environment, while the private sector should assist in improving competitiveness, pricing and access and parents can employ 'catch them young' techniques, empower children with ICT tools and arouse their enthusiasm and curiosity to explore and discover. Mr. Jim Ovia recommends that youths must possess self discipline, curiosity, focus and an innovative spirit. Observing that the future holds endless opportunities for Nigerian youths, he said the next steps calls for all hands to be on deck to achieve the desired youth empowerment.

The presentation, "The Role of ICT Deployment for National Security" by Hakeem Ajijola focused on how ICT fits into the changing concept of National Security, the associated challenges and opportunities and the way forward for Nigeria. He said the concept of national security has been expanded beyond defence forces to include EVERYTHING that threatens peace and tranquility in society. In view of the benefits/capabilities of ICT for coordination, communication, organization and information sharing, he demanded for leverage on ICT in the national security process.

Hakeem Ajijola identified several national security challenges in crime, disasters, emergencies, terrorism and political instability. The increasing sophistication in security challenges requires appropriate intelligence management, he observed. ICT, he pointed out, can abet and or be the object of crime. He noted the increase in "traditional" crimes and new types of criminal activity due to the increasing volume of computerized data, increasing value of the data and need for privacy of data. In looking at ICT and national security challenges, he highlighted trends in cyberspace, mobile systems, cloud computing, high speed communications links and gaming. He also drew attention to the security implications of tools including SMS text messaging, e-mail and online resources, remarking that they have been used for advocacy and mobilization.

Agreeing with Former US President Bill Clinton's description of Critical Infrastructure as, "those physical and cyber-based systems essential to the minimum operations of the economy and government", he shared examples of security challenges of cyberspace, e-mail, Wikipedia and Intellipedia. Noting that countries are exploiting these tools for intelligence, Hakeem Ajijola further spoke on examples of 21<sup>ST</sup> century warfare which entails using computers for espionage, supporting military forces and attacking enemy networks. Assessing ICT and National security from the 9-11 incident he shared lessons about financial service disruptions, backup facilities and business continuity plans with the audience.

According to him, government institutions combating cyber crime in Nigeria are the Executive (ONSA), legislature, judiciary and the Economic and Financial Crimes Commission (EFCC). Other Players combating cybercrime, he mentioned are UNODC, ITU: Cyber Security, OIC: CERT, Internet Safety (ISSPIN) Campaign and professional associations. He called for sharing of best practices, change management processes, significant and consistent investment, Public Private Partnerships and building Cyber Forensics capabilities.

The way forward he stressed should include Computer Emergency Response Team (CERT) and Computer Security Incident Response Team (CSIRT), informing participants that CERT services are Reactive Services, Proactive Services, Artefact Handling and Security Quality Management Risk Analysis. Establishment of National Security Sector CERT to develop and implement CERT Policy, having CERTs in National Security Institutions, and including National Security Sub-Sector CERTs and global CERTs were his recommendations. In concluding, Hakeem Ajijola called for knowledge mobilisation, the continuing development of the National Security establishment and the empowerment of National Security operatives.

The presentation, "Re-engineering, Teaching and Learning in Nigeria using ICT" by Prof. C. Akinyokun offered a unique overview of the ICT4D Strategic plan in the education sector of Nigeria. He presented a multimedia system for virtual teaching and learning in Nigerian schools. The system aims to enable expert knowledge and skills of experienced and competent teachers in choice subjects in Nigerian schools to be shared online and real time by students in different schools, he asserted.

Acknowledging that ICT is a major tool that can be used to solve the problems of Nigerian education system, he stated that the multimedia system is showcased for implementation of an aspect of the ICT4D plan in the education sector. For him, using ICT to enhance the performance of students and teachers in the Nigerian education system is the ultimate goal.

The ICT4D strategic plan is meant to serve as a road map for the full implementation of the existing national policy in each sector of Nigerian economy, Prof. C. Akinyokun noted. He explained how the ICT4D strategic plan for the education sector addressed eleven programmes, forty four implementation strategies, thirty two plan actions, and proposed one hundred and six time-bound-measurable-targets. He told participants that ICT4D strategic plan in the education sector are to provide functional and qualitative education as well as develop ICT driven curriculum characterized by both local and global contents.

He presented a multimedia system for teaching and learning with emphasis on the Design consideration, Block structure and Detail structure. For the design consideration, he identified practical issues of the multimedia system as Computer network topology, Messages transmission media, Protocol for the transmission of messages and Website design for online access to lectures by students. He informed the audience that the multimedia system has three layers or stations of activities:

lecture capture station, lecture file server station and lecture view station. The structural design of the proposed multimedia system, he explained has three components: Backend platform, Cabled network platform and Wireless network platform.

He informed participants that each school is made to run a Local Area Network (LAN) with a lecture file server machine and two categories of clustered workstations. To further illustrate the nature of the system, he highlighted conceptual diagrams of Backend Platform, Cabled Network Platform and Wireless Network Platform. "The multimedia system is designed to provide online and real time fixed and mobile communications between lecturers and students", he remarked.

Prof. C. Akinyokun made it clear that the proposed multimedia system is a desirable integral part of a holistic instrument for re-engineering teaching and learning in Nigeria schools, which he strongly feels should be implemented at the federal and state levels. This, he said, "would promote and facilitate the uniform distribution of expert knowledge among collaborative Nigerian schools".

## PLENARY SESSION 2 PRESENTATIONS

The second plenary session of the eNigeria 2010 conference under the conference sub-theme, "Sectoral Application of ICT4D 11" provided details of sectoral ICT4D initiatives and how they lead to the realization of the nation's socio-economic goals.

### Presenters

- ICT for Public Health Care Delivery in Nigeria: Opportunity & Challenges by Engr. Adeolu Odusote, Dee-ly Limited, Abuja
- Global e-Payment Adoption Ranking: Implications for Nigeria by Shamiel Bhikha, Namitech (PTY) South Africa
- ICT Research and Development and Sustainable National Development by Prof. Charles Uwadia. President Nigerian Computer Society
- ICT as a tool for Developing the Niger Delta Area by Chris Uwaje, President, ISPON

Engr. Adeolu Odusote's presentation, "ICT for Public Health Care Delivery in Nigeria: Opportunity & Challenges", provided a basis for ICT use in health sector development as well as the prospects, challenges and milestones of Nigeria's health Sector in the ICT4D Strategy and Plan. With a recent life expectancy rating of 49 years, he remarked that Nigeria's health sector leaves much room for improvement. He spoke about a health sector reform program that is presently being driven with: Assessment of the nation's national health system, Pursuit of disease abatement programs, Population growth, Health management information system, and Monitoring and Evaluation.

Concluding based on several research studies that the use of ICT is definitely advantageous in Health sector development, he agreed with research suggestions on the following as approaches for ICT engagement: Keep technology simple, relevant, and local, build on what is already on ground, involve users in the design, strengthen absorptive capacity, involve participation of users in monitoring and evaluation, use communication strategies appropriately and continue to seek ways of doing things.

According to Engr. Adeolu Odusote, the Nigerian ICT4D Strategic Plan was developed by NITDA in collaboration with the United Nation Economic Community for Africa (UNECA) to cover Human Resource Development, Electronic Government, ICT in Infrastructure Development, ICT in Education, ICT in Health, ICT in Community, Agriculture Sector Development, Private Sector Development, Governance and Legislation Framework, National Security and Law Enforcement and Research and Development. Delving further into the ICT4D Plan, he disclosed that Telemedicine, Practitioners' Data Exchange, Public Awareness in Disease Prevention, ICT in Human

Resource Development and National Health Information System are the drivers of the health sector in the plan.

He noted that though Nigeria is one of the five countries in Africa that have completed their national ICT4D document, endorsement of the Federal Executive Council is taking an unduly long time. Funding to run the various sector plans and ensuring the judicious use of funds provided, he foresees could be a major challenge with the plan. There is a strong need for absorptive capacity building in all the areas of the ICT4D plan as well as proper monitoring and evaluation, he insisted.

Engr. Adeolu Odusote concluded that Nigeria must use ICT to drive health sector development. "ICT for development strategies and plans in nation must be backed up with the political will at the highest level of national leadership to execute them", he declared. Pointing out that the availability of an ICT4D National Strategy and Action Plan is a great achievement that has great prospects for national development, he called for both national and international collaborations to achieve successful implementation of the strategic ICT4D plan.

The presentation, "Global e-Payment Adoption Ranking: Implications for Nigeria", by Shamiel Bhikha focused on security in the digital payments domain in Nigeria. He used the inefficient operations and poor service delivery scenario of banks and payments processes before Nigerian payment systems implementation to highlight the crucial role of payment systems in any economy. He spoke to the audience about the Central Bank of Nigeria's National Payment Systems policy objectives and the various types of payment systems – electronic and traditional.

Control measures he mentioned for threats in the payment environment include controlled security management, strong awareness campaign on associated risks and e-fraud forum. Electronic transactions and e-commerce, he declared require identification systems, legislation and convergence of open networks. He further described elements of an e-payment system, e-payment system participants, problems and risks.

Expanding on host security, transmission security and active content, Shamiel Bhikha explained why the Internet is insecure, while stating the importance of trust in banking and payments. He defined the elements of e-payment security as Authorization, Access Control, Confidentiality, Data Integrity, Authentication and Non-repudiation. Stressing the importance of a regulatory framework, he shared examples of threats and opportunities and expressed concern about rapidly growing threats and targeted attacks.

The importance of learning lessons and having different point of view such as the need to think like your enemy and reduce the possibility of security breaches by the most comprehensive Security Information & Event Management, were focus areas for him. Observing the manner in which networks and distribution channels are converging, he noted that banks, telecoms, public authorities, retail and media enterprises all deliver services, products and content in the convergence space. In exploring

security/identification services he restated the important elements of e-payment security.

For him, the solution to the challenge of an open and insecure channel, no means for physical authentication, execution of transactions often in real time and limited physical security elements in the payment media is Public Key Infrastructure (PKI). To encourage online transactions, stakeholders (businesses, agencies, citizens, etc) must be assured of trust value, he asserted. He told the audience PKI provides a high security and well manageable solution for the listed security requirements, enables strong authentication, digital signature, non-repudiation, integrity and confidentiality and is a (de-facto) standard. While also highlighting specific benefits of PKI, he explained how it works, showcasing opportunities in compliance, risk management and partnerships and mobility and the importance of digital signatures.

Shamiel Bhikha made it clear that the reality of more openness for improved competitiveness in various creates more opportunities for exposure to risk. He proposed leverage on VeriSign's authentication and encryption services as the solution. "A PKI requires: technology, people, facilities, applications, policy and procedures", he concluded.

Through his thought provoking presentation, "ICT R & D and Sustainable National Development", Professor Charles Uwadia examined the present state of R&D in ICT in Nigeria and outlined the way forward in this area based on national aspirations and goals. He started by declaring R&D as the bedrock of any self-reliant national economy. "The Agrarian, Industrial and ICT revolutions occurred as a result of progress made in R&D", he remarked. He identified institutions of higher learning, government agencies, research institutes, internationals and industrial concerns as bodies involved in R&D. Disciplines covered by R&D are all-encompassing and include Agriculture, Health, Education, Engineering/ Science etc. and specifically ICT, he noted.

He spoke about the WSIS declaration which recognized education, knowledge, Information and Communication as being at the core of human progress, endeavour and well-being. The declaration stated that "ICT have an immense impact on virtually all aspects of our lives." For him, the WSIS statement made it clear that national capability in ICT Research and Development should be enhanced to achieve a sustainable development of the Information Society. He stated that the declaration identified partnerships in R&D, technology transfer and manufacturing and utilization of ICT products and services as being crucial for promoting capacity building and global participation in the information society.

In explaining the declaration's information society concept, Professor Charles Uwadia identified the provision of ICT services for the benefit of the populace, respect for cultural identity, cultural and linguistic diversity, traditions and religions and the development of local content suited to domestic or regional needs as foundational. Bringing ICT nearer to the people, facilitating ease of use of ICT devices and facilities, making ICT more affordable, increasing ICT penetration and diffusion in Nigeria,

increasing local content in the manufacture and production of ICT, developing indigenous, local capacity for sustainable development, developing ICT for the local environment, creating employment opportunities and developing capacity for export of ICT were objectives of R&D in ICT, he mentioned.

He further stated that the outdated national policy framework, lack of information on R&D activities, absence of a national ICT research institution, poor development of R&D in institutions of higher learning, possible duplication of R&D activities, absence of synergy between R&D institutions and Users/User companies and inadequate investment in R&D were some constraints to R&D in ICT in Nigeria. Opportunities are quite enormous with many areas yet to be tapped, he asserted. Such prospects will however require investment and collaboration and partnership with global bodies, he noted.

In pointing the way forward, some of Professor Charles Uwadia's recommendations include defining a new policy framework/roadmap and developing an action plan, disseminating products/outcome of R&D, establishing synergy between governments at different levels and the R&D bodies, developing a programme for Investment in R&D, establishing linkages between R&D companies and user and instituting exchange programmes involving local and foreign experts.

The timely presentation, "IT and the Future of Niger Delta", by Chris Uwaje focused on developing an IT and knowledge driven agenda for people-centred development in the region. He considered it deeply ironic that the region with such fantastic potential for economic growth and sustainable development should also be burdened with deteriorating economic and social conditions. Though oil resources should be a blessing and source of substantial benefit, he expressed concern that negative development outcomes are often associated with oil.

He argued that the deplorable human development condition of the Niger Delta population makes the focus on the human development situation in the Niger Delta imperative and timely. In calling for innovative and inclusive planning, he insisted that creating an innovative future for Niger Delta people was vital and also discussed important information age concepts and definitions as well as characteristics of IT-driven domain facts.

Chris Uwaje broke down the future of Niger Delta lies in the 5 ability theory as follows: Innovatability, Planability, Designability, Buildability and Maintainability, noting that today's raw material is the human brain. "There can be no emergence and concrete and/or significant development of the knowledge industry, unless it is anchored in a vibrant software and R&D industry", he further insisted. He identified important roles of IT parks as well as serious challenges of globalization and important related issues. "IT Park is a convergence of high technology entities and centres of knowledge - creating and designing solutions that respond to the challenges of the Information Age", was his simple definition of an IT park.

With IT parks as the new knowledge industry, he declared that, "truth is, we must all go

back to school - the knowledge park", while providing an understanding of IT tools and unique characteristics of IT Parks. He then discussed about IT & Knowledge Development Dynamics paying attention to media, policy, human capacity, infrastructure, enterprise, local content & applications and the role of governance / government.

Expanding further on the IT Park concept, he honed in on opportunities in critical areas such as governance / government, social development and education, and also showcased knowledge applications in health, arts & crafts, eLearning, eCommerce, transportation, tourism and agriculture & environment. He used several diagrams including those of mobile solutions platform, global development & competitiveness, role of knowledge (IT) parks, knowledge park models and national wealth cycle to illustrate IT park processes and opportunities.

Mastery of Nanoscience and nanotechnology, he stressed is critical for all nations, while also observing that knowledge is critical and no one will develop our knowledge economy for us. Chris Uwaje's recommendations included: declaring IT as a national emergency, establishing an institutional framework to drive Niger Delta IT development based on global standards and the immediate establishment of a youth IT advisory board.

## PLENARY SESSION 3 PRESENTATIONS

The third plenary session of the eNigeria 2010 conference under the conference sub-theme, “Pre-requisites for Implementing the Nigerian ICT4D Plan” examines fundamental issues in ICT4D policy development with insightful emphasis on opportunities and challenges in the Nigerian environment.

### Presenters

- ICT Framework for Developing Globally Competitive Human Capital in Nigeria by Mr. Bankole Olubamise, Executive Director, Devnet
- ICT Based National (Homeland) Security Network: Imperatives for National Development by Dr. Emmanuel Ekuwem, Managing Director, Teledom International
- Financing Option for ICT Development in Nigeria by Dr. V. O Olatunji, NITDA, Abuja
- ICT Infrastructural Development: A Panacea for Implementing Nigerian ICT4D Plan by Gerrald Ilukwe, Managing Director, Galaxy Backbone

This presentation “ICT Framework for Developing Globally Competitive Human Capital in Nigeria” by Bankole Olubamise took an in-depth look at the human capital requirements for development in Nigeria and the role that ICT deployment could play in developing such human capital. He highlighted how ICT is changing all aspects of human activities and observed, that countries are no longer “judged by what natural resources a country possesses but by the quality of the human resource it has”. The new economy driven by ICT, he stated has been shown to improve productivity and service delivery while reducing cost. Gender challenges in ICT, the presence of the gender digital gap was however a concern for him.

He went on speak on the role of human resource in achieving National ICT4D Plan, while sharing its vision, “To develop globally competitive human capital” with participants. According Bankole Olubamise, relevant national and international policies and frameworks provided the basis for Nigeria's ICT4D Development Framework. He discussed several key objectives which include building “a critical mass of ICT professionals and ICT knowledgeable workforce that can effectively drive national development objectives, whilst being globally competitive”.

For him, a country's future is determined by the size and quality of its human capital. He emphasized the need for ICT skills availability for empowerment to enhance value and create opportunities through new technologies. Human capital must be developed through training, research and capacity building, he declared.

Since the human resource is critical to national development, he called for high level prioritization of investment in the development of human capital in ICT. He also identified available ICT skills in Nigeria and the industry's regulatory and professional bodies such as the Nigeria Computer Society. He further shared comparative data on Egypt, South Africa paying attention to number of IT specialists, ICT4D policy, human resource development objectives, funding and state of infrastructure in education sector.

Explaining that the National Vision for Human Resource Development in the ICT4D Strategic Plan is: "To become a global player in the knowledge economy, with Nigeria becoming a major global exporter of the best human capital in ICT over the next twenty years", he described several programmes and plan actions developed to achieve the vision.

In his opinion the major risks are political will, enabling legislation and funds to access ICT education. He highlighted other constraints in developing ICT HRD, as well as manpower requirements for the ICT industry in Nigeria and the present gross under-funding of the ICT industry.

In concluding Bankole Olubamise made recommendations for improving access of civil servants and students to IT facilities and devices. He asserted that the way to achieve V20-2020 is by developing the capacity of the whole nation through getting people to create systems to drive national development and training people on using the systems.

Dr. Emmanuel Ekuwem's presentation, "ICT Based National (Homeland) Security Network: Imperatives for National Development" discussed and raised issues relating to identity and integrity in achieving national security through ICT. He started by identifying key terms as people, Nigeria, lives and property, peace and order, law, crime, criminals, law enforcement/law enforcement agencies, privacy, fundamental human rights, security-physical, economic, cyber, spiritual, etc, investments (local and foreign), economic activities/productivity, economic growth and development, job and wealth creation, increase in GDP, vision 20-2020 and national well-being.

He stated that peace and security, law and order are the infrastructure of development, while also differentiating between physical security and cyber security. In explaining the trajectory of lawfulness/criminality he asked several questions including, "Who did what, where, when, how, with who, for how long, for who, to whom and for what?" He argued that "WHO is WHO uniquely IDENTIFIED". Dr. Emmanuel Ekuwem pointed out the fact that all our lawful or/and criminal routes can be traced from cradle to grave, explaining that every human activity leaves a trace and that assembling traces aids the establishment of integrity of citizens.

According to him, the IDENTITY Platform is about whether we are uniquely identified, identity authentication and verification, identity non repudiation, unique biometric, facial recognition and other personal data which may not be unique such as name, state, birth date/age, blood group and other information. Dr. Emmanuel Ekuwem

informed participations that the INTEGRITY Platform includes details of one's lawful or criminal activities from birth to the point of assessment, asking, "Do certain types of IDENTITY provide an enabling environment for the development certain types of INTEGRITY?"

In this regard, he said there may be the need for monitoring lawfulness/lawlessness, installing surveillance system - video & audio, patrol van-based video surveillance, container, truck and car scanning system and lawful interception. He shared examples of lawful interception services, interception network platforms, lawful layered voice analysis and SIM card registration.

He considered cyber security law, critical national information infrastructure law, CERT, NSA, EFCC, Financial Industry and ICT Industry as fundamental to cyber security. Finally Dr. Emmanuel Ekuwem recommended the development of a National Identity Management Database development, which can serve as a reference database for voters register, voters at every election, national security monitoring, surveillance, identification and arrest of criminals, etc. Establishment of a National Security Guard SNOC with integrated downstream Master SNOC, Mini SNOC and Micro SNOC to ensure national security surveillance, monitoring, tracking, isolation and arrest of criminals was his additional recommendation.

Dr. Vincent O Olatunji's concise and informative presentation, "Financing the Nigerian ICT4D Plan" examines the funding mechanisms and landscape for ICT development in Nigeria and considers global and existing funding options. He started by telling the audience about how ICT is being used to drive major development agenda at international, regional and national levels, which makes the Nigerian ICT4D Plan critical for using ICT to achieve sustainable socio-economic development in Nigeria. He however noted that funding is a major issue in implementing the plan and effective deployment of ICT in Nigeria and therefore called for the consideration of various funding options to address the issue. In recognition that financing ICT4D is major concern, he said, various models, options and ideas are coming up in order to create an all inclusive information society.

According to Dr. Vincent O Olatunji, the WSIS task force on financial mechanisms for ICT4D brought out three issues for discussion: Market solutions based on creating enabling policy environments; A voluntary digital solidarity fund and mandatory global taxation for a Global ICT Fund. He noted that outcome was that ICT4D is to be funded as a public good. He spoke about existing funding options of development partners and non-government & philanthropic sources, giving an idea of their nature and capacity. However, he observed that many ICT initiatives and development are private sector driven, highlighting the example of the Nigeria telecom sector which attracted substantial FDI after deregulation.

Expressing concern that the impact and level of information technology development in Nigeria has been very slow due to inadequate funding, he said this is a very common scenario in Africa and other countries faced with developmental challenges. This he

warned further widens the digital divide. New initiatives to improve the situation, he mentioned are the Universal Service Provision Fund (USPF) and the National Information Technology Development Fund (NITDEF) as well as other initiatives including Galaxy Backbone and Nigcomsat which are government institutions already providing ICT infrastructures.

Appropriate costing of projects and programmes for consistent implementation according to the timelines, appropriate technologies, avoidance of duplication, consolidation of existing funding organs (NITDEF, USPF, etc), creating enabling environment to attract FDI (policies, regulations, tax incentives, etc), Public Private Partnership (PPP) and better budgetary allocation were some of his recommendations for funding the Nigeria ICT4D plan.

In concluding the revealing presentation, he emphasized the important role of the Nigerian ICT4D plan as the engine room of sustainable development in Nigeria which if well implemented, could position Nigeria as a key player in the global information society. He insisted that no single funding option is enough and called for collaboration, harnessing of all available resources, government's encouragement of PPP and creating massive awareness.

The "ICT Infrastructural Development: A Panacea for Implementing Nigerian ICT4D Plan" presentation, which was delivered by Yusuf Z Kazaure on behalf of Gerald Ilukwe provided unique insights into the world of ICT infrastructure development in Nigeria and proffered recommendations on what needs to be done. Introducing the topic, he declared that ICT infrastructure development is essential if the ICT4D Plan is to be successfully implemented, stressing that infrastructure disadvantage is the biggest challenge to leveraging ICT for development purposes in Africa. He therefore spoke on the need for infrastructure development to be strategic and systematic so as to achieve more, with less spent.

Yusuf Z Kazaure expressed concern about the state of ICT Infrastructure in Nigeria, which he depicted as one of limited intra-connectivity, concentrated in urban areas, large swaths of underserved areas, few datacenters – for local content hosting and limited Internet bandwidth. According to him the impact of limited ICT Infrastructure has been limited local content development, lack of context-specific development content, underdeveloped ICT economy, huge barrier to entry for ICT solutions, high cost of access and poor quality of service delivery.

Galaxy Backbone (Government's ICT Infrastructure Provider, intervening for underserved areas, which he however says needs to be empowered with more resources), SABI – State Accelerated Broadband Initiative, that is supported and funded by NCC and is committed to spreading broadband access across the country, Telecom Operator Rollouts by mobile operators nationwide in response to market demands and new Satellite Technologies such O3B that make it easier to reach rural areas with broadband, were the ICT infrastructure development opportunities he highlighted and discussed with the audience.

At this stage Yusuf Z Kazaure asked the question: "What needs to be done?" Answering, he called for the development of an ICT Infrastructure plan focused on maximizing in-country interconnection among infrastructure operators, enhancing the capacity for local content hosting and expanding ICT infrastructure coverage to include rural areas. Government intervention he insisted is also needed with regard to more funding of already existing interventions and commitment to universal access

He concluded by declaring that "Accelerated ICT infrastructure development is required if ICT4D objectives are to be achieved". Current efforts to improve National ICT infrastructure base driven both by the private sector and government, Yusuf Z Kazaure argued need to be coordinated and guided by a National ICT Infrastructure plan designed to maximize the impact of such efforts on ICT4D goals. Additionally, "More government intervention is required to address market gaps", he recommended.

## PLENARY SESSION 4 PRESENTATIONS

The fourth plenary session of the eNigeria 2010 conference under the conference sub-theme, “eGovernment and Payment Systems: Experience Sharing” provided informed and refreshing perspectives on strategies, opportunities and challenges in the deployment and exploitation of ICT to enhance governance and payment systems and infrastructure in Nigeria.

### Presenters

- Strategies for Implementing the Nigerian e-Government and ePayment Initiatives by Dr. Olu Agunloye, Negst Ltd, Abuja
- Information Management Security: A Necessary Pre-requisite for ICT Deployment for National Development in Nigeria by Sunday Ben Bamidele, Mayor technology LLC, Chicago, Illinois
- Government ePayment and National Development Agenda by Mr Demola Aladekomo, Managing Director, Chams

The presentation, “Strategies for Implementing the Nigerian e-Government and ePayment Initiatives” by Dr. Olu Agunloye was a focused and engaging analysis and review of eGovernment and ePayment implementation in Nigeria. In analyzing the implications of National Vision 20-2020, he stated that the real issues are not about national resources alone, stressing that human resources, systems efficiency and national competitiveness are in fact significant. He noted that it is about overtaking other countries and used several illustrations to highlight the many nations Nigeria needs to overtake.

For him leveraging eGovernment requires a grasp of the basics for the vision, especially the implications of being one of the 20 most dynamic and competitive knowledge-based economies in the world by 2020. He said there is a need for national competitiveness through improved productivity, remarking that “eGovernment propels productivity growth which is needed to achieve sustained economic growth”. Implementing eGovernment Dr. Olu Agunloye said evokes novel Public Private Partnerships (PPP) as he discussed the required citizen-centric, good governance, multi-dimensional, multi-disciplinary, new leaderships and partnerships perspectives.

He told participants about Nigeria's march to eGovernment from the National IT Policy (2001) to NITDA (2003) and to National eGovernment Strategies, NeGSt (2004), while informing them about the mandates for eGovernment and NeGSt, a subsidiary of NITDA created through PPP as Special Purpose Vehicle for eGovernment standards and implementation platform. The roles of NeGSt, Nigerian PPP Model for

eGovernment, the NeGSt PPP Model, strategic nature of PPPs for eGovernment, mechanism of partnership operations, building blocks and pillars of eGovernment partnerships, key partners for eGovernment implementation and the eGovernment platform for new Nigeria are areas he also covered extensively.

While situating ePayment as a shared service within eGovernment platform, he acknowledged the major impact of the Presidential Order on ePayment in Oct 2008 directing all government payments (recurrent/capital) through electronic payment with effect from 1 January, 2009. Though he disclosed the technical Implications of the Presidential Order, he wondered: "But are we ready"? In his opinion, we are ready to start, but we must imbibe the principles of procurement process and implement in phases. Going further, he spoke about how ePayment is embedded within the eGovernment platform and listed interoperable platforms on eNigeria. In particular he used diagrams to illustrate the eNigeria Payment Platform, eNgPP architecture and a general representation of PKI.

During his summary of eGovernment implementation, he provided details of consensus building, briefings at various levels, strategies and projects as well as highlights of accomplishments. In concluding Dr. Olu Agunloye claimed government, access to PC & Internet (including energy factor), contents of eGovernment solutions, partnerships and human resources as the five factors which determine successful implementation of eGovernment programmes in Nigeria. He additionally listed several prerequisites for sustainability.

The presentation, "Information Management Security: A Necessary Pre-requisite for ICT Deployment for National Development in Nigeria" by Sunday Ben Bamidele revealed valuable information security strategies and measures that can be applied to ensure safety, stability and security in ICT deployment in Nigeria. He stated that information management security has become critical for survival and success due to increasing dependence on IT by government and enterprises. The e-commerce business, he reasoned is heavily dependent on the strength and security of the ICT systems.

He shared several definitions of Information security and spoke about the Data Security Standard (DSS) of the Payment Card Industry (PCI). Through exposing various wrong perspectives to information security, he identified sources of exposure for executives and organization-wide as well as popular fallacies. While examining information security attacks he listed several potential security issues which included Denial of Service (DoS) attacks, website defacement or modification and system sabotage and viruses and worms. Using a graph from symantech he illustrated growing worldwide attack trends.

According to Sunday Ben Bamidele, identity theft, extortion, salami slice, funds transfer and electronic money laundering are the different types of e-Fraud. To address identity theft, he recommended cryptography, hash functions, digital signatures and verifying the identity of users (authentication) through passwords, pin numbers,

security keys and digital certificates.

He shared several e-Payment attack scenarios, including the ATM and credit card frauds experienced by a banking client which revealed identity theft by impersonation, identity theft by packet sniffing, identity theft through internal staff, hacking by breaking into computer network, databases and servers to retrieve information. Another scenario was that of revenue leakages experienced through an energy, oil & gas client case study which exposed financial fraud through deception and unauthorized and inappropriate access to systems. For each scenario he showed how security solutions offered solved the problems and increased trust and security in the environment.

Countermeasures he suggested included applying various security best practices and the development of an information management security road map, stating that effective risk management requires a strong balance of organizational support, people, selection of appropriate technology, effective & well controlled processes and building and maintaining a secure network. He identified information security objectives as identification, authorization, integrity, availability, reliability, authentication, access control, data integrity confidentiality and non-repudiation and highlighted the many benefits of a secured e-Payment environment.

Considering the way forward, Sunday Ben Bamidele provided details of government's role and the role of executive managements, which include having the political will and building information security capacity. He concluded by stressing that in deploying ICT for e-commerce and e-payment, related legislation, regulation, comprehensive planning and effective management of ICT security are all important.

The presentation, "Government ePayment and National Development Agenda" by Sir Demola Aladekomo was a brief and eye-opening overview of the emerging government e-payment environment in Nigeria. Additionally, he made a case for the paradigm shift required for alignment with the national vision and agenda. He defined electronic payment (e-Payment) as the term used for any kind of payment processed without using cash or paper checks. Forms of electronic payment he mentioned are Automated Clearing House (ACH), e-checks, direct debit, debit cards, and credit cards.

Taking a look at the global/Nigerian e-Payment landscape, Sir Demola Aladekomo observed that the value of global e-payment jumped from US\$12B in year 2004 to \$318B in year 2008. He indicated that e-payment transactions in Nigeria accounted for N360 billion in 2008. In his opinion the Federal Government's directive that all financial transactions be made electronically by January 1, 2009 was a great step.

He highlighted the importance of regulation noting that the central bank has a key role to play in regulating the e-payment channels such as ATM, mobile and online payment channels. "Currently there is regulation for licensing ATM Independent Deplorers (AIDs) and mobile payment operators", he disclosed. This situation, he said is in line with CBN's payments system vision 2020, which is a subset of the Financial System Strategy (FSS) 2020.

Benefits of e-payment, Sir Demola Aladekomo mentioned are: use of ICT infrastructure will increase national computer literacy, easy tracking of payments to Beneficiaries' accounts, reduction of administrative costs, reduction of incidences of corruption through real-time reporting and automated audit trail, it serves as a key ingredient for building a cashless Nigeria and increased convenience of payments and speedy execution of transactions.

The paradigm shift required was his final area of focus. He queried the government debacle which entails over reliance on government despite its limitations. He also emphasized what he termed, "The private sector understatement", noting that the private sector had abundant resources and motive. For him the Public Private Partnership (PPP) is fresh air and is the best partnership model for Nigeria. Drawing attention to the identity perspective, he insisted that identity is fundamental, without which nothing can take off. He then shared the government PayCard model, which eliminates the e-manual. He also spoke about universal access, stressing why it is vital. Finally Sir Demola Aladekomo noted that functional and effective government e-Payment will take time and literacy.

## PLENARY SESSION 5 PRESENTATIONS

The fifth and final plenary session of the eNigeria 2010 conference under the conference sub-theme, “Private Sector Participation in ICT for Development” was a platform for new ideas, trends and practices that leverage on the strengths and opportunities of the private sector in ICT for development, while at the same time provoking discussion on the associated challenges.

### Presenters

- Public Private Partnership (PPP) in ICT for development in Nigeria by Mr. Jide Awe, Managing Director, Jidaw Limited
- Strategies for positioning Nigeria in the global IT market by Dr. Jimson Olufuye, President, Information Technology Association of Nigeria (ITAN)
- Creating Enabling Environment for e-commerce through Legislation by Inye Kemabonta, NITDA, Abuja
- Implications of Open Source Software in IT development in Nigeria by Prof. Oliver Osuagwu, Federal University of Technology, Owerri

The focused and informative presentation, “Public Private Partnership (PPP) in ICT for Development in Nigeria” by Jide Awe looked at the importance of public and private sector collaboration through the Strategic ICT4D plan to foster strategic deployment, development and exploitation of ICT for development. He highlighted the value of ICT in society and the need to develop a knowledge based economy to address developmental challenges. In appreciating the imperative of an ICT roadmap providing coordination, consistency and impact, he provided information on the ICT4D Strategic Action Plan and national development plans. He also shared extensive information on the status of the ICT sector as well as the private sector in Nigeria.

Jide Awe told the audience that the National Economic Empowerment Development Programme (NEEDS) and Seven-point agenda towards making Nigeria one of the leading economies in the world by the year 2020 anchor the pivot of the economy on the private sector, involving the use of PPP. For him, “the point to note that is that there has always been PPP in ICT but it needs to be deepened and development oriented”. In this regard he listed many of the challenges faced by the private sector as he urged the application of PPP in ICT for development to create opportunities for achieving economic, social, empowerment and overall prosperity goals.

In sharing ICT activities of South Africa, Tunisia and India with participants, he showed how ICT strategies vary from country to country depending on needs and peculiarities. With respect to using PPP and ICT to drive development and build knowledge based

economies, he noted the use of policy and regulatory frameworks by these countries.

“PPP is facilitated through the implementation of the Private Sector Development sub plan of the National ICT4D plan”, he remarked. Jide Awe then shared the vision and key objectives of the plan, noting that they were based on national and global policy commitments. He used several diagrams to illustrate how PPP in ICT4D can be achieved and spoke about how the 17 programmes of the private sector sub plan were developed to enable the private sector leverage ICT to achieve national development objectives.

For Jide Awe the major risks to successful plan implementation have to do with political will, enabling legislation, enhanced infrastructure, rural development, micro and small business funding and a stable climate devoid of policy inconsistency, uncertainty and confusion. Success in Nigeria's march towards becoming one of the top 20 economies of the world in the year 2020 will depend on ICT, he emphasized. He however called for improved public and private collaboration in the use of ICT to jumpstart growth and development. In recommending coordination and collective implementation of the National ICT4D Strategic Plan, he informed participants that programme recommendations are focused on ensuring Nigeria becomes a prosperous and inclusive knowledge based society through the development of the private sector.

Dr. Jimson Olufuye's presentation, “Strategies for Positioning Nigeria in the Global ICT Market”, explored opportunities for Nigerian IT companies in the global ICT market and what must be done to position Nigeria for digital competitiveness. He told participants that the global ICT market is worth over US\$4trillion, observing that the four technology groups in the global ICT market are: Hardware, Software, Services and Communications. He disclosed the communications services and equipment group has by far the largest share of total ICT spending in 2009 followed by services. The potential in IT services is huge, he claimed while breaking down the service component to include Business Process Outsourcing (BPO), IT consulting, research, education, hospitality and transportation.

He identified the six key drivers (six 'i's) of the global ICT market as: Innovation, Investment, Intellectual capital, Information flow, Infrastructure and Integration and urged nations desirous of playing major roles in the global ICT marketplace to take the drivers seriously. Calling on Nigeria to play in BPO and software development, Dr. Jimson Olufuye explained that the nation has the key ingredients in abundance while also observing the drawbacks. The solution he said entails ITAN/QAI partnership, World Bank intervention, building the BPO service industry and enacting the omnibus Senator Iya Abubakar IT bill covering cybersecurity/ cybercrime, electronic evidence and digital signature instruments.

According to him, “if we truly want to be one of the 1<sup>st</sup> 20 biggest economies in the world by the year 2020 (V20-2020), we must seriously begin to position ourselves for digital competitiveness”. He said there must be recognition that ICT is a key driver of economic growth, warning that Nigeria must engage or be left behind. He asked,

“Should we still delay”? In his opinion, active participation enhances our respectability in the global ICT market. Dr. Jimson Olufuye said there is a need to have an IT Policy to set direction and strategic plan of action to develop the industry, concentrate on low hanging fruits, enact laws to assure confidence in the economy, streamline taxation, generate industry data and create an IT Public-Private Institute by NITDA as its research and innovation arm.

Dr. Jimson Olufuye recommended the use of NITDEF fund to build awareness amongst Nigerian IT organizations regarding various aspects of operational and business excellence, assist IT organizations enhance their global competitiveness, deploy global IT industry frameworks and standards and create and implement industry wide projects for 'Enterprise Capability Building'. Enhanced visibility through the engagement of international trade bodies like WITSA is an additional recommendation he made.

In concluding, he proposed that NITDA becomes a global partner of WITSA, CEA and other important global bodies, sponsor trade missions for Nigerian IT companies overseas and hold West African IT trade exhibitions for Nigerian IT services and products in collaboration with key trade associations.

Inye Kemabonta's presentation, “Creating an Enabling Environment for Electronic Commerce through Legislation” offered a unique interesting perspective to putting in place the requisite legal environment for the acceptable use of IT in commerce and other areas in Nigeria. While acknowledging that the absence of enabling laws for e-Commerce is a sad commentary on our readiness for the implementation of the commercial component of the new Nigerian vision, he insisted that the NITDA Act 2007 is broad enough to provide a decisive framework for not just e-commerce but the development of Information Technology in every sector of the Nigerian economy. In his opinion, the reasons for a legally enabled e-commerce are: to engender enforceable relationships in online commercial transactions, to provide for appropriate remedies when there is a breach in relationships and to protect individuals and entities from online abuse.

Rather than what Inye Kemabonta described as, “our helpless haranguing of the legislature”, he advocated for more creativity using the NITDA Act. The doctrine of subsidiary legislation, he explained is a well established doctrine that occurs when the legislature cedes some of its law making powers to the executive arm. The NITDA Act is one such instance, he argued. His interpretation of the combined effect of Sections 6 and 18 in the Act is that NITDA can do just about anything it considers relevant to Information Technology without recourse to the National Assembly, stating that the sections gives NITDA more specific powers in relation to infrastructure for e-commerce, IT practices and specific e-commerce activities.

“Powers granted by the Act are such that it would be a criminal offense not to adhere to any rules or guidelines made by NITDA pursuant to the provisions of the Act”, he disclosed. Delving further he made it clear that given the legislative powers inherent in

the Act, NITDA may make legally enforceable rules that can form the framework for e-commerce in Nigeria. For him, the courts cannot and should not stand aside and watch the nation flounder due to the absence of express legislation on e-commerce. He urged courts to exercise their privilege of judicial notice of notorious issues in society and extend rules governing terrestrial contracts to cover online transactions.

In closing, Inye Kemabonta reemphasized his view that much of the legal framework for e-Commerce can be achieved through creative interpretation and application of principles of law and the exercise of the powers of subsidiary legislation. He proposed that the courts take judicial notice of the pervasiveness of Information Technology and extend existing rules to cover relationships in the online environment based on legal precedents in decided cases. He additionally recommended a full and elaborate study and interpretation of the NITDA Act and the inauguration of the National Technical Committee on Information Technology Standards by NITDA.

The intense and informative presentation, "Implications of Open Source Software in IT Development in Nigeria" by Prof. Oliver Osuagwu made the case for an open source software development ontology and how open source software engineering methodology can help Nigeria to surpass India's software development potential and attain the desired 20:2020 vision for Nigeria. He began by explaining Open-Source Software (OSS) definitions, concepts, characterizations and benefits to participants, remarking that, "OSS development provides an alternative model of development to commercial systems developed by or for a single corporate entity".

Informing the audience about the Open Source Software development process, Prof. Oliver Osuagwu provided a historical perspective, milestones and achievements. Illustrating with a diagram, he revealed that open source software development can be divided into several phases. Highlighting the differentiation in open source software development projects, he shared details of the different types of open source projects with participants. In discussing steps to starting an open source project, he declared that there are several ways in which work on an open source project can commence. Open source software development methods, package management and funding were other critical issues he explained.

Prof. Oliver Osuagwu then listed and provided details of the many tools for OSSD including: Open Source Build Systems in Java, Open Source ByteCode Libraries in Java, Open Source Business Intelligence Tools in Java, Open Source Content Management Systems (CMS) in Java, Open Source Forum Software in Java, Open Source General Purpose Libraries in Java, Open Source Geospacial Software in Java, Open Source Groupware Software in Java, Open Source HTML Parsers in Java, Open Source IDEs in Java, Open Source Installers Generators in Java, Open Source Inversion of Control Containers, Open Source Issue Tracking Software in Java, Open Source J2EE Frameworks, Open Source JDBC Drivers, Open Source JMS, Open Source JMX Tools, Open Source JSP Tag Libraries, Open Source Job Schedulers in Java, Open Source Localization & Internationalization Tools, Open Source Logging Tools in Java, Open

Source Mail Clients in Java, Open Source Network Clients in Java and Bug trackers and task lists.

According to him, it is evident that Java has a huge array of already prepared components in the open space which have be deployed for rapid software development in Nigeria. He further elaborated the benefits, of open source software development, which he remarked are enormous. In closing Prof. Oliver Osuagwu strongly advocated large scale software development for local consumption and export as an alternative to dependence on oil for national economic sustenance and for the actualization of the 20-2020 vision.

Summary of Outcomes at the eNigeria 2010 Conference organized by the National Information Technology Development Agency (NITDA) held at Shehu Musa Yar'Adua Centre, Abuja from May 18 - 20, 2010

## Observations

Following discussions at the event, the participants observed that:

- a) The ICT4D plan is a major tool for driving the Vision 2020 target set by the Federal Government, considering the role of Information Technology in achieving sustainable socio-economic development in the current global economy;
- b) Vision 20-2020 attainment requires Nigeria to be knowledge based and technologically-driven;
- c) Plan development and implementation is needed to position Information Technology as the engine of national development, to integrate Nigeria into the current global economy driven by technologies and close digital divides;
- d) Successful ICT4D Plan implementation will depend on inclusive multistakeholder participation and contribution;
- e) Lack of balance in implementation may result in the process widening digital divides within the country;
- f) Inclusion is critical in ensuring that all Nigerians play active role in the global information society and the digital economy;
- g) Though IT has been integrated into various functions at all tiers of government, compliance and depth of penetration is varied;
- h) There is massive and urgent need for people oriented IT programmes and initiatives in Nigeria;
- i) Nigeria cannot afford to be left behind in striving towards the globally shared vision of an information society that enables people to fulfill their potentials, enhance sustainable growth, accountability and transparency in governance.

## Recommendations

After extensive discussions, the followings recommendations were made:

- a) As directed by The President, all Ministries, Departments, and Agencies should commence immediate implementation of areas of the Nigerian ICT4D plan that are relevant to their respective mandates;
- b) All stakeholders in government, private sector, education and civil society should study the document and design mechanisms for active implementation;
- c) Adequate budgetary provision should be made for various projects and programmes in the implementation of the plan;
- d) Funding and resource mobilization should be prioritized by all stakeholders for effective implementation;
- e) ICT4D projects should be people oriented and implemented in accordance with best practices and laid-down due process;
- f) NITDA should develop mechanisms, including key performance indicators, for proper coordination and monitoring of the different programmes to be embarked upon in the implementation of the Nigerian ICT4D plan;
- g) Legal and regulatory frameworks must be put in place in line with efforts aimed at ensuring the upward movement of Nigeria in the global e-readiness ranking;
- h) NITDA should create further awareness about the plan and present the document to all Nigerians to foster information technology adoption by all segments of the Nigerian society and economy.



# 3

## eNigeria 2012

### Introduction, Themes and Objectives

The eNigeria 2012 Conference organized by the National Information Technology Development Agency (NITDA) took place at the Congress Hall, Transcorp Hilton, Abuja from Tuesday, 20th – Thursday, 22nd November, 2012. The theme of the conference was “Local Content in ICT Development in Nigeria”. Dignitaries at the occasion included: Chairman, House Committee on Information and Communication Technology, Hon. Dr. Ibrahim Shehu Gusau; the Honourable Minister of Women Affairs, Hajiya Zainab Maina; Honourable Minister of Youth Development, Mr. Kabir Inuwa Esq; the Honourable Minister of Information and Communication Technology (ICT), Mrs Omobola Johnson who was the Chief Host; Senior Special Adviser to the Vice-President on Information and Communication Technology (ICT) Dr. Baba Jubril; Permanent Secretary, Federal Ministry of Agriculture and Rural Development (FMARD), Mrs Ibukun Odusote and former Vice-President African Region, World Bank, Dr. Oby Ezekwesili.

Other personalities included Presidents, Nigeria Computer Society (NCS), Institute of Software Practitioners of Nigeria (ISPON), Association of Telecom Companies of Nigeria (ATCON) and Information Technology Association of Nigeria (ITAN).

Dr. Oby Ezekwesili presented the keynote address titled “An Overview of IT Content Development: Issues, Paradigms and Options for Economic Growth and Sustainable National Development”, while the event was declared open by the Honourable Minister of Communications. In addition, goodwill messages were delivered by various stakeholders among which were ISPON, ITAN, NCS, etc.

### Themes

The focus of NITDA at inception was to create the necessary awareness and enabling environment for the integration and use of IT to achieve sustainable national development. This effort is already yielding result especially with the level of IT penetration and deployment in public and private sectors as well as educational institutions.

The importance of developing a knowledge economy driven by Information and Communication Technologies (ICT) is enormous in the current world as this now drives

major economies across the globe. Accordingly, it is expedient for countries that intend to partake in the new world to accord developing their knowledge economy the special attention it requires. In Nigeria today, our knowledge-base and technology environment especially in the area of IT is greatly dominated and influenced by foreign technologies. This includes both Software and Hardware that are major components of information technology.

Organized with the theme, "Local Content in ICT Development in Nigeria", the 2012 edition of eNigeria Summit was specially designed to address issues geared towards enhancing local content in the deployment of IT in our national economy. The conference was a great success and was well attended by participants and delegates from various organizations and countries.

There were five (5) plenary sessions with a total of 25 papers presented based on the following sub-themes:

1. Enabling environment for encouraging and promoting IT local content development in Nigeria
2. Appropriate framework for marketing and sale of "Made in Nigeria" IT products and services
3. Value addition and wealth creation through Nigerian content in IT development
4. Human Capital and Infrastructural Challenge in Nigerian content in IT
5. Leveraging Technology Transfer in Nigerian content in IT

### Objectives

- To examine and proffer appropriate strategies that would enhance the Nigerian content in IT products and services;
- Develop requisite framework for empowering indigenous IT entrepreneurs in order to contribute to Nigeria's GDP;
- Develop framework for providing critical employment through outsourcing and other digital opportunity windows;
- Examine challenges/factors militating against IT local content development in the country;
- Develop strategies for leveraging on technology transfer and Nigerians in diaspora for developing the IT industry in the country.

## PLENARY SESSION 1 PRESENTATIONS

The first plenary session of the eNigeria 2012 conference under the conference sub-theme, “Enabling environment for encouraging and promoting IT local content development in Nigeria” offered unique perspectives on critical factors that affect the growth of local content development in Nigeria.

### Presenters

- IT Local Content Industry Analytics: Past, Present and Future - Engr, S.A Bello, Former - Commissioner and Acting Executive Vice Chairman, National Communications Commission.
- Framework and Strategies for the implementation of IT Local Content in Nigeria - Mr. Chris Uwaje, President, Institute of Software Practitioners of Nigeria (ISPON)
- Securing the Environment for Sustainable Development and Uptake of ICT Local Content - Jacques Hougbo, AfricaCERT, Mauritius.
- Monitoring and evaluating IT local content in the National Transformation Agenda - Ntufam Fidelis Ugbo Esq, Secretary to the Commission, National Planning Commission

Engr. S.A Bello’s presentation “IT Local Content Industry Analytics: Past, Present and Future” provided a unique perspective on the measurement of local content, in addition to making recommendations local content policy. He emphasized the need for IT industry stakeholders to understand and agree on what constitutes local content as he began his presentation. It is necessary, he said to develop a metric for determining the proportion of local content a product has.

Introducing modern concepts of factors of production, he noted that software constitutes 50 to 70 per cent by value of most ICT products. Innovative skills, intellectual property rights, product design skills and mass production techniques have now become important, he observed. Specifying the ICT product value chain, he indicated % of product cost for each task as, intellectual property (R&D): 15%, product design: 15%, cost of component parts (+ firmware): 40%, production machine cost: 10%, final assembly: 5%, testing and quality control: 10% and administrative overhead: 5%.

In breaking down the local content value chain for software products, Engr. S.A Bello specified relative value for each activity, pre-implementation (problem specification, program design, algorithm selection): 40%, implementation (coding and debugging): 20% and post implementation (testing and verification, documentation, maintenance): 40%.

He defined local content as, "The financial equivalent of local value added to the development, design, fabrication and assembling of ICT products as a proportion of the ex-factory cost or production cost" and "The proportion of indigenous manpower input to the provision of ICT services". In assessing past policies on local content, he told the audience that the import substitution policy of the 70s was outdated and had failed Nigeria. He remarked that though Nigeria has 5 Computer assembly plants, the plants only contribute 10% of product value (10% local content).

Engr. S.A Bello recommended a more aggressive policy on local content, arguing that local assembly of CKD parts is unsustainable in the long run unless it is accompanied by a policy of continuous incremental improvement in local content through indigenous R&D effort. Advocating for a new industrial policy, he made two recommendations: "a minimum of 50% local content is required for long term sustainability and profitability" and "Indigenous companies and manufacturers must participate actively in all segments of the ICT product value chain." Local R&D, local product development, local product design and local development of mass production technology, he added, should be the focus areas.

The "Framework and Strategies for the implementation of IT Local Content in Nigeria" presentation by Mr. Chris Uwaje, focused on the role of information technology in enhancing the implementation of the local content application framework in compliance with the Nigerian Oil and Gas Industry Content Act 2010.

He noted that though Nigeria presently neglects the importance of the enabling environment for Research and Development in science, innovation and technology, the mandate of the Local Content Act 2010, is to ensure a paradigm shift and change the status-quo in the oil and gas sector. Through his illustration of the content development vision and mission cycle showing the linkages of idea, R&D and product he highlighted the innovation process and its importance.

Local content for ICT enabled change, Mr. Chris Uwaje noted will require ideas, education, government and industry all working in concert to create products and services while he highlighted the role entrepreneurship and knowledge incubators can play. Emphasizing the importance of stakeholder participation in driving change, he told the audience about the history and objectives of the Nigeria Computer Society (NCS) which incorporates all specialized industry and professional interest groups.

While listing the Federal Government's IT and ICT enabling laws, he shared his own understanding of NCDMB which is that Information and Communications Technology constitutes the bedrock of all the activities leading to the production, delivery, services and technical support processes in the Oil and Gas sector. He also stated that the Nigeria Computer Society and her Stakeholders Community represents a very significant proportion of those that will provide required solutions to the national local content challenge.

Challenges he however identified include capacity and capability development and access to low interest finance. Local content measurement he mentioned is also

critical. He advocated for the building of in-country capabilities for hi-tech services, which can be accelerated through technology incubation, pilot project assignment and real-life project contracting. Other recommendations he made include the establishment of IT Parks and Business Process Outsourcing (BPO) centres, creation of IT enabling environment and building of Critical Information Infrastructure.

To ensure the accelerated establishment of the ICT framework for the Nigerian Content Consultative Forum (NCCF) under the NCDMB Mandate, Mr. Chris Uwaje advocated that NCDMB should consider strategic collaboration with NITDA and work with the Nigeria Computer Society (NCS), establishment of special IT development academy and centres of excellence for ICT research and development, commissioning of special IT pilot projects on software and hardware solutions for the Oil and Gas Sector and collaboration with the Computer Professionals Registration Council of Nigeria (CPN) to accelerate the establishment of a credible national ICT skill capability directory and building a formidable ICT resources database for the Oil and Gas industry. He also called for the enlightenment of IT professionals on the project tendering and job and service contract award and implementation processes in the Oil and Gas sector.

The presentation, "Securing the Environment for Sustainable Development and Uptake of ICT Local Content" by Jacques Hougbo raised awareness on the need for a secured environment, and provided an overview of the way to achieve it and reminded participants of the existence of AfricaCERT as a lever for them to activate.

Some of the conditions he listed for IT local content include strong motivation and commitment at the decision making level to change the situation, prioritization of security issues, direct investment in ICT, profusion of IT infrastructure and devices, financial resources for content production, training for content creators and high quality of internet service. He told the audience that the internet was a very special case, remarking that, "Internet supports in all 4 steps of development and uptake of local content: creation, preservation, dissemination, utilization". Stepping up the need for secure the internet, Jacques Hougbo noted the design of the Internet as an open network has resulted in an increase in cyber-crime cases. Joint efforts are needed to combat the menace, he stressed. While he agreed that the internet should be used extensively for local content, he warned about its security challenges. What is needed he reasoned is a secured internet offering high availability for services and a trusted business environment for electronic transactions. For him, confidence and a credible cybersecurity network are essential. The essence of the Computer Security Incident Response Team (CSIRT) is therefore to promote best practices for information security, to help people when incidents happen, to coordinate the actions of many governmental bodies and to improve security quality, he disclosed. Steps he listed for creating CSIRT include clarification and analysis of constituency: stakeholders and prospective clients, choosing the right services, establishing a mission statement, business planning, operational procedures and training, practice and going live. Jacques Hougbo introduced AfricaCERT as, "the African forum of computer

emergency response teams who cooperatively handle computer security incidents and promotes incident prevention programs". Stating that it is united in promoting cyber security in Africa, he said, "Envisaged customers include governments and official bodies, private companies and end users of IT". Awareness campaigns, support and guidance in CSIRT implementation, project implementation collaboration and coordination, information dissemination about information security and contacts relay among the CSIRTs, are some of the AfricaCERT services he mentioned. Rounding up his presentation, he recognized the importance in the development and intake of IT local content and emphasized that, "it is vital for the internet to be fast, reliable and trustworthy." He therefore urged that information security should become a permanent issue that can be dealt with through CSIRT. "AfricaCERT is keen to assist you in generating the right competences, building the appropriate capacities and using accurate and right on time decisional information", Jacques Hougbo concluded.

The presentation, "Monitoring and Evaluating IT Local Content in the National Transformation Agenda" presentation by Ntufam Fidelis Ugbo looks at how to measure the impact of local content development in ICT within the context of the Federal Government's transformation agenda.

He began by informing the audience about the mandate of the National Planning Commission, as well as its vision to efficiently guide the growth and development of Nigeria by repositioning the country to be among the league of twenty largest economies in the world by the Year 2020 in line with the national vision 20: 2020.

The National Transformation Agenda (NTA), he noted, is a subset of the NV20:2020 through which the Federal Government aims to deliver projects and programmes. NTA, he informed the audience, outlines objectives and strategies geared towards Information Communication Technology (ICT) development as well as targets and Key Performance Indicators (KPIs). According to him the development and implementation of ICT local content policy for Nigeria is integral to the transformation agenda, and he gave examples of ICT projects to confirm his assertion.

In acknowledging NITDA's role in the forefront of championing IT local content/IT service delivery, Ntufam Fidelis Ugbo identified several NITDA led interventions such as the Computer for all Nigerian Initiative (CANI), software development policy, guidelines empowering local Original Equipment Manufacturers (OEMs) and Student Computer Ownership scheme. He also shared several definitions of local content with the audience.

The purpose of the Monitoring and Evaluation department (M&E) at NPC, he explained is the coordination, monitoring and evaluation of projects, policies and programmes across all MDAs. According to him, monitoring provides management and stakeholders with indications of progress and achievement, while evaluation is the systematic and objective assessment of such projects, programmes, or policies. He asserted therefore that M&E is a vital tool towards boosting local content in the IT sector, and can be accomplished through the use of a Results-Based Management

System (RBMS). Operationalizing M&E in all sectors, he advised requires adaption to the stages involved in RBMS such as inputs, activities, outputs, outcomes, impact and sustainability.

Benefits of IT local content development in Nigeria Ntufam Fidelis Ugbo mentioned include enabling sustainable national development, enhancing the national image and bridging the information divide. He however cautioned that funding, lack of awareness of the local content act, inadequate infrastructure, conflicting priorities, dearth of technical know-how of M&E within MDAs are some of the challenges facing M&E.

Declaring that without local content, continued importation and outsourcing would hinder economic progress, some of his concluding recommendations include the building of M&E capacity in the MDAs, appropriate funding for ICT Local Content, backing funding and policies with political will and an embrace of e-Nigeria, which is our future as a nation.

## PLENARY SESSION 2 PRESENTATIONS

The second plenary session of the eNigeria 2012 conference under the conference sub-theme, “Human Capital and Infrastructural Challenge in Nigerian content in IT” provoked discussion about how to handle human capital and infrastructure issues impacting on local content development in Nigeria.

### Presenters

- Infrastructure for Local Content Development: Private Sector Issues and Challenges - Mrs. Funke Opeke, CEO, Main One Ltd.
- Broadband and IT Local Content Development - Engr. Olusola Teniola, Phase 3 Telecom, Lagos.
- IT Infrastructure and National Security Strategy: Defense and Strategic use of IT Local Content - Admiral Ola Sa'ad Ibrahim Chief of Defense Staff.
- Framework for Developing Human Capital for IT Local Content in Nigeria - Prof. A. Sahalu Junaidu, ABU, Zaria
- Global ICT Infrastructure Platforms and Local Content Development - Juliet Ehimuan, Country Director, Google Inc.

Ms. Funke Opeke’s detailed presentation, “Infrastructure for Local Content Development: Private Sector Issues and Challenges” provided insights on the status of infrastructure for local content development in ICT, and in addition proffered the way forward. She introduced MainOne as a wholly African owned company expanding and reducing the cost of much needed broadband communications on the African continent, noting that it carries traffic for the major Nigeria and Ghanaian based telecom operators and ISPs since operations commenced.

The Submarine Network Route Map Phase 1 (July 2010), she informed participants entailed 7,000 km from Sexial, Portugal to Ghana through to Nigeria; dedicated, protected capacity from Sexial to London Telehouse, North and 1.92tbps capacity, upgradable to 4.96tbps with Phase II. In addition to highlighting MainOne’s global reach, she also added that Service Level Agreements (SLAs), World Class Customer Service, On-going Monitoring and Technical Support (24 x 7 x 365) and Standard Operating Procedures are best practices and international standards adhered to by MainOne.

She further asked: “So, what is Main One’s Impact on local content development?” Answering she mentioned lowered cost of wholesale bandwidth, enhancing quality of Internet services and lowering retail cost of bandwidth and supporting initiatives geared towards enhancing local content development. Ms. Funke Opeke again asked:

“Have we achieved the potential?” In her positive response she identified broad increase in service availability, lower costs of services, skills development/ transfer of knowledge, jobs creation, content and solutions development and increased ICT contribution to GDP and overall economic growth as progress made.

Using India as a case study, she observed that increased local content development has had tremendous impact on India’s economy, resulting in India is now becoming the #1 destination for technology and business processes outsourcing which has increased employment opportunities for Indians.

Challenges of Nigerian content development she identified were limited financial support to stimulate demand or support local content production, lack of focus on ICT education and enabling ICT for educational institutions, limited access to finance to deploy advanced services and technology locally, low commitment at all levels of society to change the situation and limited structures to assist local players develop in light of market competition from global players.

While observing that it should be taken for granted that power will be resolved, Ms. Funke Opeke recommended better co-ordination across government agencies to achieve maximum results, provision of broadband connectivity to all tertiary institutions, stimulation of demand through government delivery of e-services, support of local private sector to create more jobs and the engagement of global technology players to increase local content in return for market access.

The presentation, “Broadband and IT Local Content Development” by Engr. Olusola Teniola addressed vital infrastructure issues with impact on local content development. In explaining the concept of broadband, he spoke about the difference between what we know it to be in Nigeria today, as opposed to what the developed world knows it to be. Consumer expectations in Nigeria will depend on the customer experience “so the speed of access is no longer the single measure of broadband but what you and I can do with the service becomes more important”, he disclosed. To him, broadband and IT content development should bring about a global village of interconnected cultures, values and prosperity irrespective of whether one is in the urban or rural area.

Looking at the current broadband landscape, Engr. Olusola Teniola expressed a need for innovative business models to address local content needs and idiosyncrasies prevalent in Nigeria. He called for blueprint architecture to provide a coherent and open interface to all service providers operating within Nigeria to adhere to, which will lead to reduced costs to the end user/consumer.

Getting all communication service providers to interconnect to each other at the fiber level, he told participants is the only way forward for local content participation both at the national and inter-regional level. In addition, he identified funding, human capital development and protection of intellectual property as critical to spurring innovation. He stressed the importance of software leveraging broadband infrastructure for job creation and future of Nigeria, while also highlighting the possibilities in broadband

over Power-lines (BPL).

Funding, political willingness and educating the masses, he remarked are key critical factors in facilitating pervasive ICT adoption. He therefore expressed satisfaction with recent momentum in policy definition, formulation and strategic intent, singling out the inauguration of Presidential broadband Committee by President Goodluck Jonathan to produce a comprehensive national broadband road map for Nigeria. This he said is a positive start and that he expects things should kick start in 2013. His expectation is that by 2017 there are sufficient measures that demonstrate an increased penetration of broadband compared to current figures and a wider coverage of the population achieved by all service providers.

For local content participation in the multi-layered eco system to succeed, Engr. Olusola Teniola recommends the mandating and enforcement of infrastructure sharing as essential to building a ubiquitous broadband environment. Infrastructure shouldn't be used as a weapon to beat up or stifle competition, he cautioned. In view of cyber related threats he further called for the development of a cyber security policy in parallel, stressing a local content approach by Nigerian stakeholders so that systems put into place are not open to foreign attack or compromised under the cloud of terrorist espionage. Risk management systems he advocated needs to be governed by NITDA.

Admiral Ola Sa'ad Ibrahim's presentation, "IT Infrastructure and National Security Strategy: Defence and Strategic use of IT Local Content" highlighted the strategic use of IT local content in national defence security of Nigeria. He informed the audience that the grand strategy for national security 2010 is for national security to be ICT driven. According to him, the key variables in defence ICT are ICT infrastructure, the national security strategy and ICT local content. The national security strategy, he explained, as it relates to the ICT industry would be to protect and promote the growth of the industry in Nigeria through local content patronage.

ICT infrastructure, Admiral Ola Sa'ad Ibrahim reminded the audience pervades all aspects of life and is integral to national security strategy. He made it clear that its disruption could lead to national tragedy that would impact negatively on every aspect of human activity and endeavour. He spoke about the importance of ICT strategy in view of the fact that ICT is critical to enabling success in operations and to the achievement of defence goals. Though he noted that much of the ICT required to support defence is similar to that required by other governmental agencies, he explained that some ICT requirements will remain unique to defence owing to the changing nature of defence's operational environment.

He also expressed the opinion that though outsourcing defence ICT requirements may be necessary, ICT procurement and the ICT capabilities for delivering value must be better balanced against the risk of obsolescence to maintain appropriate technological standard. Admiral Ola Sa'ad Ibrahim called for policies and strategies to enhance local content in ICT products and services in Nigeria, stating that indigenous

companies can be empowered to plug into the short, medium and long term strategies of enhancing ICT development of the defence sector.

According to him, the strategic use of IT local content is critical in addressing insecurity in the cyber world. "The defence headquarters is very mindful of this and is making concerted efforts to rely more on IT local content for its strategic networks", he remarked. The future projections of defence ICT, he assured will be greater ICT scalability, flexibility and adaptability as well as stabilizing and securing ICT availability with modern technology to link sensors, weapons systems, commanders and their personnel in a networked environment. Defence he said will also increase the efficiency and effectiveness of defence ICT capabilities and services while contributing to the development of Nigeria's ICT industry.

Admiral Ola Sa'ad Ibrahim concluded by declaring that "the need to encourage sustained use of these infrastructures through development and patronage of local content and encouraging indigenous entrepreneurs cannot be over emphasized". According to him, defence is focused on enhancing local content in its ICT deployment, warning of the inherent danger of relying on foreign partners.

The presentation, "Framework for Developing Human Capital for IT Local Content in Nigeria" by Prof. S. B. Junaidu, presented the needs and motivations for Nigerian content in ICT services, locally and internationally and provided some strategies for developing human capital for IT local content in Nigeria. He began by sharing definitions of framework and human capital with the audience, stating that his charge is, "To develop workable strategies for creating a pool of skilled personnel in appropriate numbers with adequate skills, in line with the requirements of the ultimate users such as the industry, trade, and service sectors".

National goals Prof. S. B. Junaidu identified were: to develop the domestic outsourcing industry, become an offshoring hub for international investors, develop an ICT driven knowledge economy and increase security and enhance national development. The absence of appreciable Nigerian content in solutions for government and industry services is a real problem he complained while noting that there is a market and global demand for services, and Nigeria has the ability to exploit the potential.

He harped on understanding the various reasons for outsourcing/offshoring in addition to having favorable costs, good human resources and a functional business environment as requirements for the realizing goals. For him availability of employable talent is the single most important determinant for the growth of the IT services and ITES industries in the long term after access to broadband infrastructure. Prof. S. B. Junaidu therefore stressed the importance of talent pool assessment, while assessing talent supply in low wage countries. He extracted data from the NEEDs report on Nigerian universities in expressing concern about talent supply challenges in Nigeria. Perception of risk factors such as crime and forms of insecurity can also affect growth of offshore business, he noted.

India's huge talent pool and capture of about 60% of the global offshoring market, he

asserted offered lessons Nigeria can learn from. He mentioned long-term investment in world-class technology institutes, liberalized entry of private technology institutes in tertiary education, software technology parks, telecom liberalization, establishment of a Ministry for Human Resource Development and the very high priority accorded higher education.

Prof. S. B. Junaidu concluded with several recommendations. These include strategic planning to meet the needs, assessing ICT skill needs/deficits in partnership with industry and academia, establishing a national skills portal, aligning skills development with industry needs and requirements, introducing standardized national level tests, establishing skills development centers, reorienting accreditation away from regulation to performance measurement. Government must refocus its attention and resources on education, while nationally, stakeholding in education must also be refocused, he further recommended.

The presentation, "Global ICT Infrastructure Platforms and Local Content Development" by Juliet Ehimuan was delivered on her behalf by 'Teju Ajani. Google's mission in Nigeria, its focus areas and approach to innovation were covered in the presentation.

Google's Mission for Nigeria, according to her is to serve those already online such as advertisers, businesses, users, publishers. Google she stated also aims to get others online by enabling what she termed, "an accessible, relevant and sustainable Internet ecosystem". She told participants that growing the Internet ecosystem in Nigeria requires working with multiple strategic partners towards mutually beneficial goals, while further disclosing goals of google in Nigeria as 1. Access: reducing access as a barrier to all potential users, 2. Relevance: making the Internet relevant and useful to local people and 3. Sustainability: helping to build an Internet ecosystem in Africa that is viable and sustainable in the long-term.

Juliet Ehimuan then mentioned multiple focus areas of google, which involve partnership and implementation of projects in such areas. Google developer and focus groups was an area she identified which covers google product trainings, Android developer community support, ICT entrepreneurship support via CC hub and media training and local product trainings. Another area she revealed was for university programs, which includes google student ambassador program, access to google applications (for example, Enterprise Apps for students, lecturers and IT department) and expertise contribution. The third area she informed the audience about was products and partnerships, that deals with government e.g. broadband committee participation, mobile operators, enterprise partnerships e.g. resellers and orgs, digital media organizations and support for entertainment industry e.g. AfriNolly app.

In rounding up her presentation, Juliet Ehimuan spoke about "the innovation approach of google". She said this involved keeping a finger on the local pulse by asking questions about what Nigerians care about and exploring opportunities as they arise. This approach she insisted also encourages local innovation through developer

challenge competitions and technology education events. The google process is in addition about openness and compatibility, she concluded while inviting everyone to be part of the process.

## PLENARY SESSION 3 PRESENTATIONS

The third plenary session of the eNigeria 2012 conference under the conference sub-theme, “Appropriate framework for marketing and sale of “Made in Nigeria” IT products and services” raised issues relating to promoting, financing and supporting the development of products and services of local content in IT.

### Presenters

- Financing the Development of IT Local Content Products and Services: Global Best Practices - Chinonye Mba-Uzokwu, ISPON.
- Marketing IT Local Content Products and Services: Issues, Options and Strategies - Mrs Florence Seriki, Managing Director, Omatek Computers.
- Levering and Managing IT Facilities for Local Content Development and Effective service Delivery in the Public Service - Tunde Ezichi, Former President, CPN
- New g.TLD (TopLevel Domain) and IT Local Content Development Nigeria - Mrs. Mary Uduma, President, Nigerian Internet Registration Authority (NIRA).

The Financing the Development of IT Local Content Products and Services: Global Best Practices” presentation by Chinonye Mba-Uzokwu was short and delivered with a strong belief that the right support for local content development can transform the nation. He started by declaring that, “Our past need not be our destiny” and stated bluntly that, “In the year 2050, when Nigeria becomes the 7th most populous nation on earth, I probably won’t be here”. Continuing he shared his thoughts and vision. “I BELIEVE” he asserted, “that wherever by acts of omission and commission we end our dreams, we will also find the carcass of our nation”.

In emphasizing the importance of innovation, Chinonye Mba-Uzokwu claimed that that it is innovation or lack of it that extends or denies us our possibilities. “The plow, combustion engine, phone, PC, genetic engineering and utility/cloud computing” are examples, he remarked. Reinforcing his belief about innovation, he told the audience that, “our prime Imperative is neither food, shelter nor security but rather to build our innovation capability starting with education”. Expressing his concern that Africa has a higher birthrate and a lower life expectancy than the rest of the world, with 41% of its population under 15, he raised the issue of the possibilities within Nigeria, stressing that, “I BELIEVE our country, Nigeria, will make or break the African dream”.

In asking the question, “Where we are now”, he queried the nature and extent of development from 1997, wondering incredulously about unrealized potential and dreams. Rather than fear or rage about the present undesirable state of affairs, he called for innovative thinking and the right preparation and attitude to rise and seize the

future. "There is enough blame to go round", he cautioned as he reeled out examples of the corruption, wastages, lack of sincere investment and absence of forward thinking hindering the creation of learning environments and opportunities for Nigerian children. Asking for focus on moving forward rather than wasting efforts attacking those he referred to as "parasitic bugs who leech our future and national resources", he assured that "They will be called to account and many brought to justice in ways we can neither fathom or orchestrate. That is not our task".

In closing Chinonye Mba-Uzokwu emphasized that intellectual capital and human resources are the most critical assets in today's information age. But he noted ironically that in Nigeria, they are treated as "intangibles" and consigned to the "unknowables". His message that support, material and financial, is essential for local content development, which is in turn critical to achieving fulfillment of potential by Nigeria, was well received. "Our past need not be our destiny, but we must make our choices to create new possibilities", he concluded.

The presentation, "Marketing IT Local Content Products and Services: Issues, Options and Strategies" by Mrs. Florence Seriki provided a detailed guide to steps that are critical to promoting the local IT industry and its products and service. She started by expressing confidence that the effective utilization of IT would contribute to poverty reduction and job creation, assuring that this will in turn affect Gross Domestic Product and become one of the ways to reduce dependence on oil.

She advocated the use of ICT to drive the economy as exemplified by the Indian and Taiwanese experience, observing that though the IT industry of Asians started off as resellers of global brands ten years ago just like Nigeria, they unlike Nigeria have moved forward. There is a need to examine steps taken by the Asians, she asserted.

According to Mrs. Florence Seriki, the first step taken by the Asians was the decision to be producers rather than consumers. She advised that we need to take advantage of the population in the African market and start to engage in local production and local factories. The next step, she said they took was the decision to develop and implement policies on local content to ensure local patronage. Particularly decisive she observed were the massive campaigns around local content led by top influencers like their number one citizens.

She told the audience that sustaining the local policies was another step which entailed promoting ICT companies, creating ICT parks, creating international exhibitions to expose their SMEs and creating projects and initiatives to keep their factories busy. Furthermore, she noted that another step was the encouragement of SMEs and local manufacturers to partner with foreign direct investors or buyers. Creation of export opportunities and government partnering with factories was part of this step, she disclosed.

Funding for manufacturing was another vital step Mrs. Florence Seriki observed. She disclosed that unrealistic terms and conditions were prevented in lending to the sector, and observed that benefits of long term funding of SME's and local factories cannot be

over-emphasized. Another step she highlighted was the creation of new innovative factories and SME derived factories, as well as the springing up of R&D labs along with different factories sharing common ICT labs and R&D facilities.

Addressing critical infrastructure of power, road, housing and network was an important step she observed they undertook which helped in reducing the cost of running factories, noting the importance of exploring the use of alternative energy sources as well. She further described the step on influencing education which entailed setting up training schemes (R&D), creating resource centres and building database of learning opportunities as quite important.

The introduction of schemes and initiatives to enable the purchase of computers by ALL at very affordable prices, working with banks to support manufacturers and consumers for both cheaper funding and rental payment structure was the final step she mentioned. In concluding, she emphasized the importance of using these steps as a guide in view of the importance of ICT. "ICT is critical to the success of Vision 20: 2020", Mrs. Florence Seriki insisted.

Tunde Ezichi's thorough presentation, "Leveraging and Managing IT Facilities for Local Content Development and Effective Service Delivery in the Public Service" examined the state of IT facilities for effective public service delivery and made recommendations in line with the goals of local content development.

In introducing the topic he started with a definition of local content and then declared that the nation is not leveraging on local content development for effective service delivery in the public service. He called for a vision and strategy for local content development and an overhaul of the present government approach.

He noted that though IT facilities have greatly improved service delivery in all aspects of our lives, the Nigerian public service is not effectively leveraging on IT facilities to improve service delivery to the people. Processes, technology and people are the major factors that must work together in perfect sync, he stated.

Expressing his disappointment with service delivery processes in our public service, Tunde Ezichi claimed it is amongst the most bureaucratic and cumbersome anywhere in the world. He told the audience that subsuming the IT function under other departments is not international best practice and must be rejected. Full-fledged IT departments must be created, he declared. In order to further stimulate processes, he also called for the upgrade of NITDA to a National Information Technology Development Commission (NITDC). He additionally stressed the need for each MDA to embark on a rationalization study of its information processing requirements and produce an IT strategy master plan.

Insisting that people are possibly the most important link in the chain, he expressed concern that skills required to efficiently run the processes and technology are lacking. This in his opinion reinforces the need for an effective and implementable eGovernment strategy that will define the methods, processes and technology. He noted that there is

currently a dearth of adequate IT personnel capacity, and he made it clear that a situation where non-IT professionals are given the responsibility of operating and managing IT departments within the public service is unacceptable.

He spoke to the audience about the need for professionalism of IT in the public service, insisting that field of IT is as specialized as a field like medicine or accounting. Tunde Ezichi declared that a properly trained and directed IT cadre will ensure that the quality of IT services and the production of local content meet desired standards and are in line with professional best practices. Creation of a service-wide IT cadre similar to that for accountants/auditors, at the apex of which there will be the Information-Technology-Systems General of the Federation (ITSGF) and the establishment of a full-fledged IT department/function reporting directly to the accounting officer of the MDA and the production of an IT strategy master plan report by each MDA were his recommendations.

Mrs. Mary Uduma's presentation, "New gTLD (Top Level Domain) and IT Local Content Development Nigeria" was undoubtedly an informative presentation that included prospects for the domain industry in Nigeria. She began her presentation by introducing ICANN (Internet Corporation for Assigned Names and Numbers) as the body that registers domain names at the root and runs Internet Assigned Number Authority (IANA). Illustrating the workings of the ICANN multi-stakeholder model, she used a diagram to show how the board of directors, committees, ICANN staff and stakeholders are all connected and working towards common goals.

ICANN she said coordinates the Domain Name System (DNS), Internet Protocol (IP) addresses, space allocation, protocol identifier assignment, generic (gTLD) and country code (ccTLD) Top-Level Domain name system management, and root server system management functions. Mrs. Mary Uduma informed the audience that ICANN delegates the registration of country code top level domain (ccTLD), such as Nigeria Internet Registration Association which manages Nigeria's ccTLD.ng. She stated that DNS or IP is the registry for computers as machines identify each other with numbers, noting the need to convert lengthy numbers to readable words. Generic (gTLD), Country: ccTLD, International Agencies: .int and US Military and Government were identified as domain categories.

According to her ICANN has worked for over 6 years to open up the domain name business in order to introduce more competition in the generic top level domain name space, disclosing further that domain name registration is open to anyone, including corporate and non-corporate bodies. While stating costs including the fact that the cost of a new gTLD is \$185,000, Mrs. Mary Uduma said ICANN has made provision for applicants from Developing Countries to the tune of \$2,000,000.

She then shared relevant statistics with the audience such as the ICANN posting on 13 June 2012 of the applied-for strings to the application results page of the site, indicating total current new gTLD applications, total withdrawals, total change requests submitted and total change requests approved. Statistics she shared

included gTLDs applications for all continents. Discussing the opportunity of making comments about the process, Mrs. Mary Uduma noted that the application comment window closed on 26 September 2012, though the application comment forum is open for the duration of the new gTLD program.

Benefits of the new gTLD, she identified include entrepreneurship, increased control, ongoing revenue stream, innovative marketing opportunities, innovative business models, Internationalized Domain Names (IDNs) and community engagement. In Mrs. Mary Uduma's opinion, Nigerians can further benefit through e-Governance, positive branding from the .ng domain, local content development (creative art, education, agriculture, health, financial services, applications), distributors, resellers, community identity, cultural expression, job creation and online marketing.

## PLENARY SESSION 4 PRESENTATIONS

The fourth plenary session of the eNigeria 2012 conference under the conference sub-theme, “Value addition and Wealth creation through Nigerian content in IT development” provided unique perspectives to local content development in relation to adding value, creating wealth and the pertinent policy issues.

### Presenters

- IT Local Content for Education Sector; Systems, Services and Products - Seyi Adisa - Sales & Distribution Solutions Ltd
- The Role of Media in IT Local Content Development, Marketing and wealth Creation - Don Pedro Aganbi, MC Tech TV, Lagos
- The Nigerian Youth: Innovation, Creative Problem Solving and IT Development - Dr. Noel Akpata
- Information Technology for Health: Opportunities for Nigeria - Charles Nwasor, Atlanto University, USA
- The Role of Indigenous Software at the Heart of National Economic Transformation - John Tani Obaro, CEO, SystemSpecs

The presentation, “IT Local Content for Education Sector; Systems, Services and Products” by Seyi Adisa brought the issues of IT in education to the fore and linked them with local content development using a future oriented perspective. He started his presentation by declaring that the future of any country is totally dependent on the quality of education made available to the citizenry. While he acknowledged some positive IT initiatives in education, he expressed concern about the will to implement.

From his perspective, local content is about the development of local skills, technology transfer, use of local manpower and local manufacturing. IT, he stressed, is essential to promote participation in society and cannot be neglected in education. He was therefore disappointed with the state of IT in education in Nigeria, noting that most teachers are not computer literate and most government decision makers fail to appreciate the importance of IT to education. Insisting that change was possible, Seyi Adisa remarked that India which is building a solid foundation for the future as evidenced by the impact it is making in software development is being propelled by purposeful leadership.

He identified some of the IT in education products presently available as: online education, e-Learning, e-Payment, e-Registration, e-Records, e-Projects and e-Tutorial. Student Management Information System, Nigerian Universities Information Management System and Nigerian Educational Content Information Management

System are examples of IT systems he shared. For him, Nigerians can develop any of these information systems and develop various customized software to improve the education system, revealing that he saw an untapped, virgin market requiring the right policies that could create success in the educational sector similar to that achieved in the telecommunication sector.

The import dependent focus of our policies, our value system, corruption, encouragement of certificates instead of proficiency, inability to learn from ambitious Asian countries, non existence of supportive policies, erratic power supply and neglect of education by the different levels of government were reasons Seyi Adisa adduced for the non existence of local content IT infrastructure in our education system.

He recommended elevating the profile of teachers, having a dynamic educational plan and the signing of an IT local content bill that encourages the manufacture of locally produced IT educational software. In addition he called for all teachers to be computer literate, the building of IT laboratories at all levels of education, while also increasing the education budget and working on our value system. He also recommended putting IT related financial packages in place to assist students and parents, e.g. laptops on lease for students. In closing Seyi Adisa appealed to decision makers in the education sector to immediately deploy a Student Management Information System that can provide a one-stop source for all information about schools, curriculum, projects and students in Nigeria.

Don Pedro Aganbi's presentation, "The Role of Media in IT Local Content Development, Marketing and wealth Creation" took a refreshing look at how to improve local content creation and at the same time it assessed the role of the media and explored opportunities and prospect in local content creation. He started by observing that the local content concept gained currency in Nigeria through the petrochemical industry.

Noting that it is a new concept with ICT, he sees the challenge as improvement of local content creation, the role of the media and seizing the attendant possibilities. Media, including books, newspapers, magazines, and recordings, radio, movies, television and the Internet was therefore a focus for him. Particularly, in situating local content is a community's local knowledge and experience that is relevant to the community's situation and marketing for creating value for customers, clients, partners, and society at large. Wealth creation and digitization he remarked are also focus areas for him.

Don Pedro Aganbi expressed appreciation that key stakeholders in Nigeria's ICT sector agree that for the ICT sector to play a dominant role in the nation's economic transformation there needs to be a substantive local content policy in the sector. Limited financial resources for content production, inappropriate training, inadequate access to appropriate technology, uncommitted decision makers and market forces, which do not encourage diversity are reasons he gave for lack of local content.

According to him, the core of the media's fundamental functions of information, education and entertainment is the role of persuasion to influence people's actions

towards a particular direction. He noted that experts have also called on the media to use their capacities to sensitize and mobilize people and set the agenda for people on issues that should be viewed as priority issues. He called for a clear ICT local content policy and for the role of the media to be specified. He further insisted on support for innovation in local content production in the media, capacity building, a special fund for ICT local content development and full implementation of the Freedom of Information. In analyzing marketing he invited stakeholders to take a cue from the audio visual industry (Nollywood) which is a pivotal example of how local content can become a viable industry. He argued that Nollywood achieved this feat through originality, creativity, identification, accessibility and persistence.

He told participants that experts have said that if properly handled local content can facilitate the creation of an inclusive, job creating economy. He however recommended paying attention to specific areas such as: education/training opportunities, digitization, government policies (cashless policy, buy Nigeria and others), ICT-based media development (websites, CD-ROMs), information centres and tele-centres, distribution/dissemination and partnerships. In closing, Don Pedro Aganbi called for more action on the far reaching measures introduced to promote local content by the Ministry of Communication Technology since it was established one year ago.

The presentation, "Information Technology for Health: Opportunities for Nigeria" by Charles Nwasor examined how Nigeria's health profile and the availability of health information technologies create opportunities for Nigerian innovation. He started the presentation by declaring that the impact of technology can be felt in education, banking and eCommerce. Using a projected graph he illustrated how teledensity and number of telecom subscribers in Nigeria had risen rapidly from a teledensity of 1.89% in 2002 to a teledensity of 76.69% in 2012.

Painting a distressing picture of Nigeria's health profile, he informed the audience that Nigeria has one of the worst records in the world stating that it is second to India, as the most hazardous place in the world for expectant mothers and children with equally high incidences of morbidity. He identified challenges of healthcare as lack of information, lack of access to quality care, systemic failures, resource constraints and gaps in care.

Health information technologies, which he stated can help, is the application of Information and Communications Technology to health in: planning, management, financing, delivery, improvement, electronic health records, electronic prescription, health Information exchange, analytics and clinical decision support.

Though Charles Nwasor claimed that health information technologies come with significant advantages, he cautioned that the potential to make a difference in Nigeria depends on certain key considerations such as the value of health information, appreciation of the impact on the quality and appropriateness of care that is dispensed and commitment to improve the quality of healthcare services. Specific uses of health IT he discussed include engaging patients and their families, data

collection and dissemination, clinical collaboration, surveillance, analytics and clinical/business intelligence.

For him, health IT presents opportunities for Nigeria for the adoption of the patient-centered paradigm. Multidisciplinary collaboration that entails comprehensive pathways of care, clinical workflow that foster the care team approach, sound business case and clinical value and information-oriented architectures is embedded in such innovation, he remarked.

He spoke about the regulatory and policy enablement, which included the national health bill, issuing an innovation challenge and incentivizing the creation, adoption and meaningful use of Nigerian health information systems. Possible impact with all requirements in place, he insisted will be transformation of healthcare and growth of Nigeria's knowledge-based economy.

Concluding Charles Nwasor called for the following: recognition of the value of health information; punctuation of the equilibrium of suboptimal and declining health outcomes; leverage on the inherent efficiencies of health information technology to innovate; make Nigeria an outsourcing destination and foster sound clinical and economic health.

John Tani Obaro's presentation, "The Role of Indigenous Software at the Heart of National Economic Transformation" explored how ICT can be a key contributor and the role of indigenous software and action steps to take to achieve such outcomes. 'DeRemi Atanda delivered the presentation on his behalf.

He asked the audience whether they had seen the Transformation Agenda document (2011-2015) containing the summary of Federal Government's key priority policies, programmes and projects. In answering he highlighted the ICT component of the National Transformation Agenda which included 2011-2015 proposed investment: N22.2 Billion (0.19% of total 2011-2015 investments by MDAs), development of 10 year strategic plan, development of Infrastructure particularly global connectivity and creation of enabling environment that encourages PPP.

John Tani Obaro further analyzed ICT in the national budget (% of total) and indicated that it fell on an overall basis from 0.31% in 2012 to 0.29% in 2013, while recurrent percentage remained the same at 0.43%, capital percentage fell from 0.32% in 2012 to 0.26% in 2013. Asking participants about future economic transformation and how much can come from the ICT-software sector, he sounded positive. According to him success stories/examples abound, arguing that "the window remains open, we are NOT late". He declared that the imperative of local content in transformation is that "Nobody can like our country more than we do" and "We owe future generations a legacy".

His ICT industry overview highlighted the fact that the ICT sector is growing at a fast rate and has become the 4th largest contributor to GDP. However, he noted that though the software sub-sector holds unlimited potentials for economic transformation, the local

content policy on software is yet to be activated. The lack of incentives to promote the development of the software sub-sector and the absence of encouragement for innovative and brilliant youth were major concerns for John Tani Obaro.

To show sincere recognition of the potentials of the software sector for economic transformation, he called for facilitation of affordable capital to create and sustain enabling environment and implementation of local content policy on quick-win, high-impact projects (drivers' license, micro-finance, payroll, pensions, examinations, electronic-payment, etc).

He made it clear that indigenous software in national economic transformation is not about protectionism. Instead, "it's about taking responsibility for economic transformation, creating a conducive environment for economic growth, preservation of national dignity, attracting foreign investment, creating value and attracting wealth, empowering our youths for the future, giving Nigeria a GOOD name and very many more", John Tani Obaro declared.

## PLENARY SESSION 5 PRESENTATIONS

The fifth and final plenary session of the eNigeria 2012 conference under the conference sub-theme, "Leveraging Technology Transfer in Nigerian content in IT" was a platform for sharing original ideas, concepts and guides in technology transfer to better serve the local development goals.

### Presenters

- Towards a New Economy in Developing Countries: Opportunities and Challenges of using Information Technologies and Systems by Prof. Adekunle Okunoye, Department of Management Information Systems, Williams College of Business, Xavier University, Cincinnati, Ohio, USA
- IT Local Content Development in Africa: The Kabissa Story - Tobias Eigen, Founder and CEO, Kabissa
- The Compelling Need for CIOs in MDAs by Sadiq Abubakar, KRC Services Ltd

The presentation, "Towards a New Economy in Developing Countries: Opportunities and Challenges of using Information Technologies and Systems" by Prof. Adekunle Okunoye examined strategies and approaches in academics, research and entrepreneurship aimed at facilitating the development of local content and promoting of new technology.

He began with an appreciation that knowledge is increasingly becoming the driving force of economic growth, social development, and job creation. He however expressed concern that unlike the Western industrialized part of the world, several developing countries are yet to exploit the opportunity of new technology to advance to the new economy. For Prof. Adekunle Okunoye, Internet as a new technology hasn't been fully adopted in Nigeria because of the lack of local content and inability of majority of common users and small and medium size enterprises to see its relevance to their day-to-day activities.

In focusing his concept of local content to new technologies, he noted that for a nation to truly benefit from the Internet there should be mechanisms to develop local content to meet local needs as well as global opportunities. Appropriate authorities, he said should provide the required enabling environment. There is a need he insisted to extend the perspective to Internet adoption and utilization in the national context and to the role of institutions in local content development. In his opinion, government collaboration with other important stakeholders in the new technology market can help in dismantling barriers to new technology adoption.

It is essential, he disclosed to define a wide range of policy measures and tools that

public authorities can use in their effort to diffuse the new technologies in the best way. Prof. Adekunle Okunoye suggested five diffusion drivers, namely: (1) knowledge building; (2) knowledge deployment or subsidy; (3) mobilization; (4) standard setting; and (5) innovation directive.

According to him, there must be availability of knowledge necessary to develop and sustain innovation as well as the application of the innovation, while critical activities essential for the diffusion and innovation of technology should also be subsidized. He said participation of established local companies and multinational corporations helps to provide expertise and economic stability. Additionally, he insisted that there should be encouragement of "decentralized actors and organizations to think about an innovation in the right way in order to facilitate increased usage".

Prof. Adekunle Okunoye disclosed that standard setting makes the innovation practice official and defines the scope of options for the actors involved while the innovation directive addresses the guidelines that are meant to control both the production and use of innovations. Financial, procurement, political and public enterprise are measures he identified as being supportive of these strategies. For example, he called for an innovative entrepreneurial drive to start new ventures and availability of venture capital to ensure that ideas make it to the market place.

Tobias Eigen's concise presentation, "IT Local Content Development in Africa: The Kabissa Story", looked at the issues of building trust in the content and online space using Kabissa's example. He began by emphasizing the importance of trust in building confidence in content provision, noting that "Reputation matters if you want people to pay attention to you".

He spoke about Kabissa Trust Badges and the fact that they can help African NGOs improve their reputation. In his words, the reputation platform badges, "put otherwise invisible organizations on the map". He noted, "Crowdsources" enable upkeep of contact details and the badges confer stories of badge holders with credibility.

Explaining how it works, Tobias Eigen said Kabissa will verify contact details, organizations give and get trust badges, spend appreciation points on each other and reputation score highlights most trusted NGOs. For the open data platform, he instructed that interested parties should browse and download as CSV to use as they see fit, noting that the API Programmer Interface and the open data license are also important. He further called on participants to be part of the Kabissa trust badges Information and survey online.

He spoke about the history of Kabissa, stating that it was founded in 1999 after the Nigeria project that focused on website hosting and domain registration. According to him, Kabissa conducted the "Time To Get Online" training program, tagged, "Steps to Success on the Internet" in 2003. He additionally informed the audience that the networking platform which included profile pages, community blog, newsletters and more was launched in 2007. The mission is to: "Help African civil society put ICT to work for benefit of their communities", Tobias Eigen disclosed.

Sadiq Abubakar's presentation, "The Compelling Need for CIOs in MDAs" explored the CIO function and the value of CIOs to MDAs in Nigeria. He began by noting that service delivery to citizens by MDAs leaves much room for improvement. ICT can however be used to dramatically improve service delivery to citizens in quantity, quality and timeliness, he remarked.

Introducing the CIO concept and paraphrasing a definition of the CIO as "a strategic value creator for the organization," he explained that in the private sector, strategic value means shareholder value: profits and in the public sector it means: service to citizens.

He further highlighted the very clear differences between the roles of Head of IT, who is in charge of tactical service provision/organization and that of CIO, who is a strategic value creator. In enabling the delivery of the core services of the MDA using ICT, he declared that CIOs are prime movers of eGovernment who must have top level positioning and support in the MDAs.

Sadiq Abubakar expressed concern that the IT Unit headed by Heads of IT is tucked away under Planning, Research & Statistics (PRS) department, while in most MDAs, the CIO is unknown and does not exist. According to him, dramatically improved service delivery from banks has been brought about by placing competent CIOs in proper executive positions in the banks, competitive pressures and through the combined use of internet and mobile technologies.

Many countries, he informed the audience, have set up what they call the government CIO or the chief public CIO, and many have also set up CIO councils to support the GCIO. To provide more detail, he described the functioning of GCIO in South Africa and Mauritius. He additionally used a table, titled, "CIO: Learning from experience of selected countries" to identify the location of CIO offices and to describe notable contributions to the CIO concept in various countries.

In closing, Sadiq Abubakar argued that examples from other countries and obvious benefits for service delivery and e-governance provide a compelling reason to adopt and implement the public CIO concept and the placement of CIOs in the various MDAs in the public sector of Nigeria. He advocated that CIOs must be suitably located in the administrative hierarchy of the respective MDAs and have top level support. "After this is done service delivery to citizens using technology can begin to happen", he assured.

Summary of Communiqué at the eNigeria 2012 Conference organized by the National Information Technology Development Agency (NITDA) held at The Congress Hall, Transcorp Hilton, Abuja from 20th – 22nd November, 2012

## Observations

Following discussions at the event, the participants observed that:

- ICT sector in Nigeria is growing at an increasing rate, and it is the 4th largest contributor to the nation's GDP;
- the IT sector contributes about 18% to the growth of the economy with an investment worth about \$200 million in 2003 and expected to increase to \$25 billion in 2013;
- there is a huge potential for ICT local content development towards its contribution to the growth of the Nigerian economy;
- the development of a sound IT sector can assist in achieving the Federal Government's transformation agenda and engender development in the rural areas;
- IT has the potential to create jobs for our youths, boost food security and create export opportunities for the country amongst others;
- National security can be enhanced through the promotion of ICT local content in Nigeria;
- various unnoticed ICT innovative programmes are currently on-going amongst the youths in Nigeria;
- despite the many obvious challenges, Nigeria can still leapfrog and contribute to the global digital economy;
- there is still a wide gap between monitoring and evaluation of ICT projects on value added on investments;
- Nigeria has not done so much on the protection of intellectual property, which is necessary to promote innovation

## Recommendations

After extensive discussions, the followings recommendations were made:

- NITDA, should focus on intense research towards achieving the vision of Local content while the theme of this year's eNigeria should be sustained in subsequent editions and Key Performance Indicators be set and evaluated until 50% local content is achieved in the sector.

- There is a need for government to include local IT manufacturers in its international trade missions, in order to expose our local manufacturers and stakeholders to the best practices in the areas of service, software, knowledge, and innovation
- Government shall encourage local ICT companies to compete internationally through various measures including reduction of software and hardware importation into the country.
- Stakeholders shall identify an ICT champion and a lobby group to advance the growth of ICT
- Government should upgrade NITDA to a National Information Technology Development Commission (NITDC) to ensure adequate regulation of the IT sector
- NITDA should collaborate with the NASS to fast track appropriate legal framework for smooth integration of IT in all sectors.
- NITDA shall commence the development of a concise ICT local content policy in collaboration with stakeholders
- NITDA shall strengthen its partnership with other relevant stakeholders such as Ministries of Education, Finance, Agriculture, Health, Trade and Investment for effective ICT development in achieving their mandates
- Indigenous hardware and software manufacturers shall commence the development of workstations for forensic technology works
- Organization of the annual software competition for students should be collaboratively handled by NITDA, CPN and NCS and the National Mathematical Centre
- NITDA should develop a multilingual web portal in Nigerian languages including development of special IT programmes for our teeming youth to meaningfully engage them.
- Government shall continuously facilitate the establishment of knowledge based clusters (ICT Incubation Centres) in a strategic imperative to enhance the standard and quality of local content implementation processes
- Government shall introduce ICT local content in the curriculum of educational institutions
- All stakeholders shall collaborate to develop ICT local content in Nigeria. Creative and innovative thinking should be encouraged at all levels of the education system.

# 4

## eNigeria 2013

### Introduction, Themes and Objectives

The eNigeria 2013 summit and exhibition organized by the National Information Technology Development Agency (NITDA) took place at the Shehu Musa Yar' Adua Centre, Abuja from Tuesday, 3rd – Thursday, 5th December, 2013. The summit and exhibition was declared open by Arc Namadi Sambo, The Vice President Federal Republic of Nigeria. Other dignitaries at the opening ceremony were Mrs. Omobola Johnson, the Honourable Minister of Communication Technology, Prof Iya Abubakar who chaired the opening ceremony and Prof Pat Utomi who was the keynote speaker. Also present were Hon. Dr. Ibrahim Shehu Gusau, Chairman, House Committee on Information and Communication Technology, Chief Don Etiebet, Former Minister of Petroleum, Dr Tosin Ajayi, Chairman, NITDA Governing Board, Dr A. S. Daura Acting DG-NITDA and other members of the Board and Presidents of ICT Professional bodies such as NCS, CPN, ISPON and ITAN amongst others. The Minister in her welcome address formally presented the guidelines on Nigerian ICT local content development as the rulebook for local content. The 2012 edition of eNigeria with the theme "Local content in ICT development in Nigeria" examined the nonexistence of technology exports and very low level of patronage of locally produced ICT products including hardware and software. Stakeholders at the summit rightly observed that while the country appears to be fully abreast with technological advancements and global innovation, the economic value generated locally with the imported technologies used by Nigerians is far below that of our indigenous technologies.

### Themes

In view of the foregoing, the stakeholders agreed to adopt ICT local content development as the central issue to be addressed in subsequent eNigeria conferences until the country achieves optimum level in balance of trade in the ICT sector. The 2013 edition of eNigeria therefore focused on achievements in ICT local content initiatives. The theme of the conference was "Local Content in ICT Development in Nigeria: The Journey So Far".

About 420 delegates who participated at the conference were drawn from across the public and private sectors, civil society groups, students, the academia and the media. The speakers were experts practicing in various fields of Information Communications

Technology (ICT) and beyond. There were five (5) plenary sessions with a total of 16 papers presented based on the following sub-themes:

- 1 An Overview of Local Content Development in Nigeria
- 2 An Overview of Infrastructure Development
- 3 ICT Policy as Local Content Infrastructure: Status Report
- 4 Experience in Implementing ICT Local Content: Global Best Practices
- 5 Financing ICT Local Content Development: Investment and Funding

### Objectives

- Evaluate progress and success of the buy “Made in Nigeria IT Products and Services” campaign;
- Develop requisite framework for global competitiveness of indigenous IT products and services;
- Develop framework for providing critical employment through outsourcing and other digital opportunity windows;
- Examine funding options and factors militating against IT local content development in the country;
- Develop strategies for leveraging on technology transfer and Nigerians in diaspora for developing the ICT industry in the country.

## OPENING CEREMONY

### Welcome Address

The Acting DG of NITDA, Dr. Ashiru Sani Daura welcomed everyone to the 2013 edition of eNigeria International Conference, declaring that the 3day conference has been a platform for setting agenda for IT development in Nigeria since the first edition exactly a decade ago. He remarked that due to developments in the digital world it is an understatement to say that the world has changed a lot since then. He however queried that in spite of all these global changes and hundreds of billions of Naira spent on IT in Nigeria, how much of the IT products and services are produced locally, how many IT global brands have grown out of the country and similar questions. In his words, "we are more familiar with the word download than the word upload". He explained that addressing these issues and others like them is the reason why it was resolved at the 2012 edition of the conference that the next five editions of eNigeria should focus on the development of Nigerian content in the IT industry, which is why, "Local Content in ICT Development in Nigeria: The Journey so far" was chosen as the 2013 conference theme. Dr. Ashiru Sani Daura emphasized the importance of reviewing impact in determining future steps to be taken noting that lessons should be learnt from decisions that did not produce the expected positive results, while we should celebrate the successful milestones achieved and plan towards scaling and replicating them for global adoption. He appreciated the Local Organizing Committee of the conference for putting together a wonderful and rich event to stay on track in achieving the much needed development in the local content for the IT sector. "If this is accomplished, we would be on the right path towards creating jobs for our teeming youths, re-growing the disappearing middle-class, diversifying our economy from natural resource based to knowledge economy driven by IT and achieving the vision 20:2020", he remarked. Dr. Ashiru Sani Daura expressed conviction going by the caliber of the keynote Speaker, other speakers and the panel of discussants that the conference would be fruitful and come out with appropriate recommendations that meaningfully contribute to the achievement of the transformation agenda of Mr. President. He again welcomed every one and wished all a fruitful conference.

### Keynote Address

Prof Pat Utomi, Founder Center for Value Leadership expressed appreciation at having the privilege of presenting the keynote address "ICT Local Content Development: A Panacea to Sustainable Growth in Nigeria" at eNigeria 2013. He shared his various experiences from reading about the global village as a young student volunteer in university to his various partnerships and entrepreneurial experiences with ICT ventures. For him the potential is yet to be fulfilled, but we should learn from experiences and be thankful for progress made so far. He is of the opinion that it is not too late to leapfrog, and challenged NITDA to be the driver of the desired future of Nigeria for our millions of young people.

He believes that NITDA, with the right focus and culture can be the champion that drives transformation and even achieve faster than recent leapfrog successes like South Korea. He highlighted the fact that Japan's Ministry of International Trade and Industry (MITI), which was integral to making Japan a global economic champion functioned seamlessly with the private sector and recommended that NITDA needs to have a mindset change and paradigm shift for it to be to Nigeria what MITI was for Japan's leapfrog. He warned against repeating Nigerian content in the Oil and Gas sector mistakes.

Prof Pat Utomi insisted that issues in local content for ICT must begin with a clear national strategy. Using his model, the strategy interface framework, he explained the strategy firms make will largely be a function of national strategy and those more or less determine growth and development. "In my opinion, national strategy should focus on Nigeria's competitiveness relative to global value chains of our factor endowment", he advised.

He is also concerned about the major crisis in education and disconnect between the education offered and the competences required to drive the critical sectors of the economy. ICT knowledge platforms, he recommends should address inclusion and relevance in particular.

He observed that most governments try to buy local to encourage indigenous enterprise and to create institutional support for enterprise development. Using his growth driver's framework from his 2006 book, Prof Pat Utomi remarked that NITDA needs to guide policy choice, contribute to institution building in the sector, drive human capital development, support entrepreneurs, keep at the right values in the sector and provide leadership.

He warned against the temptation of bureaucracies and advised focus on what works and is sustainable, suggesting as an example that it may be best to see how to better support emerging software development incubators than to set up another network of government funded incubators.

In closing Prof Pat Utomi argued that this sector holds the key to Nigeria's harmony and prosperity. "With NITDA representing the public sector, working in harmony with the private sector and social enterprises as the soul of civil society, I have no doubt that Nigeria will not only reach but surpass projections that it will be the 13<sup>th</sup> largest economy in the world by 2050", he concluded.

#### Remark and Presentation of Nigerian Local Content Guideline

Mrs. Omobola Johnson, Honorable Minister, Ministry of Communication Technology, who was also the chief host, made Remarks and Presented the Nigerian Local Content Guidelines. She remarked that Nigeria has witnessed unprecedented growth in the use and adoption of Information and Communications technology over the past decade, indicating also that the telecommunications sector is the fastest growing of the

Nigerian economy and is the fourth largest contributor to Nigeria's GDP.

In appreciating the eNigeria 2013 themed "Local content in ICT development in Nigeria: The Journey so far" she noted that the economic value generated locally with imported technologies used by Nigerians is still extremely low and that major recommendations contained in the eNigeria 2012 communiqué were that, "NITDA to focus on achieving the vision of local content, and Key Performance Indicators be set and evaluated until 50% local content is achieved in the sector" and "NITDA to commence the development of a concise ICT local content policy in collaboration with stakeholders".

Though a significant milestone in the journey to the target of 50% local content had been reached with the presentation of the guidelines on Nigerian content development in ICT, there is clearly still a lot of work to be done, Mrs. Omobola Johnson remarked. The guidelines developed with stakeholder participation, she stated are expected to assist in moving many of the local ICT companies from the fringes of the market to be larger and more strategic companies while at the same time keeping valued international partners interested and engaged in investing in the local industry.

She emphasized the need for enhancing the capacity of local providers in the ICT industry to provide globally competitive products and processes, while stressing that access to finance and sub-standard processes and procedures are challenges. She applauded the methodical path taken by the Computer Warehouse Group (CWG), culminating in their recent and very successful listing on the Nigerian Stock Exchange as the way to go, while also informing the audience that new capitalization requirements have been recommended to ensure quality, consistency and appropriate industry standardization.

Mrs. Omobola Johnson also commended IBM for its decision to engage in true technology transfer through research and innovation in Nigeria. Additionally, she acknowledged the direct retail channel for devices and stated that the guidelines aim to add many more locally assembled, and eventually locally designed and manufactured, high quality, reasonably priced devices to the market through this channel.

Explaining that despite the aggressive Internet roll out, the benefits of the Internet can only be realized with content that is relevant to the needs of the majority of the population, she advocated for strong collaboration between industry and academia to bridge the content gap in the economy and society. At this juncture she called for product/service demonstrations by companies created due to faithful application of the guideline at subsequent eNigeria conferences.

Acknowledging the tremendous support received from His Excellency, the Vice President in pushing the agenda for the ICT sector, she informed him and the audience that at a recent meeting with the governor of Lagos State, an agreement was reached to reduce the levies and charges on telecoms infrastructure by 40% and the cost of right of way on Lagos State roads by 90%. Mrs. Omobola Johnson thanked the Vice President for his presence at eNigeria 2013 and looked forward to positive impact on

local participation in the ICT industry and feedback from the industry and the public as the guidelines are adopted and implemented.

The opening address by Arc Mohammed Namadi Sambo, GCON, Vice President, Federal Republic of Nigeria on the choice of "ICT local content development in Nigeria: The Journey So Far" As the theme selected for eNigeria 2013 was quite apt agreeing that the issue of ICT local content development in Nigeria could not have come at a better time for brainstorming since a similar effort in the Oil and Gas sector was yielding result.

He highlighted the fact that the Nigerian Content Development Management Board (NCDMB) was issuing ICT guidelines to operators in the Nigerian Oil and Gas sectors based on the signing into law of the Nigerian Oil and Gas Industry Content Development Act by President Goodluck Ebele Jonathan, GCFR in April 2010.

For him, eNigeria provides yet another opportunity to emphasize the need to improve/increase the Nigerian content in IT development in the quest to transform Nigeria. He assured the audience that eNigeria 2013 will provide a veritable platform for developing appropriate framework and ensure the requisite awareness amongst key stakeholders that will encourage the "Nigerian content in ICT initiative".

He expressed satisfaction that through the eNigeria initiative from inception in 2003, considerable awareness has been created resulting now in massive ICT deployment in the functioning of government organisations and the education and private sectors. With the continued dependence of all sectors of our national life on ICT, the Vice President stressed the need of the Federal Government to formulate policies and monitor such policies through the focal Agency like NITDA and the supervisory ministry to ensure that Nigeria is on the right path in achieving the national goal of joining the league of global top twenty economies by the year 2020. He told the audience of the commitment of the President Goodluck Jonathan, GCFR led administration to make concerted efforts aimed at creating the required enabling environment to mainstream local content in Information Technology (IT) deployment in order to create job opportunity for our youth as well as increase the GDP of the nation.

Vice President Sambo mentioned notable efforts of the Federal Government and went further to appeal to multinational industry giants and the top government decision makers present, to support the nation's common vision and shared conviction, in leveraging local content to achieve sustainable economic development.

In concluding his address and formally declaring open eNigeria 2013, he expressed a strong belief that with the content of the conference and the calibre of resource persons invited, the conference outcome will help the nation to develop a useful framework for inclusive, local content in ICT deployment in Nigeria, pointing out that "a similar feat was achieved from the eNigeria 2012 which led to the development of a framework and guidelines for Nigerian content in Information Technology which will be presented to the stakeholders at this summit".

## PLENARY SESSION 1 PRESENTATIONS

The first plenary session of the eNigeria 2013 conference under the conference sub-theme, “An Overview of Local Content Development in Nigeria” provided the conference with a comprehensive background to local content in ICT development efforts in Nigeria.

### Presenters

- An Overview of Nigerian Local Content Guidelines by Inye Kemabonta Esq , Director Standard Guidelines and Regulation, NITDA.
- The Strategies for Implementing Nigerian National Software Policy by Prof. Charles Akinyokun, Federal University of Technology, Akure.
- Local Content Development in Nigerian Cashless Policy by Oluwatoyin Jokosienumi, Head, Financial System Strategy (FSS) 2020, Abuja

Inye Kemabonta’s presentation, “An Overview of Nigerian Local Content Guidelines” increased awareness about the guidelines and its purpose while providing stakeholders with useful insights. He opened up discussions by noting that though stakeholders have worked hard on several fronts to grow the ICT sector, it is generally acknowledged that the participation and contribution of predominantly local companies and Nigerian professionals in the value chain for the provision of most ICT services is not significant. “It is with this background in mind that NITDA aims to put forth this policy document for the sector”, he disclosed.

In reviewing statistics of different segments of the ICT industry, he pointed out the fact that the figures indicated consumer preference for global rather than local brands. Looking back at past efforts such as Software Nigeria, Buy Made in Nigeria, he was of the opinion that insufficient participation in the value chain, limited structures to assist local players, low commitment at all levels of society and limited financial support are some of the reasons for their ineffectiveness. To address previous mistakes, he told the gathering that current efforts have incorporated extensive stakeholder consultations, a holistic approach and an implementation framework for sustainability.

Making a case for local content policy, Inye Kemabonta observed that nations look for ways to ensure that their regions stay competitive and are capable of fulfilling local demand. He reasoned however that the right frameworks are needed to enhance the ability of indigenous companies to maximally explore and exploit local opportunities, as well as remain competitive globally. He additionally urged participants to view local content from the perspective of local human resource development and local industry growth.

He shared several objectives of the guidelines, chief of which is enabling the local ICT industry to contribute meaningfully towards the achievement of national development targets. Other objectives include stimulating and increasing the production, sales and consumption of locally developed and high quality ICT solutions, facilitating efforts to build capacity and equip Nigerians to serve actively in the local ICT industry and providing a framework for appropriate ICT related regulation and legislation. He then made projections for global IT growth and local demand for hardware, software, network services and Internet access.

As part of his review of the guidelines he looked at authority and enforcement, structure, coverage, application, key provisions and the implementation framework. His review of the implementation framework entailed examining the role of NITDA (legal and institutional) and stakeholders.

Inye Kemabonta concluded his presentation by recommending that the guidelines be reviewed every four years in order to improve it constantly, enable responsiveness to the rapidly changing Information Technology landscape and to continuously enhance national strategy.

Through his informative presentation, "The Strategies for Implementing Nigerian National Software Policy" Prof. Charles Akinyokun shares the background, details as well as the hopes and aspirations behind the National Software policy. He made it very clear in his introduction that software is the engine of IT as a global agent of societal transformation in an emerging knowledge economy. This he said is justification for developing a national policy to ensure software resources are aligned to national goals and aspirations. Disclosing information about previous national software efforts such as the National Software Development Task Force (NSDTF) and the National Software Development Initiatives (NSDI), Prof. Charles Akinyokun expressed reservations that these efforts were not backed with any legislative and regulatory framework. "It is imperative that Nigeria develops a software policy in order to align software as a National Critical Infrastructure (NCI) for national goals, aspirations and empowerment", he remarked. He informed the audience that NITDA set up the National Software Policy Committee (NSPC) with members drawn from a broad spectrum of stakeholders to develop a National Software Policy (NSP) as a blueprint aimed at providing a roadmap to make Nigeria a competitive country in the area of software engineering and development. He told participants that the NSPC was inaugurated by Professor Cleopas O. Angaye, the Director General of NITDA on December 6, 2010, sharing the detailed terms of reference, missions, vision and objectives of the policy. The vision of national software policy is: "Innovative Nation, Creative Minds Connected and Propelled by Software Capability", while a primary objective of the National Software Policy is "to develop appropriate strategies for software research, innovation and development", he revealed. Prof. Charles Akinyokun identified the focal areas of the National Software Policy as software human capital, software infrastructure, software fiscal policy, software industry economics, software legislative, regulatory and institutional framework, software and national

development strategy and software research, innovation and development.

He then produced the highly detailed strategic plan for implementation of the National Software Policy developed by NSPC. He disclosed implementation details and requirements for each focal area, which included implementation levels, relevant National Software policy, relevant national software objectives, programmes and plan actions. He additionally presented timelines, descriptions and time bound measurable targets as specified for each plan action.

Rounding up, he observed that immense potentials exist for the emergence of Nigeria as a global competitor in the software market with the ancillary beneficial impact of poverty alleviation, gender equality, wealth creation and job creation.

The challenge facing Nigeria, Prof. Charles Akinyokun warned is how much of this opportunity is linked to the emergence of a vibrant local software economy and capability, as opposed to net negative capital flight and job losses to international competition. "The strategic plan for the implementation of the National Software Policy is pivotal in answering this question", he concluded.

The "Local Content Development in Nigerian Cashless Policy" presentation by Oluwatoyin Jokosienumi addressed local content issues in the nation's financial system strategy. He opened with an overview of banking reforms, the 2003 emergence of BRIC countries, the Goldman Sachs predictions including the assertion that Nigeria could be placed among the 'next 11' after Brazil, Russia, India and China (BRIC) by 2025.

He highlighted the FSS2020 Revised Strategic Destination vision, "By 2020, to be the safest and most diversified financial system among emerging markets, supporting the real economy" while also identifying key elements of the vision. "To drive rapid and sustainable economic growth primarily in Nigeria and Africa", he revealed is the FSS 2020 mission. These along with the strategic objectives, he observed are in line with the National Vision 20:2020.

Delving into the FSS2020 ICT strategy Oluwatoyin Jokosienumi provided the multistakeholder composition of the FSS2020 committee which included representatives of relevant government agencies, private sector and professional associations. He stressed that the Information and Communications Technology vision is borne out of the need to use ICT as an enabler to drive the successful implementation of the Financial System Strategy (FSS2020) vision, "To make financial services available to everyone, everytime, everywhere". Creation of a legal and regulatory framework for electronic business transactions and development of a future-proof technology infrastructure for nationwide financial services are some of the FSS ICT objectives he discussed. The FSS 2020 ICT accomplishments as well as details of several quick-win initiatives for ICT implementation were also highlighted.

He stated that the Nigeria Payment Systems Vision 2020 is to be "Nationally Utilized,

Internationally Recognized” while enumerating its track record and future challenges. He then introduced the cashless policy disclosing that CBN informed the world that Nigeria would commence the process of changing to a cashless economy by January 2012, in addition to specifying the objectives, main trust and expected benefits of the cashless policy.

For him, local content should be viewed in terms of value creation or addition in the Nigerian economy and utilization of Nigerian human, material resources and services. The cashless initiative offers a great opportunity for indigenous IT companies to develop local content capacity and benefit from the initiative, he declared. Oluwatoyin Jokosienumi recommended that the country should tap into the available opportunities by producing the PoS devices locally. In his opinion government had been proactive so far in local content issues, though he emphasized the need to develop the necessary security and legislative frameworks to make the cashless policy successful.

## PLENARY SESSION 2 PRESENTATIONS

The second plenary session of the eNigeria 2013 conference under the conference sub-theme, "An Overview of Infrastructure Development" was a platform for sharing and discussing infrastructure and related local content strategies.

### Presenters

- Satellite Based Broadband in Nigeria, Prospects and challenges by Engr. Ahmed T. Rufai MD/CEO NIGCOMSAT
- Strategies for implementing CERT in Nigeria by Abdul-Hakeem Ajijola MD, Consultancy Support Services (CS2) Ltd, Abuja
- Nigeria eAgricultural Portal: Challenges and Prospects by Mr. C. Uche Onuora MD/CEO Flex-Finity Nig. Ltd
- The Place for Biometric Technology in Local Content Development by Dr. Chris Nwannenna, MD Condata Systems, Lagos

Engr. T. Ahmed-Rufai's presentation, "Satellite Based Broadband in Nigeria, Prospects and Challenges" looked at relevant and related issues in satellite broadband environment. Asserting that ICT is a development enabler, he noted that as the least wired continent, wireless systems in the form of communication satellites and variants of terrestrial wireless systems are in great demand to bridge its digital gaps and play a critical role in delivering ICT readiness in unserved and under served areas.

While addressing the state of broadband in Nigeria, he presented statistics that suggest only people from urban areas have access to Internet at broadband speeds, which leaves people from rural areas with very limited chance of getting broadband Internet. He also expressed concern about the gross under utilization of capacities of submarine optic fiber cable on Nigeria's shores and the lack of appropriate last mile infrastructure. The Nigeria's Communication Satellite (NigComSat-1R), is a low hanging fruit that can be utilized and harnessed to meet goals of the national broadband plan he declared.

Though communication satellite technology remains the technology of choice to quickly bridge the digital hiatus, he complained that satellite broadband still faces the challenges of lack of effective government policy for rural and remote areas, lack of confidence in communications satellite technology due to sharp practices in the past of satellite based Internet service providers (ISPs) and the relatively high cost of satellite bandwidth.

He listed several prospects and potentials of satellite broadband in Nigeria and

discussed improving capacity and efficiency of satellite in providing broadband Internet and related dimensions in the satellite industry in Africa and globally."The recently concluded London Olympics 2012 games is attestation to not just the broadband capability of communication satellites but also the HDTV and 3DTV transmission quality assurance", he remarked. According to him, NIGCOMSAT Ltd has responded with a local content orientation to the looming June 17, 2015 digital migration, with the introduction of a complete state of the art digital satellite TV Direct to Home (DTH) technology to complement and offer alternative to Digital Terrestrial Television.

He shared the specifications of the NigComSat-1R, a hybrid geostationary satellite, which he claimed is now critical ICT backbone infrastructure driving the national ICT revolution. This he said helps in providing revenue diversification for the nation and offers cost effective solution and affordable access to meet Nigeria's broadband needs. According to Engr. T. Ahmed-Rufai, the success of Nigeria's information technology policy and infrastructure in the short and medium term remains wireless systems. NigComSat-1R communication satellite he argued remains a "low hanging fruit" ready to drive and improve broadband penetration in Nigeria.

The presentation, "Strategies for implementing CERT in Nigeria" by Abdul-Hakeem Ajijola brought in cyber security perspective to local content development in ICT. He began by stating that CERRT.ng was commissioned and funded by NITDA. Placing it under the national interest, cyber security ecosystem, he enumerated the aims which are: to develop, nurture and patronize a home grown cyber security solutions economic sub sector, generate employment (job creation), promote knowledge generation & empowered human resources, increase incomes, foster confidence in the economy and enable the nation to meet its national development agenda.

He raised the question: what is money, and answered by sharing concepts of "Trusted Intermediary of Value", electronic currencies and electronic "authority" for secure authentication of etransactions. Abdul-Hakeem Ajijola then defined cyber security as "branch of security dealing with digital or information communication technology" and cyber crimes as "conduct prohibited by law, with prescribed punishment, carried out using cyber systems like computers, electronic, ancillary devices, processes and/or procedures".

The fact that Boko Haram send text (SMS) messages and posts videos on the Internet while the Movement for the Emancipation of the Niger Delta (MEND) regularly sends email threats, from cloud based email services were observations he highlighted. While expressing his opinion that people commit cyber crimes for personal, financial and political reasons, he also described the intrigues and workings of underground economy - organized criminal gangs.

Explaining the concept of the Computer Emergency Readiness and Response Team (CERRT) Ecosystem of Nigeria he highlighted a diagram showing elements and linkages of the ecosystem from global, regional, national, industry/institutional and

sectorial perspectives. He provided further details by producing information on the CERRT.NG coordination centre operational organogram, CERRT.NG work plan and the 12 steps of CERRT.NG methodology.

Abdul-Hakeem Ajijola stressed that the cyber security ecosystem must factor in the fact that the future is mobile and the future is now. He further categorized CERRT.ng services as reactive services, proactive services, Artefact handling and security quality management risk analysis. CERRT.NG equipment, incident handling tools, incident response capability, national cyber forensics laboratory and CERRT.NG ecosystem sustainability were additionally explained by him. Operational challenges such as lack of cyber crime and critical infrastructure laws, getting top level policymakers and management endorsement and support and focus of security services were some of the operational challenges he identified.

Discussing scope of work, which includes developing an overarching grand strategy for planning and setting up CERRT.ng as the hub of a CERRT ecosystem in Nigeria, he described the 5 project phases and expectations and mentioned the fact that phase 1 and parts of phase 2 had been completed. In closing Abdul-Hakeem Ajijola described the Nigerian honeypot project trap set to detect, deflect, or counteract attempts at unauthorized use of an information system.

The "Nigeria eAgricultural Portal: Challenges and Prospects" presentation by Mr C. Uche Onuora proved to be quite informative about the role of local IT capacity in developing Nigeria's agriculture value chain. In framing the big picture he stated that of life's 3 basic necessities, food, shelter and clothing, only food is an item of obligatory consumption. "History of mankind is replete with several wars and conflicts occurring due to disputes over food supplies", he disclosed.

He noted ironically that Nigeria is a net importer of food, and that Nigeria is one of the largest importers of food globally. Expressing disappointment, he said the huge cost involved is at the expense of our overall development and is at same time indicative of weak food security. Nigeria should strive for food self-sufficiency, while Nigerians should invest in agriculture and its derivative industries, he urged.

To address the challenges of agriculture and drive Agric business, under current Agricultural Transformation Agenda, Mr C. Uche Onuora stated that a critical enabling point which IT stakeholders can invest in is the collaborative efforts of both the Federal Ministry of Agriculture & Rural Development (FMARD) and NITDA in innovative applications of local ICT resources for maximum food and agricultural development impact. He additionally observed that most Nigerian agricultural producers operate in fragmented fashion on small plots of land nationwide, challenged by weak infrastructure and occasionally exploitative intermediaries which can make achieving scale in product aggregation by large buyers (and support services for value chains) challenging, expensive and inefficient.

In this regard, he said the goal of the National eAgriculture web portal project strategic Intervention and collaboration effort of FMARD and NITDA is the aggregation,

optimization and delivery of IT local content capacity for transformed Value Chain, under Agricultural Transformation Agenda (ATA). He then shared the portal's content and classifications as well as its services and value streams. Aims include "Food and Agriculture stakeholder nomenclature expanding particularly amongst youth driven unemployed demographic; supporting them to excel in and fit into envisioned farm-to-fork value chain of ATA", he remarked.

He told participants that the portal's robust solution provides for "agropreneurs" by addressing access to capital, access to land, access to markets and access to capacity. According to him the portal uses intuitive interfaces, enhanced multimedia formats, and in addition offers real time information on accessing market support services and capacity enhancement elearning focus areas.

Mr C. Uche Onuora then displayed portal resource schematic and layout showing portal structure and information flows as well as its indepth workings of each specific tab/section (home, finance, farm/primary production, agro industry, distribution & logistics, food security, nutrition and consumption, extension education, eAgriculture tab and members area).

The incisive presentation, "The Place for Biometric Technology in Local Content Development" by Dr. Chris Nwannenna shed light on how to address the challenges faced by biometric solutions and the local content dimensions. He asserted that technology, in the name of biometric, is now taking advantage of measurable biological characteristics or traits of a human being to develop systems that automatically identify people uniquely.

According him the uniqueness of each persons fingerprint is as a result of the fact that the fingers of every individual display Friction Ridge Skin (FRS) that consists of a series of ridges and furrows. He explained that that the pattern of ridges, the minutiae points and the furrows are the main features that determine the uniqueness of a fingerprint that can be useful for mathematical functions or algorithms.

Enrollment, Dr. Chris Nwannenna informed the audience is the process of capturing and storing images of biometric traits (such as fingerprints, faces, irises, etc.) in a database, explaining further that the comparison of two sets of extracted minutiae data is done during authentication and verification processes. According to him, most of the biometric systems in used in the country currently are built around fingerprint modality. Known in the industry as an AFIS (Automatic Fingerprint Identification System), he said the level of confidence implicit in this type of system is very low because the use of a single biometric indicator to build enterprise biometric systems is more susceptible to biometric spoofing and therefore suffers from unacceptably high error rates.

He therefore proposed building a biometric system that is robust enough to eliminate multiple errors in the areas of authentication, and verification. The proposed multimodal system he stated will be based on face and fingerprint modalities and constitutes what is known in the industry as an ABIS (Automatic Biometric

Identification System). In providing explicit details, he revealed the architecture of the proposed biometric system in a diagram. Proceeding further Dr. Chris Nwannenna elaborated on some of features of the proposed system such as specific requirements that are built into the system to minimize spoofing. Strategies he named include: i) Technology: use of robust biometric algorithm, ii) User control: control of access to the system and iii) Curbing human factor: greed. He explained that the local content in the proposed biometric system will consist of ideas, technological or otherwise, that will curb the 'Human Factor' of greed so prevalent in society.

## PLENARY SESSION 3 PRESENTATIONS

The third plenary session of the eNigeria 2013 conference under the conference sub-theme, "ICT Policy as Local Content Infrastructure: Status Report" examined the impact of critical strategy development and policy formulation issues for local content development in ICT.

### Presenters

- The Role of Local content Policy in National Development by Prof. Kevin C. Urama ATPS Network Nairobi, Kenya.
- The imperatives of effective ICT implementation through innovation and local content Development by Dr. (Mrs.) Wunmi Hassan President High Tech Centre For Nigerian Woman & Youth
- Local Content Development in Nigeria: Social Impact of Information Technology by Prof. Patience Akpan-Obong, Arizona State University

Addressing Media Challenges to promoting local content policy as a developmental tool by Aaron Ukodie, Chairman ICT Publishers Alliance and Publishers, eWorld magazine. The interesting presentation, "The Role of Local Content Policy in National Development" by Prof. Kevin C. Urama highlights the opportunities, challenges and issues in policy development for local content. He began with definitions of the Local Content Policy (LCP) noting that policy value cuts across sectors and that there are various perspectives on what "local content" means in the IT sector. Defining the innovation ecosystem, he remarked that, "this is a reflection of the rise of systemic approaches to the study of technology development as opposed to the linear model of innovation".

In Prof. Kevin C. Urama's opinion, ICT represent a productive sector and is an enabler of productive use of ICT in all sectors, citing examples of how ICT had facilitated innovation and contributed significantly to GDP in several countries to buttress his point. He also observed that government policies have played a key role in the development of the IT sector in individual economies. Fiscal, R&D and innovation, human capital and investment climate policies were local content policy levers he focused on. For each type of policy he listed the instruments and illustrative interventions, for example, by identifying R&D support as an instrument and funding through strategic R&D grants & patent incentives, test facilities, R&D tax breaks as interventions for innovation policies.

He then used case examples from China, United Kingdom and Angola to indicate good practices, while sharing common traits and lessons from these countries. In analyzing

Nigeria's ICT Sector, he insisted that the LCP needed to ensure increase in local content participation in hardware and software for job creation and accelerate human capacity in ICT and other sectors. He further identified technical complexities of IT procurement, lack of IT standards and interoperability frameworks, risk management, restricted access to tender notices, policy environment, nature of incentives, STI infrastructure (Science labs, ICT, etc), STI policy research and training institutions as some of the ICT sector challenges.

Concluding, Prof. Kevin C. Urama declared that there is a compelling business case for a comprehensive local content policy in all sectors. Adopting a holistic approach to policy development, having efficient institutional and implementation mechanisms, encouraging private sector participation and linking incentives (including subsidies) with identified strengths (core competencies) of domestic companies are all critical in his opinion.

For governments and donors, he recommended collaboration in knowledge and information sharing, resource pooling, recognition of differences in motivations, maximization of win-win, flexibility in interventions, planning activities in commercially viable terms, impact reviews, public procurement policy to realize local content vision, policies to enhance innovation and fostering of an innovative environment for content creation. While for the private sector, he recommended investment in training and local capacity development, prioritization of contracting or hiring, high quality, inclusion of micro scale firms and investment in long term competitiveness advantages.

The informative presentation, "The imperatives of effective ICT implementation through innovation and local content Development" by Dr. (Mrs.) Wunmi Hassan provided insights on issues and critical success factors for policy implementation. She described policy as the formulation of rules, norms and prescriptions intended to govern the subsequent decisions and actions of government. In her opinion, a holistic policy model includes policy implementation, policy process, policy synthesis and integration and policy evaluation. She disclosed that success of public administration for development is measured only in relation to the implementation of policies, remarking that requirements of successful policy implementation are personnel, financial resources, administrative capability and political and judicial support.

Dr. (Mrs.) Wunmi Hassan shared definitions and the workings of innovation also displaying a diagram representing the structure of interactions among the elements of a typical innovation system. She further illustrated the impact of innovation through ICT in areas of local strength to drive socioeconomic development and competitiveness. While in another diagram she revealed the nature and constitution of the ICT policy eco and innovation system including ICT policy and other essential elements. Taking a look at different rates of change (discontinuous and continuous), she noted that discontinuous change increases uncertainty. She further itemized essentials for a transformed Nigeria ICT Policy, and in harping on the need to create the

future, she expanded on the development of future technology and future prospect in ICT.

Examining foresight processes as the way forward, she stated that methods are used at all stages, representing the elements of creation and implementation of plans, priorities, products; Analysis of trends drivers, opportunities: construction of “visions” and Identification and enlistment of key stakeholders and knowledge sources. Dr. (Mrs.) Wunmi Hassan provided a hierarchical perspective of the Planning Implementation Evaluation (PIE) cycle diagram and guidance in communicating ICT4D while identifying communication channels. “Innovative ICT policy for development delivers the right information, to the right people in the right place and time, in the right way, avoiding haziness”, she asserted.

Concluding, she restated the need for the national vision, agenda and global plans to have platforms to function, noting that the application of ICT and science and technology in all spheres of our socioeconomic development is one of such platforms. In her words, “The new ICT as well as the science, technology and innovation policy are the DRIVER for the much envisioned transformation agenda in Nigeria”. Dr. (Mrs.) Wunmi Hassan also recommended proper stakeholder involvement and engagement, robust funding mechanism, building of strong institutional structure and legal framework for ICT engagements and activities, strong political commitment towards the implementation process and engendering of local and international partnerships.

The thought provoking presentation on “Local Content Development in Nigeria: Social Impact of Information Technology” by Prof. Patience Akpan-Obong highlighted the social dimensions that need to be considered in policy formulation and implementation. She started by stating that the social impact of information technology on local content development should be discussed from perspectives of context, information and local content. According to her, there is an ideology that influences the form and functionality of technology, and context shapes technology. Prof. Patience Akpan-Obong insisted that local content must begin with a shift in particular ideologies and how Nigerians view technologies and view locally made products generally.

Understanding of target and purpose of technology, and kinds of technologies to address the needs of the people are also her concern. She advocated that the push toward increased local content in ICT should focus on innovation that addresses specific and existing needs. Prof. Patience Akpan-Obong argued that though discussions on ICT often focus on hardware, software and services, information is the object of technology. For her, knowledge is power, the power to do, to act and to think and knowledge is based on information. She went further to indicate that information is power/capacity/influence to achieve stated goals and objectives. For her, questions about the purpose of information, the message, the audience and the kinds of information processes all highlight the “social impact of local content development”.

She defined (Nigerian) local content as content about Nigeria for Nigerians and by

Nigerians, which can be informative, educative or entertaining, but must be relevant to Nigerians in Nigeria, remarking that, "there's no deficit of Nigerian content". She noted that though Nigerians were mostly consumers of content rather than creators, that has changed with social media as Nigerians especially the youth, are now constantly tweeting, Youtubing, Facebooking and blogging noting. Her concern is not that there is no Nigerian content but the nature and quality of the information. Prof. Patience Akpan-Obong emphasized that, "information should be viewed as technology on the same level as hardware and software given the ideological dimension of technology itself". She called for greater intentionality in creating and providing relevant information through government and business website that are rich, searchable, interactive and hyperlinked.

Closing, she urged innovators and entrepreneurs to shift focus from the global market to the Nigerian customer base of 170 million people. "We have two options: We can apply every resource to strive to compete with the rest of the world and against their shifting goal posts, or we can innovate and produce for Nigerians, promote Nigerian not because it is Nigerian but because it is great product/service locally accessible, available and affordable", she argued.

"Addressing Media Challenges to promoting local content policy as a developmental tool" presented by Aaron Ukodie, examined the role of the media in the local content campaign and proffered strategies for working with the ICT media. He began by acknowledging the role of the media in the actualization of the objectives of the local content policy. Though the local content policy has some policy benefits to the populace, he remarked that impact depends largely on not just policy implementation but also the role the media is willing and positioned to play in achieving policy goals.

In determining whether the media matters, he identified with its role in the development process in the storage and sharing knowledge and impact in education, information, entertainment and edutainment, good governance, transparency, and the functioning of markets. Aaron Ukodie noted that the media's ability to influence behavior is evidenced by the huge amounts spent on global advertising. Change campaigns which contribute to the development process, he explained are often undertaken in the media.

According to him, the Nigerian ICT Media is one of the most vibrant, noting that specialized ICT reporting began in 1985 with the Guardian blazing the trail. "The ICT Media has played very vital roles in pushing the frontiers of ICT development in Nigeria", he asserted. He mentioned the vital role the media played in the manner government eventually handled the Orosanye report as well as in swaying INEC to patronize local OEMs to help drive the electoral processes of 2011. The ICT media he argued has however not received commensurate support in this regard. Disappointed that many stakeholders are yet to appreciate the importance of the ICT media, Aaron Ukodie called for a planned and sustained local content campaign, with ICT media a key player in the campaign.

Noting that in the local content campaign, NITDA, ICT Trade Associations and local OEMs are the agenda setters, he stressed that the media is pivotal in the execution of the agenda. The power of the media to deliver on change and to influence, in his opinion, often hinges on its understanding of issues and how those who desire such changes are able to sync with it (The media). He cautioned that media management is not just about press conferences and press releases. Asserting the local content agenda and landscape are both huge, he made recommendations for investment, better engagement and financing. "If the media is considered a stakeholder in the local content agenda, then the realisation of that agenda is surer to determine. The question therefore is: how much of the policy thrust and the agenda goals of the local content policy are understood by the ICT media and the entire body of media?" Aaron Ukodie asked in closing.

## PLENARY SESSION 4 PRESENTATIONS

The fourth plenary session of the eNigeria 2013 conference under the conference sub-theme, “Experience in Implementing ICT Local Content: Global Best Practices” looked at critical success factors for ensuring local content facilitates global competitiveness throughout the economy and society.

### Presenters

- Overview of COBIT 5 and Tips for Effective National Adoption by Mr. Peter Ineh, National President, Information System Audit and Control Association (ISACA)
- Local Content as a tool for Youth Empowerment and Job Creation in Nigeria by Mrs Martha Omoekpen Alade, Founder and President of Women in Technology in Nigeria

The “Overview of COBIT 5 and Tips for Effective National Adoption” presentation by Mr. Peter Ineh offers a snapshot of COBIT 5 and how it can be relevant in local content development in ICT. His presentation introduced ISACA, which he stated is a non-profit making association of IT audit and assurance professionals, IT security professionals, IT risk & compliance professionals, IT governance professionals in nearly all industry categories, with members worldwide.

“COBIT 5 is a framework for the governance and management of enterprise IT. It is the globally accepted framework, providing an end-to-end business view of the governance of enterprise IT that reflects the central role of information and technology in creating value for enterprises”, he informed. COBIT 5, according to him brings together the five principles that allow the enterprise to build an effective governance and management framework based on a holistic set of seven enablers that optimises information and technology investment and use for the benefit of stakeholders.

Mr. Peter Ineh stated further that COBIT 5 integrates other major frameworks, standards and resources, including: ISACA's Val IT and Risk IT, Information Technology Infrastructure Library (ITIL), PRINCE2, CMM1 and related standards from the International Organization for Standardization (ISO) such as ISO27001, ISO38001, ISO14001 and ISO9001. “The framework addresses both business and IT functional areas across an enterprise and considers the IT-related interests of internal and external stakeholders”, he remarked.

He listed COBIT5 benefits for enterprises as the ability to: maintain high-quality information to support sound business decisions, achieve strategic goals and realize benefits through effective use of IT, achieve operational excellence through reliable application of technology, maintain IT related risk, optimize cost of IT service and technology and support compliance with relevant laws and policies. Using a diagram, Mr. Peter Ineh highlighted COBIT5 principles as 1: Meeting stakeholder needs, 2:

Covering the enterprise end to end, 3: Applying a single, integrated framework, 4: Enabling a holistic approach and 5: Separating governance from management.

In considering the local content initiative, his thoughts were on the position of the IT industry in Nigeria vs global trend, IT market and investment opportunities and challenges of Local IT firms such as governance, funding, compliance, system design and implementation management and competence management. Emphasizing that COBIT 5 offers the best approaches in terms of governance and management of enterprise IT, Mr. Peter Ineh recommended an effective national adoption process entailing adoption, a roadmap and implementation by stakeholders.

Mrs. Martha Alade's presentation, "Local Content as a tool for Youth Empowerment and Job Creation in Nigeria" offered insight into the forces enabling growth and success in the emerging online and content worlds. She started her presentation with a SWOT analysis of the ICT space indicating strengths as human capital, great talents, high consumption, huge market and weaknesses as scarcity of expertise, ignorance, lack of incentives, talents latency, global incompetence and lack of sufficient venture capital, opportunities as low entry barrier, huge digital content gap, low competition, lack of cultural and linguistic contents, collaboration and threats as education lapses, lack of infrastructures, inflexibility of online payment platform, over dependence on foreign contents and lack of strong regulatory framework.

Following up with a question, Mrs. Alade asked "what do people do online"? In answering herself she said people go online to "get contents, socialize and put contents". Responding to her own question about the size of the market, she used a graph to show it was growing beyond Nigeria, beyond Africa and getting global. Putting things in perspective, she approximated Nigeria's population as 180 million, indicating the African and global populations were much bigger.

Based on population size, she did a revenue forecast of sample content and using purchase of such content by 50 million people, she calculated could bring in 180 billion Naira revenue per annum and employs 50% of Nigerian graduates yearly. In highlighting market prospects, she used several graphs from the Nigerian Communications Commission (NCC) to illustrate the growing rate of active Internet subscriptions (GSM) and mobile subscription and teledensity for the period August 2012 to July 2013.

Honing in on content creation for youth employment and empowerment, Mrs. Alade made it clear that "contents can provide revenue whether it is professionally created or user generated". For her, content must meet the need of users. She said content varies from sophisticated mobile apps to a simple youtube video or even a blog in one's local dialect, noting that an important feature of Web 2.0 is the increased amount of user generated content. Cultural and linguistic, educational, entertainment, health, agriculture, security are areas she indicated as having content. For local content to generate revenue and empower young Nigerians, content creators must understand that user adaption and experience is an absolute must, she stressed. She noted that

contents should be accessible and easy to use, meet the needs of people and provide a rich user experience, adapt to changing consumer behaviors, sustainable, enable brand loyalty, start at lower base cost, must be able to run on multiple platforms.

She further stated that for local content to create substantial jobs in Nigeria, the education sector, professional bodies and civil societies, all stakeholders must encourage innovation, entrepreneurship and content marketing, with more awareness created on program generators, open source, cloud technologies and other basic content creating tools. In closing Mrs. Alade emphasized the importance of being future oriented in this matter and highlighted, "mobile phones ubiquity, broadband explosion, cloud and open source, SDN virtualization, OTTs, Big Data, IP centricity. M@M, IOT, convergence of technologies" as the 10 trends and shifts to watch for global competitiveness.

## PLENARY SESSION 5 PRESENTATIONS

The fifth and final plenary session of the eNigeria 2013 conference under the conference sub-theme, “Financing ICT Local Content Development: Investment and Funding” focused on the challenges and opportunities in financing and investing in local content development in ICT.

### Presenters

- DNS Business Opportunities for Entrepreneurs by Mrs. Mary Uduma, President, Nigeria Internet Registration Association
- Financing ICT Local Content Infrastructure for a Sustainable Economic Growth by Barbara James, CEO, Henshaw Capital, Abuja.
- The Economy of Local Content Development in Nigeria: Challenges and Prospects by Tope Aladenusi, Head, Information and Technology, Akintola Williams Deloitte, Lagos, Nigeria

The “DNS Business Opportunities for Entrepreneurs” presentation by Mrs. Mary Uduma, President, Nigeria Internet Registration Association, shared detailed information about .ng and internet business opportunities while encouraging participants to be part of the new environment. She began by defining the Domain Name System (DNS) as “a hierarchical distributed naming system for computers, services, or any resource connected to the Internet or a private network. It associates various information with domain names assigned to each of the participating entities”, noting that, “it translates easily memorized domain names to the numerical IP addresses needed for the purpose of locating computer services and devices worldwide. By providing a worldwide, distributed keyword based redirection service, the Domain Name System is an essential component of the functionality of the Internet”. She explained how the DNS is often said to serve as the phone book for the Internet by translating human friendly computer hostnames into IP addresses.

In describing the business aspect of the domain, Mrs. Uduma said a domain has value that appreciates, and it can be leased or rented or sold at any time for good money. She told participants about DNS business features, she said entails the choice of name (value, easy to remember, sound, meaning, branding) as well as specific DNS business opportunities such as domain name registry, resellers (who are licensed to sell domain names from the registry operator), hosting (for domain name, website and e-mail), domaining (auctioning, speculating, brokerage, intelligence and research works and advisory) and support services (website development, legal, financial, advertising and security). Nigeria Internet Registration Association (NIRA), she informed the audience, runs the .ng registry.

She further described various business opportunities in .ng such as .ng hosting of local content, having an identity on cyberspace, stating that NIRA has liberalised .ng for local content development and business. She specifically mentioned opportunities for different aspects of the Nigerian economy and society. Jumia, OLX and freelancing were case studies she discussed of innovative businesses on the .ng platform.

In closing Mrs. Uduma informed the audience that, “NiRA is an independent not for profit organization that manages the .ng country code Top Level Domain (ccTLD) name space in the public interest of Nigeria and global internet communities”. Though she explained that NiRA is not a governing or regulatory body, stated that NiRA manages the .ng national resource. Everyone should practice local content by getting their identity in cyberspace, she urged.

The presentation, “Financing ICT Local Content Infrastructure for a Sustainable Economic Growth” by Barbara James focuses on how venture capital and private equity are important components of the ICT local development ecosystem for growing businesses and creating jobs. She introduced Henshaw Capital Partners as an organization specializing in funds, mandates and initiatives and Private Equity and Venture Capital (PE & VC) in Nigeria, while informing the audience about her qualifications and experience in consulting, innovation and venture capital activities. According to her she is interested in providing a vehicle for institutional investors, a vehicle for investment in SME’s funds and the development of PE&VC in Africa to contribute to African prosperity and competitiveness through Henshaw Capital partners.

Barbara James informed the audience that the private equity opportunity should be viewed as an imperative. “Nigeria needs a robust private equity and venture capital industry to finance innovation and high growth businesses”, she remarked. She highlighted the PE&VC Opportunity in Nigeria from the supply side with attention to the fund raising pool, while looking at the PE&VC Opportunity in Nigeria from the demand side, she stated that, “Nigeria needs 12-15 new fund managers a year to reach 100 managers with \$20B AUM by 2020”.

She additionally compared the PE&VC opportunity in Nigeria with that of Brazil, South Africa and Malaysia, stressing the challenge of PE as a percentage of GDP in Nigeria. Comparing who invests in PE&VC in Europe, Malaysia and Brazil, she said pensions, family offices and banks are the PE&VC investors in Nigeria and assured the audience that the Henshaw fund and its partners aims to bring other investors into Nigerian PE&VC.

Investing directly in funds, investing through a Fund of Funds (FoF) and investing through a FoF and co-Investor in funds are the three options, Barbara James suggested for investors in Nigerian PE&VC. She then shared fund details of Henshaw Nigerian SME VC Fund of Funds and Henshaw Nigerian Private Equity Fund of Funds and in addition explained the investment process for Henshaw FoF.

In her opinion, target returns of the Henshaw Nigerian PE Fund of Funds are

comparable to South Africa PE returns, stating further that compared to Global PE returns, Nigerian and African PE are able and poised to outperform Global PE returns. She highlighted the advantages of Henshaw capital partners, as well the fact it offers partners, "the opportunity to build the first local Nigerian Private Equity Fund of Funds".

Barbara James concluded her presentation by calling for potential strategic partners to join Henshaw to build a robust venture capital and private equity ecosystem to support ICT local content development in Nigeria.

The presentation, "The Economy of Local Content Development in Nigeria: Challenges and Prospects" by Tope Aladenusi highlights the barriers hindering local content development in ICT and makes recommendations on the way forward. After commencing by defining local content, local development and local economic development, he observed that that many individuals and organizations prefer and are using foreign products rather than local products, "The country is in dire need of local content on ICT to stem the tide of capital flight", he remarked. In India, he however noted that, "IT products earned export revenue of around \$1.5 billion, which rose to \$1.6 billion in 2012-13".

In his opinion, while Nigeria is presently at what he described as the "Global content for local application influx of foreign products" stage, he stated that Nigeria should be at stages he described as "Local content for local application" and "Local content for global application".

Challenges in regulation Tope Aladenusi observed include the lack of a ministry dedicated to ICT until July, 2011, rolling out new regulations over ensuring adherence to existing regulations, poor access to funding and lack of enabling infrastructure. He expressed concern about the school system with regard to outdated IT related curriculum, overemphasis on job seeking rather than entrepreneurship, lack of full integration of ICT related courses in all tiers of education and the absence of IT security in many ICT courses.

Societal issues such as the "get it quick" syndrome, the slave mentality preference for anything foreign, absence of role models in many sectors of ICT, lack of interest by philanthropists and undue focus on saturated areas, he asserted are not conducive to improving local content development.

Furthermore Tope Aladenusi complained that many made in Nigeria software are not built using secure coding practices or international standards, while intellectual property rights are usually not protected and trust issues are hindering the use of Nigerians debit and credit cards issued by a Nigerian bank abroad. A major challenge he also identified is the mentality of IT professionals who think only of catching up and consumption, rather than creativity.

In order to effectively overcome the challenges of local development, he advocated for committed leadership, shared vision and addressing root causes of challenges with a

sense of urgency. He told the audience about the prospects in the evolving ICT landscape, the large consumer base, availability of local talent and acceleration of the growth of the economy. "I see a big jump", he declared, through an ICT Ministry that creates better frameworks and policies and the enforcement of the policies.

Tope Aladenusi concluded that with this in place, "it is only a matter of time before the ICT industry becomes one of the biggest employer of labor, and one of the largest contributors to the GDP of our great country Nigeria."

Summary of Communique issued at the end of the 2013 Edition of the eNigeria 2013 Summit and Exhibition held from 3rd to 5th December 2013 at Shehu Musa Yar' Adua Centre, Abuja

## Observations

Following discussions at the summit, participants noted:

- I. The poor state of local content in Nigeria's ICT infrastructure and services.
- II. The effort of NITDA at developing the ICT local content guidelines and a National Software Policy as part of Nigeria's ICT development strategy.
- III. The need for government in the promotion of local production and consumption of ICT products and services.
- IV. The Need for collaboration amongst government agencies in the ICT sector and partnership amongst government industry associations, private sector and the civil society.
- V. The imperative of local content option as a critical tool for the creation of massive jobs, improving national productivity and motivating overall national development.
- VI. That ICT in Nigeria cannot thrive without the involvement of other sectors of the economy such as education, health, finance, agriculture, security, etc
- VII. That human capacity development in local content is key to producing experts that would drive the industry through education, training and re training programmes.
- VIII. The underutilisation of Nigeria's communication satellite infrastructure provided by Nigcomsat which could save the nation annual capital flight of about \$450 million US Dollars incurred from bandwidth purchase from abroad
- IX. The absence of a national legal framework that compels local and foreign investors, including banks to patronise indigenous ICT products, as well as train local staff on ICT to inculcate appropriate knowledge transfer
- X. There are various uncoordinated ICT initiatives at the state and local government levels
- XI. Lack of appropriate strategy to properly harness the potentials and capacity of Nigerian young innovators in ICT especially at the tertiary institutions

## Recommendations

After extensive discussions, the following recommendations were made:

- I. Full implementation of NITDA's guidelines on Nigerian ICT local content development and the National Software Policy for the growth of the sector.
- II. Government must as a matter of urgency take leadership in patronizing made in Nigeria ICT products to inspire indigenous enterprise and create institutional support for enterprise development.
- III. Develop an integrated framework that would mobilize Nigeria's ICT ecosystem towards national development.
- IV. NITDA to provide leadership by mobilizing both the public and the private sectors, including the civil society toward realizing the objectives and targets of the local content national strategy.
- V. Retooling of Nigerian Universities and all other educational institutions on ICT, through the establishment of ICT research centres and software laboratories, e-libraries, training and training of experts for sustainable capacity building.
- VI. Government to intervene through pragmatic fiscal policies that grant tax waivers, protection of intellectual property, and preference for locally made ICT products as no country develops through over reliance on foreign goods.
- VII. Massive campaign to encourage indigenous production of ICT products such as software and hardware as well as delivery of talent based services as strategy for building strong digital economy for the country.
- VIII. Practical engagement to cultivate the full and top leadership support of government officials to engage in local campaigns for made in Nigeria ICT brands as unavoidable tool for capacity building, job and wealth creations.
- IX. The communication satellite as space based wireless systems infrastructure should remain within the framework of Nigeria's ICT policy and broadband implementation to complement the inadequate terrestrial infrastructure in Nigeria.
- X. Adoption of the Public Private Partnership (PPP) strategy to finance and commercialize the indigenous products of Nigerian young innovators
- XI. Governments at all levels must intervene by providing incentives to local Original Equipment Manufacturers (OEMs) through tax rebates, lower bank interest rates and vat exemptions in order to encourage them to begin to manufacture more of components of their computer hardware locally to create jobs and stimulate wealth.
- XII. NITDA should expand the scope of participants to the annual summit for effective mobilization of the entire stakeholders, who are critical to the implementation and realization of Nigeria's ICT objectives.

- XIII. NITDA should develop a measurable index for assessing ICT initiatives at the state levels and initiate award scheme to encourage competition among the states of the federation
- XIV. Development of a legal framework and application of punitive measures against defaulters through imposition of high tax charges, the proceeds of which could be deployed in developing Nigeria's local content on ICT
- XV. Considering the huge market in Nigeria for ICT products, the summit called on Nigerian billionaires to invest in the Nigerian local content on ICT as a critical tool for not only wealth generation but massive creation of jobs for women and youths
- XVI. To prevent spoofing and destruction of Nigeria's biometric profiles by criminal elements in the society, participants backed the use of local content to train and engage ethical and certified hackers to protect the biometric systems from vandalism
- XVII. Government should encourage innovators and producers of indigenous ICT products to engage more in local content that provides local solutions for solving the peculiar needs of Nigerians
- XVIII. There should be effective media involvement both in the formulation and implementation of the policies that not only accelerate but monitor achievements and challenges within the sector.
- XIX. That Nigerians should be re orientated to believe in themselves and appreciate "Made in Nigeria" ICT Products through patronage of locally made software as a catalyst for sustainable market and wealth creation.
- XX. Collaborate with the academia by funding their research initiatives and encourage their commercialization when required.
- XXI. To provide financial access to ICT investors, participants called for the establishment of a specialized bank on ICT, and advised the Central Bank of Nigeria (CBN) to initiate a development finance scheme for ICT development as it has done for the agricultural sector.
- XXII. That professional bodies should establish an industry-academia platform that defines and pursues their common purpose in ICT, especially in the area of access to funding and advancement.
- XXIII. That NITDA should organize a young innovators conference and awards to inspire confidence and reward young innovators
- XXIV. ICT services should be domesticated in Nigeria in order to encourage our local capacity



## eNigeria 2014

### Introduction, Themes and Objectives

The 2014 eNigeria Conference and Exhibition was held at the Transcorp Hilton Hotel, Abuja from November 18 - 20, 2014. The program was declared open by His Excellency, the President of the Federal Republic of Nigeria, represented by the Honorable Minister of Communication Technology, Dr (Mrs) Omobola Johnson. Other dignitaries at the event were the House Committee Chairman on ICT, Hon Shehu Gusau, Prof Turner Isoun who chaired the opening ceremony, Director-General of NITDA who presented the welcome address on behalf of the Honorable Minister of Communication Technology and Mr. Jelani Aliyu, Nigerian-born, US-based automobile designer who was the keynote speaker.

In attendance also were the members of the board of NITDA and President of Council of the Computer Professionals Registration Council of Nigeria (CPN). Over 1000 delegates attended the conference. In cognizance of the fact that the current technology environment in Nigeria is mainly dominated by foreign technologies, the 2013 edition of eNigeria focused on developing local content for national transformation. This led to the establishment of Office of Nigeria Content in ICT (ONC), formation of NITDA knowledge hub for young innovation and adaptation of COBIT5 among others. The aim is to actualize 50% IT local content to make Nigeria a hub for indigenous IT products and services.

### Themes

Accordingly, the 2014 edition of eNigeria focused on moving our young innovators from product development to entrepreneurship skill development and promotion of their products and solutions. The theme was therefore "Creating Market Opportunities for Indigenous ICT Products and Services" .

The three day conference featured demos by over 10 business start-ups and over 20 presentations in 6 plenary sessions on the following sub-themes:

1. Showcasing Indigenous ICT innovations for national development
2. Value addition, wealth and job creation for ICT solution providers
3. Strategies for enhancing the quality of "Made in Nigeria" ICT products and

services

4. Building ICT entrepreneurs and human capital in Nigeria
5. Leveraging International ICT exhibitions and fora for showing Nigerian content
6. IT innovations for security and crime prevention

A parallel session on “Scoping of ICT deployment in universities” was also hosted during the conference to examine ICT related interventions in federal universities by various government agencies to identify possible areas of collaboration for more strategic and effective government ICT initiatives.

Objectives:

- Identify tech start ups as well as ICT related research and innovations and showcase them at international exhibitions like CeBIT, GITEX, CES amongst others;
- Groom young innovators in the ICT sector and expose them to investment opportunities while protecting their intellectual properties;
- Enforce policies targeted at improving the qualities of the indigenous ICT products and services for global competitiveness;
- Explore strategies for providing critical mass of employment through ideas, innovations and investment opportunities
- Create one of the world’s most innovative and talented work force through Nigerian content and entrepreneurial development.

## OPENING CEREMONY

### Opening Address

In officially declaring open the 2014 edition of eNigeria, His Excellency, President Goodluck Ebele Jonathan, GCFR, informed that the audience that the Federal Ministry of Communication Technology was created in recognition of the growing importance of ICT to national socioeconomic development, job and wealth creation. He noted that two years later, his administrations emphasis on a more strategic and deliberate focus on the ICT sector had been validated. The ICT sector had made a direct contribution of 10.56 % to GDP, while also contributing a combined 2.56 % of added value to other sectors.

Appreciating the impact of eNigeria, the President expressed satisfaction that the guidelines for Nigerian content development in ICT launched by His Excellency the Vice President, Architect Namadi Sambo GCON at the 2013 eNigeria has received a lot of interest from both local and global ICT stakeholders, while the policy's implementing vehicle, office of Nigerian content development in ICT is close to being fully operational.

He acknowledged the importance of the theme of eNigeria 2014, "Creating market opportunities for Nigerian ICT products and services", being a useful follow up to the 2013 theme, noting the fact that the success of our local content initiative will depend largely on utilizing deliberate and market driven opportunities to deliver Nigerian ICT products and services.

The President made it clear that government would continue support a strategy of strengthening the local IT sector by using public procurement which is bound to grow with increasing use of ICT to increase citizen engagement and to improve public service productivity and efficiency. He noted that several policy directives and incentives already exist, although warning against into the trap of protectionism or poor quality, if there is a perception of a guaranteed market.

Recognizing the initial impact of innovative programmes rolled out by NITDA to complement the local innovation ecosystem and recent venture capital funding initiatives, he charged that, "there is no better platform to take advantage of the great potential in this sector, and no better time now that Nigeria is considered the largest economy in Africa, with a record of close to 7% growth in each of the last five years".

While concluding his remarks and extending his best wishes, President Jonathan expressed confidence that the conference would help in developing a useful framework that will provide an all inclusive approach for creating market opportunities, for indigenous ICT products and services in Nigeria.

## Keynote Address

In presenting the opening keynote address, "Creating Market Opportunities for Indigenous ICT Products and Services: The Philosophy for Success", Mr. Jelani Aliyu MFR, lead concept Chevrolet Volt electric car designer, spoke about the essential nature of ICT while noting the undeniable importance and role of NITDA as an enabler of society. He spoke about the amazing power of human imagination in creating a dramatically positive and dynamic future. While acknowledging that Nigeria is blessed with natural resources, he stressed that we should appreciate our humanity that makes us an integral and crucial part of the human civilization. He described his fascinating experiences growing up in Sokoto and his education and eventually developing the design concept of the Chevrolet Volt electric car, the vehicle would go on to usher in a new era not just for General Motors but for the whole industry and world in general to emphasize that nothing is impossible, linking it building a better Nigeria.

He praised the characteristics of four 'Asian Tigers' - Hong Kong, Singapore, Taiwan and South Korea – which has enabled them within about thirty years, to transform themselves from underdeveloped economies into some of the worlds most advanced nations, moving their populations from a life of hardship to that of prosperity. This he believes was due to emphasis on education and strategies and initiatives to establish strong ICT solutions internally on a massive scale before further scaling up globally. He challenged the audience to believe that Nigeria can emulate the miracle of the Asian Tigers.

He went on to declare that our greatest enabler is Intelligent Technology, that is in tune with our culture, histories, climate and geography, demanding for a nationwide development and adoption of the most advanced ICT to bring out this transformation. He specifically called for ICT solutions for millions of children excluded from traditional classrooms due to the nature of their family's vocation and for the majority of our citizens live in rural areas with no access to public or modern private services.

Aliyu concluded his address by advocating for the establishment of industrial design courses and integration within ICT and the educational system (secondary and tertiary). He also requested for the establishment of robotics and Artificial Intelligence courses (secondary, tertiary and specialized institutions, while recommending the engagement of Nigerian professionals in the diaspora in collaborative initiatives and projects, engaging collaborative advanced Research and Development, and organizing exciting local challenges and competitions to expose our local talent to the international community.

## PLENARY SESSION 1 PRESENTATIONS

The first plenary session under the conference sub theme, “Showcasing Indigenous ICT Innovations for national development” was an avenue to explore and dialogue on issues affecting the development of local ICT innovation and entrepreneurship in the country.

### Presenters

- Role of Incubators and Startup Grooming Programs in Innovation Development by Mr. John Dada, Fatsuan Foundation, Kafachan
- Building Local ICT Innovation Ecosystem: Prospects and Challenges, by Victor Okigbo, IDEA Hub, Lagos
- From Inventions to Innovation: Breeding Technopreneurs for Transformation of Nigeria by Dr (Mrs) Wunmi Hassan; President, High Tech Centre for Nigeria Women and Youth, Abuja.
- Development - Innovation - Transformation, Huawei ICT for a better world, by Mr. Abayomi Olurishe, Huawei Technology

Mr. John Dada’s presentation on “Role of Incubators and Startup Grooming Programs in Innovation Development” was refreshingly informative. He made it clear that though innovation is a vital tool for development, innovation is contextual, explaining that Nigerian contexts have been described in two policy documents: The Nigerian transformation agenda on ICT and the national framework for building information technology partner ecosystem from NITDA. According to him to actualize the framework for IT partner ecosystem, there is a need to: 1. Conduct a comprehensive ICT infrastructure audit; 2. Strengthen relationship between NITDA and the key stakeholders; 3. Encourage Nigerian content initiatives in ICT development and deployment and 4. Create ICT knowledge and infrastructure hubs.

John Dada further identified various opportunities within Nigerian Innovation ecosystem including: Office of Nigeria Content in ICT (OCN), NITDA's knowledge hub for innovation, a draft of standards for development of IT parks in Nigeria released in May 2014, establishment of Rural Information Technology Centres (RITCs) and Technology Incubation Centres and the Africa Incubation Network. He however expressed concern about the impact, viability and practices of these laudable initiatives. What do we have to show for them? How many of these efforts are still viable? Have they delivered value for money? What benchmarks have they achieved? How much of a business like approach do these incubators have? How regularly are the incubator staff required to upgrade their skills in general and to market their incubatees? How well do these incubators undertake continuous adaptation of the incubator services

provided to changing needs (of their clients and markets)? These are the questions John Dada sought answers to.

To tap into regional opportunities, he urged NITDA to collaborate with the ECOWAS secretariat and the Africa Incubator Network on local innovation growth in important sectors. He reasoned that such collaboration can facilitate the sharing of ideas on developing new businesses in agro food, renewable energy, biotechnology, public services, etc. He advocated for host business plan competitions and regional awards where winners can get expert advice as well improved access to regional development co-financing for identified innovation start ups and scale ups.

John Dada closed his presentation by arguing that though Nigeria's Innovation Capacity Index (ICI) is low compared to some other African countries, Nigeria can rightly aim at becoming a regional hub of innovation, but a road map is needed to achieve this ambition.

Victor Okigbo's presentation on "Building Local ICT Innovation Ecosystem: Prospects and Challenges" focused on averting what he termed, "Crisis in the future" now through activities of the IT Development Entrepreneurship Accelerator (iDEA) and similar initiatives. He alerted the audience to the brewing crisis in the making in the nation because the combination of youthful populations with low youth development indicators points to the possibility of multiple crises. Governance, education, the business environment, poverty levels and levels of peace are the indicators he linked to youth development.

Okigbo stated that the vision behind iDEA is the "Building sustainable software businesses" which targets youth development and innovation. Okigbo informed all that the vision is brought to life through support of software development and creativity and assistance with finance, legal, marketing and business management. "We will utilize integrated best of breed approaches stimulate the establishment and growth of technology based startup companies and increase the number of successful companies originating and developing in the area", he stated. Victor Okigbo highlighted Business KPIs, market access and incubation and acceleration as the focus areas. He made it known that members and incubatees had benefited from assistance with goal setting for learning and business development as well as from the insights and guidance of experienced facilitators in incubation and accelerator capacity development. He showed the audience a list of their facilitators and the areas they cover.

Okigbo explained that profound opportunities exist due to the social media impact and the youth culture. Key lessons he shared are that: iDEA should directly select all members and incubatee (no automatic selection from external programs); Provision of working capital is a key driver of sustainability but must be managed; Investment in start ups is critical to successfully launch and sustainability; Startups require go to market assistance as much as they require finance; Timely provision of funding is essential at this early stage in the life of the incubation program; Delays can

jeopardise the programs survival.

He further spoke about the importance of transparent and granular monitoring and evaluation, indicating that this enables anomaly detection and that centrally managed analysis and policies is based on aggregated information and hard research

While concluding his presentation he asserted that the crisis of the future is actually the opportunity of today while highlighting the fact that the Tech Launchpad and iDEA Nigeria initiatives had responded well to the challenges of ICT development and youth empowerment.

Dr (Mrs) Wunmi Hassan's presentation on "From Inventions to Innovation: Breeding Technopreneurs for Transformation of Nigeria" looked at the issues of invention, innovation and technopreneurship from the academic, research and industry perspectives. The enlightening presentation included detailed definitions and interesting illustrations to buttress her points. While acknowledging that in today's increasingly knowledge driven world, Science and Technology (S&T) are the inseparable twin keys to progress and industrial growth, she warned that the conduct of scientific R&D does not automatically translate into development. She emphasized the need for R&D activities to be entrepreneurial and connected to demands while existing within a strong National Innovation System (NIS).

Questioning the link between R&D and inventions, Dr Hassan presented various definitions and perspectives of invention. She interestingly listed inventions in software in Nigeria while wondering about the fact that there were no inventions in hardware in Nigeria. Defining innovation as "something original, new idea, device or process and, as a consequence, new, that "breaks into" the market or society", she explained the need for innovation, noting that innovation does not take place in isolation, but within a network of actors – the system of innovation. According to her, innovation is for "Bridging the gaps between the activities of the scientific communities and the overall development aspirations of our people". She made it clear that an innovator must have not just technical skills but also market and business skills.

In describing knowledge and innovation options for transformation and wealth creation, she identified the Government, Industry and Knowledge Institutions (GIKI) model, the Triple Helix Strategy and the Technology Transfer Model. Dr Hassan defined technopreneurs as "entrepreneurs who are into the core businesses involving technology based industries" and asked curiously whether we have Technopreneurs in Nigeria. She called for the breeding of techpreneurs within National System of Innovation (NSI) as the redesigned NSI goes beyond formal R&D parameters to embrace innovation and inclusion, stressing that developmental goals are much more easily achieved when S&T knowledge is created and deployed within the context of the NIS.

In closing she prescribed the creation of a strong and virile NIS, individual re-orientation, institutional rearrangement, functional government, R&D and industry linkage and technology transfer. She remarked that individuals, knowledge institutions,

government and the productive sector all have a critical role to play.

Mr. Abayomi Olurishe followed with the last presentation of Plenary Session One on "Development - Innovation - Transformation, Huawei ICT for a better world". He started by informing the audience that the presentation represents the view of Huawei, which has grown into a leader in the ICT industry by closely aligning with digital trends and innovating ahead of the curve. He remarked that in just 20 years, we have seen the transformation from "society on wheels" to "society on network". Mr Olurishe observed that without a doubt, a "connected world" has taken shape with ICT profoundly changing the ways in which people live and work. He highlighted the impact of smartphones and mobile broadband has on the ways in which we communicate, shop, travel, and even how we make new friends.

In his opinion the next wave of the digital society will be "the deep integration of digital and physical worlds" reflecting a physical world driven by data. This according to Mr. Olurishe will surpass the phase of using IT as a tool, but will create brand new intelligence and wisdom, fundamentally changing the world. Mapping, he noted, is a good example of the digital application and data expression of the physical earth. Future possibilities he mentioned include intelligent transportation, real time translation and intelligent manufacturing. He reasoned that continuous pursuit for better user experience is the fundamental driving force, identifying trends such as speed, freedom, reality, sharing and simplicity.

He asserted that in the coming era of digital restructuring business transformation will be the key, while ICT infrastructure is the foundation insisting that this requires every business to rethink their positioning and the value of ICT in their businesses. Mr. Olurishe observed however that ICT transformation is often ignored, which is understandable because business transformations create more visible value. With the importance of ICT infrastructure in mind, he spoke on cloud computing and big data, 5G and SDN driving network development and wearable devices as being ICT infrastructure trends to watch.

He in particular advocated the construction of optical network as national strategic infrastructure, stating that it is the 4th Utility in daily life. He therefore called for policies to establish a National Broadband Network (NBN) ecosystem to address Last mile access and socialization, introduction of private investment and a revenue sharing model. Emphasizing the inevitability of digital restructuring he urged stakeholders to, "Change the Game before the Game Changes You".

## PLENARY SESSION 2 PRESENTATIONS

The second plenary session under the conference sub-theme, “Value addition, wealth and job creation for ICT solutions providers” provoked interest and discussions about the choice of areas of focus as well as sustainable strategies and solutions that are relevant and impactful.

### Presenters

- Using Market Challenges to Create Valuable Solutions by Dr Jummai Ajijola, Executive Chair/CO, The Business People Limited
- Creating Incentives for Tech Startups in Nigeria and the Role of Government by Dr. Dan Omofoman, Founder, RFID Institute Nigeria
- Market Accessibility and Role of Government by Prof Murtala Sagagi; Director, Centre for African Entrepreneurship Research and Training, Bayero University, Kano
- Connecting Business Opportunities in A Better Way by Mr. Peter Pan, Huawei Technologies
- Smart use of information technologies: the integration of SMEs in global value chains by Wande Adalemo

The first presentation in Plenary session two, “Using Market Challenges to Create Valuable Solutions” was delivered by Dr Jummai Ajijola. She started off her inspiring presentation with a look in the past, using a graph to show that Nigeria has made substantial gains in Information Technology adoption over the past decade. She however cautioned that much has been focused on consumer electronics with insufficient effort along the production and supply side and that acquired knowledge and limited capacity have not translated into an economy wide technology revolution. In asking where we have made gains, she identified telecommunication as the nation had 134.3 Million Active Non-unique Mobile Subscribers. Dr. Ajijola also mentioned the banking system which has transformed from 2009-2014 through the movement from cash to card, and now to mobile.

She then asked about where the need was. Using an adaptation of Abraham Maslow's hierarchy of needs to buttress her point, she declared that agriculture, housing, healthcare and education are the areas of need. She spoke about the impact of the growth enhancement support scheme and technology driven food crop production in agriculture, but asked questions about Go to Market support, mobile information platform, high technology capacity building and local Research and Development. Looking at housing, she acknowledged the National Housing Policy and the Nigeria

House Financing Programme. Dr. Ajijola however queried the 17 million housing deficits, smart urban settlement plans, new housing construction technologies and power situation.

While lauding the success recorded during the Ebola epidemic in the health sector, she also raised issues about smart hospitals, computer savvy health professionals, online health services, mobile healthcare (mhealth), informed patients and telemedicine. For Dr. Ajijola, the issues in education are an IT driven curriculum, sustainable learning aids, information resource platforms, smart classrooms, school management platforms and purposeful government intervention.

At this juncture she told the audience that infrastructure, capital, capacity building and corporate governance are the market challenges limiting gains. Answering her own question of where to start, she recommended early education and broader IT application focus in manufacturing, public infrastructure and services and marketable public services. The way forward she proposes is a combination of using multi-stakeholder mechanism, policy refocus, technology massification and citizen participation. In closing she stated that, "The ultimate value and gain we will achieve as a nation, through the adoption and utilization of Information Technology will depend on how best we can make use of our autonomy, mastery and purpose".

Dr. Dan Omofoman's presentation on "Creating Incentives for Tech Startups in Nigeria and the Role of Government" starts by highlighting the crucial role the private sector is playing in the economic and social development of our nation, as well the emergence of a growing army of technopreneurs (i.e. technology focused entrepreneurs) is an emerging start ups in Nigeria.

Delving into the concept of incentives, he stated that, Wikipedia (2014), defines incentive as "something that motivates an individual to perform action, this is to say when channeled into start ups it could turn around the fortunes of such business thereby bringing about greater rewards". In his opinion incentives can also be categorized according to different ways in which they motivate agents to take a particular course to action.

In asking about the problems associated with creating incentives for tech start ups, he explained that incentives structures are notoriously trickier than they might appear to people who set them up. He argued that because human beings are both finite and creative, people offering incentives are often unable to predict all of the ways that people will respond to them. Dr. Dan Omofoman however asked all to agree on the key attribute of a start up, which is its ability to grow.

He then proceeded to highlight tech startups success stories of the RFID Research & Development Centre. He mentioned various designed and implemented RFID Applications such as: Library Inventory and Tracking System (LITS), Animal Identification and Tracking System (AITS), Vehicle After Sales Management System (VASMS), Third-Party Insurance Policy Certification Systems (TIPCS), Data Centre IT Assets Management System and Equipments Maintenance Management System. On

the basis of these achievements, he urged stakeholders to key into the RFID Technology as a platform for technological innovations in startups.

In terms of what the future holds for startups in Nigeria, he expressed his candid opinion that some of challenges mentioned would have been tackled if the Nigerian government shows more support to the industry. Dr. Omofoman therefore expects massive investment in startups before the end of 2017, considering the untapped opportunities in education, eCommerce, health, and also telecommunications. In his view the role of government is critical in providing the enabling environment for startups, which is one that encourages investment in technology by the private sector by promoting intellectual property protection, transparency, trust and openness rather than corruption.

Dr. Omofoman's recommendations include creation of incentives for tech startups in Nigeria, identifying Nigeria's areas of competitive advantage in industry and technology, identifying and exploiting leadership opportunities in biotechnology, building a merit-driven but just society of technopreneurs and embracing what he terms the "total scientification of Nigeria as a cultural necessity.

Prof Murtala Sagagi rephrased his presentation "Market Accessibility and Role of Government" to "Access to ICT Market: The Challenge of Governance in Nigeria" which is his preferred title. His first intriguing observation was that today's world is not divided by ideology but by technology, reminding the audience that in the last three decades, technological change has been the primary driver for growth and structural change for nations and today ICT is considered critical to increased voice, accountability and economic progress. He is of the opinion that though Nigeria has witnessed modest level of growth in the mobile telecom over the last 2 decades, such growth, however, is skewed to urban areas.

In justifying the framework need Prof Murtala Sagagi observed that mere access to broad ICT supply chain network is insufficient to achieved meaningful social and economic change unless it is supported by capacity development and policy framework as exemplified by India and South Korea. He noted that "the real gain of ICT does not trickle down to poor countries, particularly in most African countries". He told the audience that many people in Nigeria are isolated from the benefits of industrialisation and globalisation, insisting even though e-business/e-commerce/egovernment is today's reality, it still requires more inclusiveness

He listed benefits of increased access to ICT markets as being an additional driver to growth and employment generation, improved productivity and competitiveness of firms, creation of new sources of wealth, support for good governance, building of domestic capacity and improved business performance and governance. He argued that it was for this reason that developing countries found it advantageous to integrate ICT policy in their development strategies, insisting that good policies tend to expand ICT sector quickly, cheaply and responsibly. At the juncture he mentioned the Nigerian policy on ICT and the role of NITDA, and is of the view that Nigeria's ICT policy

implementation is bedevilled by numerous challenges associated with governance.

Inadequate infrastructure, especially electricity supply, high poverty incidence, limited potential for collaboration with major global IT players, weak capacity for innovation, weak ICT transformation implementation process, cyber crime and uncultured ICT materials were identified by Prof Sagagi as the key challenges to access to ICT Markets. He however urged Nigerians to view each of the problem identified as representing a unique source of opportunity to be exploited by IT entrepreneurs which Nigeria has in abundance.

He then called for government intervention in rapid development of ICT infrastructure, human capacity development, credible regulatory environment, support for entrepreneurial ICT start ups, support for local innovations and investments amongst others. In closing, Prof Sagagi declared that what Nigerian entrepreneurs need is credible, focused and digitally oriented government to provide the enabling environment.

The focus of the presentation, "Connecting Business Opportunities in A Better Way" by Mr. Peter Pan is the Huawei Technologies approach to partnering and sales. He started his presentation by informing the audience that Huawei was established in 1988, and has now developed into the largest telecom equipment provider in the world. Huawei has a place in the Global Fortune 500 list, according to him because of "Huawei's continued innovations, collaboration with partners, and dedicated employees". Throwing more light on this success story, he noted that in the fiscal year 2013, Huawei achieved USD39.5 billion in sales revenue, an increase of 8.5% year-on-year.

Mr. Peter Pan argued that as an important contributor to these historical changes, Huawei has never been more closely connected to the world than it is now. He told participants that the implications of this level of connectivity are that ICT technologies have been deployed in more than 170 countries and regions, helping more than 3 billion people connect to the world, communicate anytime, anywhere, and easily acquire and share information and that this connected world is reshaping politics, economics, business, and production at an incredible speed and with formidable force.

He said that their achievements are attributable to steady growth in sales revenue, stating that, "Our target is to achieve 3.5billion dollars of sales revenue in 2014 and 10billion dollars in 2017". According to him the first and foremost strategy of Huawei channel business is "being integrated" by partners. He promised partners commitment to a long term and win-win partnership, and creating more values to customers and partners through continuous technology and business innovations.

Attributing Huawei's success to support of customers and partners in various countries, Mr. Pan revealed that Huawei has certified over 300 tier 1 partners, and over 4000 tier 2 partners in 34 focused countries and regions in the world including 2 certified tier1 partners and 100+ tier2 partners in Nigeria. While thanking partners for their support, he made it clear that, "Huawei is more than just a Chinese company, it

belongs to the world”.

He informed participants that Huawei would be adopting the Channel Strategy-4E principle approach - Enhancing partners' capability, Enlarge partner base, Efficiency improvement and Expand customer - to achieve their target of 2.5billion US dollars in 2014.

Mr. Pan explained that because they will build the world's most efficient and integrated digital logistics system to ensure full connectivity between people, people and things, and things and things, partners are encouraged to embrace the trend and improve capability, and grow to higher levels. To this end, he revealed that Huawei had designed courses covering both pre-sales and post-sales, provided training for partners, invested in a training to support partners to build capacity, invested in a marketing fund to support partners to develop business and created a partner incentive Program.

The final presentation of the day was “Smart use of information technologies: the integration of SMEs in Global Value Chains” by Wande Adalemo. He launched into his presentation with a declaration that technology is transforming virtually every business and all aspects of life. In examining where digital is heading, he remarked that the rapid rise of social media, smart devices, big data and cloud computing has changed the landscape and created new prospects and potential. According to him, digital customers are better informed, more connected and more vocal while digital organizations are more insightful on customers and their business, more innovative and more confident with new technology.

Wande Adalemo described the various ways in which ICT is changing our lives and how it is one of the strongest drivers for competitiveness, innovation and change in our modern economy. He told the audience that recent ICT developments like Enterprise 2.0, cloud computing, social networks and others are enabling dynamic new and smaller companies to develop and bring to market innovations that before were too expensive to develop. According to him, “SMEs grow two-three times faster when they embrace the Internet. For every job destroyed by the emergence of the Internet, 2.6 new jobs were created. Still, the huge potential of ICT enabled business innovations remains to be unleashed by SMEs”.

He expressed concern that small businesses, accounting for 99% of all enterprises and contributing in many sectors up to 80% of all employment, are the ones suffering the most from limited understanding of ICT and their potential, limited budget for ICT investments and difficulty in recruiting ICT professionals. While appreciating that a web presence is necessary for an SME, he cautioned that having a web presence is not enough, observing also that the huge potential of smart use of ICT in value chains, notably by SMEs is still largely underexploited.

He advised that the smart use of Information technology by SMEs would enable their integration into global value chains, and in addition demanded for a more coordinated regulatory and technology outlook. He warned that SMEs in particular risk elimination from global value chains, due to shortage of appropriate, affordable and interoperable

ICT solutions to link them with large business partners.

Wande Adalemo's recommendation in terms of policy response is that the Ministry of Communications Technology should launch the Nigeria initiative to promote the smart use of information technologies and the integration of SMEs in global industrial value chains. He expects the initiative to be complementary to existing actions plans such as the National Broadband Plan, the NITDA Strategic ICT4D Plan and the Guidelines on Nigerian Content in ICT.

## PLENARY SESSION 3 PRESENTATIONS

Starting day two of the conference, the third plenary session under the conference sub-theme, “Strategies for Enhancing the Quality of Made in Nigeria ICT” brought matters affecting standards and best practices in local innovation to the fore.

### Presenters

- Sustainable Funding Opportunities for IT Innovations and Startups in Nigeria by Mr. Rasheed Olaoluwa, MD Bank of Industry
- Building Quality Nigerian Tech Product - The SimplePay Story by Simeon Ononobi, Founder/MD, Simplepay4u
- Opportunities in the Nigeria and African ICT Markets by Marek Zymylowski, Managing Director, JOVAGO
- Collaboration Promotion and Utilisation of Indigenous ICT Products and Services for National Development by Prof. Zakari Mohammed, Department of Information Science, Ahmadu Bello University, Zaria, Kaduna.

Mr. Rasheed Olaoluwa’s presentation “The Sustainable Funding Opportunities for IT Innovations and Startups in Nigeria” was advisory and quite informative. In his initial remarks he recognized the formation and growth of small and medium enterprises as one of the most important factors of economic growth while also appreciating that startups require money to: get the business off the ground, rent space for the business, purchase furniture, equipment and supplies and pay employees.

He highlighted the fact that it is difficult for start-ups to take off since funding is a major challenge because they lack access to traditional debt capital in view of their limited life history. Financial institutions are more likely to fund established businesses rather than start-ups, in his view since the likelihood of failure is high for startups. Mr. Olaoluwa also noted that lack of Infrastructure compounds the growth prospects of start-ups.

Stating that to start a new business or to bring a new product to the market, the venture needs to attract fund he identified personal savings, friends & family, angel investors, bank loans and venture capital as various types of financing possibilities. He advised that startups must determine need and value proposition as well as business plan and revenue model in investment considerations. Need definition, established competence and expertise and knowledge of operating environment are also issues he considered to be important in investment consideration by startups.

Mr. Olaoluwa then took on the issue of Venture Capital by expanding on the several advantages and disadvantages. For example while he considers it an essential for start-

ups with limited operating history, Venture Capital firms require the new venture to give up an equity position. He further went on to name entrepreneur risk, product risk, business model risk, market timing risk and timely exit as the risk factors in venture capital investments.

Risk mitigants he proposed are significant control over company decisions, involvement in the decision making processes, part of the company's ownership and representation on the company's board, constant scrutiny of all business operations, staggered release of funds, identification of startups with high growth potential and determination of an investment limit in a startup.

In closing he told the audience that Venture Capital Funds are not easy to obtain as Venture Capital Firms look for startups with high growth potential. He advised that in order to be successful, the business plan must demonstrate a good potential to exit the investment in the medium term, and in addition, the new venture and the entrepreneur must have the right attributes.

Simeon Ononobi began his presentation "Building Quality Nigerian Tech Product - The SimplePay Story" by renaming it, "Building Great Nigerian Tech Products". He continued on a story telling note by speaking about what he had done from his early years till date and why he believes in Nigeria. he revealed that he started my first business at age 16 (@ school COMPUVERSITY), built his cyber cafe at age 19 and created, registered and sold his first startup (BackUpMyPhone) at the age of age 24.

He informed the audience that he designed GTBank's first Mobile application (MoVe), the ProjectAct Nollywood Program for the Ministry of Finance and was nominated as a UN team member for Nigeria at the World Intellectual Property Conference. His other achievements he shared are that he designed the YouWin! Program for the Federal Government, is a founder of SimplePay, won best startup Company 2013 – Seedstars world competition, was top 5 best start up company in the world 2014 and nigerians next great personality (world changer).

Simeon Ononobi then asked the question: how do we build quality Nigerian tech products? He answered by sharing his dilemma when starting SimplePay. He spoke about the Nigerian trust issues - 419 tag/online fraud - he encountered as well the challenges of having little money to invest in the business, poor education amongst online users and the challenge of competing with PayPal.

According to him he fought the 419 tag by creating a system that knew both buyer and seller and which also had the ability to enable him track all transactions. He stated that he also battled online fraud by creating a verification system – tech roll back functions. Though he had little funds to invest, he created a vast illusion with little staff. He also spoke about how the MTN story and entering global competitions – SeedStars etc enabled him to over the funding challenge. He told the audience that creating a great structure where customer support was the watch word, including online support, tickets, free phone calls, e-mailing and above all a call from the CEO also enabled him overcome the education barrier.

His next question was what do we have? Again he answered by stating that we have a nation that has over 120 Million Mobile phone users/65 million internet users and growing, a country with a great tech need and very intelligent minds who are our youths. Simeon Ononobi however expressed concern that the nation does not have a focused youth group, but instead has a complaining team of youths, and it also does not have elites who believe in the youths. He then charged that everyone should rise up together and make Nigeria great to conclude his inspiring presentation.

Marek Zymylowski's presentation "Opportunities in the Nigeria and African ICT Markets" was undoubtedly both revealing and forward looking. He started by letting the audience know he had a background in finance, hotel, software development and online startups website (dating website, funeral network, automotive network). He then proceeded to explain how Jovago is connected to Rocket Internet, MTN and Millicom who own Africa's leading Internet company (Africa Internet Holding (AIH)).

He advised that it is essential when looking at opportunities in the ICT markets to avoid being misled by mistaken beliefs. He spoke about myth busting and common misconceptions and identified some of these misleading perspectives as same speed and direction of market changes as developed countries; same customer behaviors between markets; copying business models and other processes; being first, being better and looking at USA, Europe and Asia. To him, relevance and authenticity should be maintained and not compromised rather than copying the approaches and strategies of the leading and more advanced economies.

Marek Zymylowski spoke about the importance of methodology, stating that there are 6 types of online business models. He mentioned the models and some examples as follows: e-commerce – Jumia, Konga, marketplaces – Jovago, Kaymu, SAAS – not identified, mobile App – SimplePay, user generated content – Eskimi and media – Ynaija.

He further spoke about the fact that in Africa, mobile is first unlike other parts of the world. According to him, credit, computers, internet, banking, telecoms, insurance, watch, camera, mapping, print, broadcast, music, gaming, virtual, social media, marketing research and advertising are all connected and being utilized through mobile. He used the value of industries converging to use mobile in 2013 based on the grand convergence towards mobile theory by Tomi T Ahonen (2002-2014) to give an idea of the level of mobile usage and dependence with telecoms at 80%, computers at 65%, internet at 70%, camera at 90%, social media at 60% and virtual at 50%.

For him, the methodology in mobile business models is through adding value, as this is where the opportunities. Marek Zymylowski in concluding stated that adding value is through the 6 Ms, which he identified as Movement, Me, Moment, Multiuser, Machine and Money. He also referred the audience to the case study of Tuluntulu.

Prof. Zakari Mohammed's "Collaboration Promotion and Utilisation of Indigenous ICT Products and Services for National Development" examined the concept of information and discussed the relevance of ICT to the Nigerian society, asserting that

without information, there can be no individual and societal development and advancement in any direction and dimension. He observed that the nation has fared well in embracing ICT in nearly all sectors, however insisting that all ICT end users, irrespective of their status should have equal rights to access and utilization of ICT products and services.

His presentation highlighted the essence of domesticated ICT products and services as well as where the country fared in indigenous ICT products and services presence, adoption and utilization. He advocated that "Any attempt to effectively promote the acceptance, access and utilization of Nigerian indigenous ICT products and services will largely be contingent upon the extent of their durability, user-friendliness, public acceptability and adaptability to the local environments".

Prof. Zakari Mohammed further informed the audience about challenges militating against their acceptance, access and utilization, expressing concern that a majority of Nigerians prefer foreign ICT products and services. He therefore advocated that the promotion of indigenous ICT products and services should go beyond the adoption of conventional methods of products and services promotion to include practical approaches to their application, adaption, access and utilisation in public and private workplaces as well as policy expectations.

He recommended a formal institutionalization of policies for embracing and utilization of Nigerian indigenous ICT products and services in public and private work places. Though he acknowledged the national IT policy he listed a variety of challenges inhibiting the effective promotion, popularization, awareness and utilization of Nigerian indigenous ICT products and services for national development. He therefore called for continuous monitoring and evaluation by relevant bodies and other strategic stakeholders to determine how much progress Nigeria has made in this direction.

Prof. Zakari Mohammed further requested for strong government support and involvement in the recognition, promotion, adoption and utilization of indigenous ICT products and services to enhance their prominence, acceptance as well as the protection of intellectual property rights. He warned in particular that policy development should take note of the disparities in the societal settings. Concluding he called for the establishment of viable and endearing structures for collaborations, partnerships, creativity and innovations in ICT products and services domestication to facilitate their easy acceptance, adoption, adaption, access and utilization by all and sundry in the society.

## PLENARY SESSION 4 PRESENTATIONS

The fourth plenary session under the conference sub-theme, “Building ICT Entrepreneurs and Human Capital in Nigeria” stimulated discussions and provided direction on what Nigeria must do about specialist expertise in the knowledge based economy and society.

### Presenters

- Role of Government in Innovation Development by Dr. Umar Bindir; DG National Office for Technology Acquisition and Promotion NOTAP
- Mobile Software: Imperatives for Mobile Content as Accelerator for Sustainable Development, by Dr. Chris Uwaje (FNCS), Chairman, Mobile Software Solutions Limited
- Impact of Indigenous ICT Innovations on Economic Development in Nigeria: What Is Possible by Femi Longe
- Improving Technopreneurship and Culture of Innovation (Using COBIT) by Ben Anyia, ISACA Nigeria
- Role of Incubation and Practical Mentoring for Start-Up by Mr. Victor Asemota, Founder, Afrinnova/MD Swift Networks
- Impact of Indigenous ICT Innovation on National Development by Dr. Afolayan A. Obiniyi, MNCS, Department of Computer Science, Ahamadu Bello University, Zaria

Dr. Umar Bindir’s scholarly presentation, “Role of Government in Innovation Development” was delivered on his behalf by A.A. Tandama. Research, technology, invention and innovation were issues at the heart of his presentation. He told the audience that governments role essentially focused on policies, infrastructure, enabling environment and regulation/control. He took a look at Nigeria’s knowledge infrastructure showing that it was impressive in terms of institutions, availability of high class capacities in Nigeria and in the diaspora and publications output.

He provided the historical background of Nigeria’s Science Technology and Innovation policy development from 1986 till the most recent approval in 2012. He told the audience the drafting of implementation action plan of the policy is in progress by seeking for inputs from relevant stakeholders, carrying out advocacy plans to look for support and funds where necessary and engaging legal practitioners to translate document to a bill and legalize the STI Policy. He indicated that the national ST&I policy thrust is on science and innovation promotion, human resource development, intellectual property, technology transfer diffusion, standardization and quality

assurance, ST&I Information management system, women & STI and Research & Development in agriculture, water resources, biotechnology, health, environment, mines and materials etc.

In terms of government structures, he informed participants about the presence of National Research and Innovation Council (NRIC) inaugurated in February 2014 as well as the fact that research funding is provided through the National Research and Innovation Fund (NRIF) (1% of GDP, 0.5% technology transfer fees from OPS and 5% of funds received by: TETfund, RMRDC, PTDF, ADF, Ag.DF, NSDC etc). He also mentioned the Presidential Standing Committee on Invention and Innovation (PSCII) that encourages innovations and inventions in Nigeria amongst other tasks.

Dr. Umar Bindir then described what he dubbed the Helix of efficient nation building which consists of leadership (political, economic, moral and technological) at one end, industry/enterprise at another end and knowledge (SETI) at another end, and that three must all work together to achieve sustainable nation building.

Reflecting on STI elements he asserted that science gives facts and figures, technology represents possibilities and applications while innovation produces solutions and products. Though stressing that the nation has the capacity in each of these elements, he expressed concern about relevance of activities and output of each element. He therefore insisted that the SETI policy objective is for the STI elements to bond and integrate together. Speaking briefly about NOTAP and its activities, he remarked that it regulates inflow of foreign technology into Nigeria.

In concluding Dr. Umar Bindir recommended that R&D efforts and activities should be demand driven with a problem solving orientation. He advocated for regular training of R&D personnel, establishing effective networking between R&D institutions and industries to commercialize research output and creating a credible research databank.

Dr. Chris Uwaje's illuminating presentation on Mobile Software: Imperatives for Mobile Content as Accelerator for Sustainable Development spoke on issues at the core of mobile application development in Nigeria. He started by creating awareness of fact that the "Always On" generation is being enabled by mobile application development standards and processes. While acknowledging that embedded Software may be delivered as web applications using server side or client side processing, he mentioned challenges associated with platform standards and device facilities.

He painted the mobile software environment as one of intense competition, fast changes and job creation. Looking at the historical perspective over time which started with print as the first mass medium in 1500 he declared that mobile is the 7<sup>th</sup> mass medium emerging in the 2000s. Dr. Uwaje he considers the mobile roadmap for indigenous success to be one that engages the Africa's visual and oral communication culture in Africa – original content with THE "STORY", ENVIRONMENT AND PEOPLE. This according to him drives the need to change attitudes to information, change lifestyles to adapt and domesticate technology, and the importance of sustaining

change as a lifestyle.

Honing in on the GUI and mobile development process, he declared that GUI (Graphic User Interface) is very significant for mobile design, particularly for creation of graphic design for mobile apps. He further advised in addition to other considerations that the UI of mobile apps should: consider users' limited attention, minimize keystrokes, and be task oriented with a minimum set of functions.

He argued that the challenges of mobile application development were device fragmentation as well as tech limitations such as limitations of the mobile environment, wireless network, limitations imposed by mobility and limitations of the mobile device. He also indicated that mobile technology innovators and entrepreneurs face the challenges of team structure, skill availability and capacity sustainability, policy makers, sharing and partnerships among professionals, market model and access – marketing resources and the anti-local content consumer mentality.

Dr Uwaje however challenged the audience to engage the challenges through the knowledge olympiad which entails policies and regulations, strategies for pushing the boundaries to innovate and focus on creating the emerging creative generation. He maintained that in building local content knowledge banks through mobile entrepreneurship and knowledge incubators would enable the creation of wealth locally.

He explained that the award winning mobile solution Malaria Destroyer Game (MDG) is an example of effective leverage on the power of mobile to support e-health systems, noting that it is motivated by the need to prevent harmful effects of Malaria. According to him MDG raises awareness about the effective use of the methods/tools at our disposal.

In concluding he made several recommendations including the Nigeria conference declaring “Software Nigeria” as a national emergency and enthroning a distinctive national software master plan on local content software, and calling for the recognition of mobile technology as Nigeria’s best ICT opportunity window and establishing mobile software development corridors for startups at Federal, State and Local Government levels.

The presentation “Improving Technopreneurship and Culture of Innovation (Using COBIT)” was delivered by Benedict Uzoma Anyalenkeya representing Ben Anyia. It was delivered as “Improving the Quality of Indigenous Service Delivery Using COBIT 5”. He began with the observation that organizations globally have consistently been weighed down by failed IT projects, ad hoc IT initiatives with short life span, IT not meeting stakeholder expectations, poor service delivery and unreasonably high cost of using technology. He attributed these challenges to lack of good governance in technology development and implementation, not adhering to best practices, gaps in knowledge and communication and inadequate prioritization of project management in IT projects.

Coming back home, he expressed disappointment that Nigerian local content developer hasn't fared better. Inability to adhere to standards, myopic view of software entrepreneurship, lack of marketing strategy, inability to integrate project management practices, lack of domain knowledge, inability to retain good hands for long, lack of structure are what he referred to as internal challenges. He listed the high cost of running a business in Nigeria and poor local patronage/preference by the average Nigerian as external challenges.

Low quality output, everyone focusing on the same area (payroll, schools portals), continued low patronage by corporate Nigerians, loss of funds to foreign nations (\$10billion annually), high unemployment and loss of our identity, he remarked are the outcomes of the challenges. He therefore advocated that indigenous hardware and software manufacturers should focus on improving their standards of service delivery to a global standard. At this stage, he informed all that though there are several tools for this purpose, the one major tool available globally for this objective is Control Objective for Information Technology (COBIT 5).

According to him COBIT is globally recognized and used for IT governance, systems audit and other IT related functions by governments and top private firms throughout the world. He defined COBIT 5 as, "a set of standards & guidelines that combine different standards into one to help organisations overcome it challenges, by using 5 principles and 7 enablers". He noted that being a globally recognized framework, there are benefits from being COBIT certified for the firm and for the country. For example one of the benefits he mentioned is the customer trust in the products of the IT firm, while for the country, he is certain that it will improve global competitiveness of indigenous developers. He listed the many other benefits.

His final recommendations were that local content manufacturers should be mandated to get COBIT certified, the principles of COBIT should taught at final year level for ICT Courses, government should train her top officers on COBIT and NITDA should set up a unit to certify COBIT compliance status of indigenous ICT companies.

The last presentation of plenary session four, "Impact of Indigenous ICT Innovation on National Development" delivered by Dr. Afolayan A. Obiniyi laid emphasis on deriving value from the guidelines for Nigerian content in ICT. He started by warning that though Nigeria has a plan, strategy and polices for growth over reliance on oil was militating against growth prompting the need to diversify the economy. NITDA according to him was established through the NITDA Act 2007 in realization that ICT is a sector that is essential to such diversification. He highlighted similarities between the NITDA Act and the Nigerian Oil and Gas development bill especially in terms of driving indigenous innovation and participation, as well as developing the local content industry.

Dr. Obiniyi stressed the importance of local content in ICT in view of the impact ICT is having on all other sectors. For example, he observed that SMEs who are the main drivers of economic growth, use ICT in driving their productions and services, while the health sector could deploy ICT for telemedicine. He also shared examples of the use of

ICT in research and how ICT had saved Nigeria over N120bn through the detection of ghost workers. He noted the increasing and significant contribution of the telecoms sector to GDP.

He noted that the Nigerian content in ICT guideline is meant to: grow and provide an enabling environment for indigenous ICT and telecom companies help, to them to widen their frontiers, build human capacity and come up with world class innovations that can easily compete globally. He believes it can build on achievements of the earlier NITDA act which had been embraced by the ICT sector, professional bodies in ICT and other stakeholders. Innovative products of these stakeholders include Malaria Destroyer Game, a digital knowledge entertainment and educational mobile game, Nigerian Constitution Blackberry App, REMITA: an e-payment solution, Clicrec and e-identity card from the NIMC.

Observing that the act is not enough, he stated that there should be feedback mechanisms to assist in measuring the impact of the guidelines on national development. To this end he proposed a model that would involve NITDA and other stakeholders in assessing impact on MDAs and other sectors of the economy. Dr. Afolayan A. Obiniyi concluded by stating that the guidelines are timely as they position Nigeria to join the fastest growing economies in the world – BRICS and to be one of the first 20 economies in the world. He also recommended that relevant bodies such NITDA and CPN need to synergize towards realizing the local content aims for overall national development.

## PLENARY SESSION 5 PRESENTATIONS

The fifth plenary session under the conference sub-theme, “Leveraging International ICT Exhibitions and Fora for Showing Nigerian Content” stimulated discussions and provided direction on what Nigeria must do about specialist expertise in the knowledge-based economy and society.

### Presenters

- Value of Leveraging on Diaspora Network in Growth of Nigerian Content by Ngozi Bell, US Small Business Administration
- Developing Quality Nigerian Products for International Exhibition by Adekunle Ajiboye, AAjimatics Inc USA
- Evaluation of Sectorial Implementation of ICT4D Plan in Nigeria by Jide Awe MD JIDAW Systems.

Ngozi Bell’s presentation “Value of Leveraging on Diaspora Network in the Growth of Nigerian Content”, delivered the diaspora signature and possibilities to the 2014 eNigeria conference. Her first statement was to declare that, “diaspora if properly leveraged can be the catalyst to important innovation which is sorely needed in a nation and people that are hugely capable”. She stated that though the need for diaspora in the development is widely discussed, she aimed to make a case for the provision of a roadmap.

She asserted strongly that Nigerians are entrepreneurial, remarking humorously that it is in the DNA and the water. But her concern is for appropriate policy to support growth while also insisting that research institutions are needed to bridge the knowledge gap. Going back to the diaspora angle, she urged Nigerians to use them, calling them “Two sides to one coin” possessing multicultural ideas, appeal and strategies that broaden strengths.

Ngozi Bell observed that innovative content is about bridging the knowledge gap and content development entails customization, curation and validation and is about the development of a useful product with global potential and domestic resiliency. To this end she says developers must understand the impact of technology, the market, end user satisfaction, developments in the environment and scale. She insisted that there are the disciplines for curating your product and for which diaspora can be an intellectual fortress and provided impressive statistics of Nigerian diaspora capacity in the US to buttress her claims.

On the question of funding she listed the different options - friends and family, angel, vc, private equity, grants, bank loans (equity or debt financing). To bring the diaspora

possibilities into focus she noted that the \$46bn invested by VCs and Angels in 2013 is in the range of what our US diaspora repatriates annually \$40bn per year.

To her the question is how to tap into this opportunity. She insists that your solution must be compelling and provided suggestions on how to attract diaspora investment and mentioned a platform called homestrings.com that was created to allow diaspora invest in projects and programs back home.

She then harped on Scale, arguing that to grow, commercialize and create jobs, Nigeria needs this desperately. She is convinced that with the diaspora on your side you can significantly expand your reach and even double your market. This she told the audience is the scale desired as you add on resources, build out your ecosystem, grow your business and create jobs.

Though 90% of businesses in Nigeria are small businesses, she is concerned that their economic impact is negligible in stark contrast to the US. According to her small innovative businesses in the US backed by VCs are the ones changing the world in phenomenal ways and creating millions of jobs. This, Ngozi Bell told the audience is possible in Nigeria and is the reason why we should leverage the diaspora to achieve local content with a global fit.

The presentation, "Developing Quality Nigerian Products for International Exhibition" by Adekunle Ajiboye focuses on how Nigeria can leverage on external fora to meet local content development objectives. Taking a look at ICT and entrepreneurship he explained that inclusive growth through ICT local development and national ICT policy space for ICT local content development are essential. He also said that in actualizing the concept of ICT as a catalyst for development, e-commerce and communication are required enablers.

He then highlighted pertinent facts and figures which include improved mobile subscription and mobile penetration. Through the facts and figures he spoke about the impact of the ATM and POS in the banking and finance, noting however that there is work to be done about the financially excluded and the financially underserved. He also used the facts and figures to indicate that 60% of the population is within the 15-34 years age group and that the Nigerian market of a population that is over 165 million is a considerably large market.

In analyzing ICT related developments, Adekunle Ajiboye considered the paradigm shift which had certainly been most dramatic and obvious in the banking and finance sector. He identified developments relating to the cashless policy, electronic payments and mobile money as the change drivers. While appreciating the impact of these changes, he however asked two questions – is the current approach the best Nigeria can experience and is the current approach in the best interest of Nigeria? he asked ironically about the made in Nigeria contribution in the developments?

Taking a snapshot of current local content related ICT developments in Nigeria, he identified IT hubs as the Lekki Smart city initiative, Lagos innovation city, Lekki

software development and the iDEA hub. He then set targets of 50% local content and 15% ICT contribution to GDP. He insisted that these targets are feasible but would require support and encouragement of STEM education, which requires capacity in infrastructure, entrepreneurship and funding. According to him the entrepreneurial dimension entails a vision, mission and the shaping and creating markets. He noted that confidence not bureaucracy and tech and sector specific expertise are required. On the policy side, he expects NITDA, ONC and NUC to provide the enabling framework.

He noted that the developmental state requires strong integration of R&D production and tech import at enterprise level, strong incentives to innovate at enterprise level involving management and workforce and intensive experience of competition in international markets. In assessing the promotion of Nigerian international exhibitions, he observed that in the last 5 years made in Nigeria eplatforms and esolutions have been in GITEX, CES and CEBIT.

Adekunle Ajiboye concludes by stating that path to export grade Nigerian ICT products has to be ushered by NITDA amongst others. He insists that this step has to be deliberate concerted focused and free of bureaucracy, and it appears to him that the current leadership of NITDA has the vision and character required to accomplish this goal.

The final presentation of plenary session five, "Evaluation of Sectorial Implementation of ICT4D Plan in Nigeria" by Jide Awe provided insights into ICT policy development and impact in Nigeria. He began by providing information on how NITDA facilitated the development of the Nigeria ICT4D Strategic Action Plan in recognition of the crucial role that ICT play in facilitating socioeconomic development through an inclusive multistakeholder process. Giving the background to the strategic action plan, he informed the audience that President, Dr Goodluck E. Jonathan approved the plan in June 2010 during eNigeria 2010 International Conference, with a policy statement that all agencies must implement their areas of the ICT4D Plan.

According to him the plan consists of 11 Sub-Plans representing the 11 Pillars of the Plan: Human Resource Development, Electronic Government, ICT Infrastructure Development, ICT in Education, ICT in Health, ICT Awareness and Popularization, Agriculture Sector Development, Private Sector Development, Governance and Legislation Framework, National Security and Law Enforcement, Research and Development, with each sub-plan made up of programmes and plan actions.

He stated that the evaluation was carried out to ascertain progress made by the plan and its effectiveness in ensuring quality leverage on ICT to achieve inclusive growth and sustainable development in Nigeria. He noted that the evaluation improves transparency and accountability in policy making while strengthening the policy development process. He then provided findings of the assessment of ICT policy implementation impact on the process of transforming the Nigerian economy and society through each of the sub plans. He identified notable initiatives, achievements and challenges for each sub plan and shared implementation status information with

the audience.

Jide Awe stated that findings indicate that though implementation has been above average on an overall basis, a lot however still remains to be done to fully leverage on ICT to achieve the Federal Government of Nigeria's strategic vision of making Nigeria one of the top 20 economies in the world, by year 2020 through the development of an information and knowledge-based economy and society. According to him, evaluation rated new software initiatives and programmes in e-payments, e-commerce and e-banking high, while Infrastructure inadequacies in network quality and broadband penetration as well as in power supply continue to hamper implementation prospects of other sub-plans and overall inclusion. He also expressed serious concern about the lack of a comprehensive legal framework for ICT.

He shared several evaluation recommendations with the audience, some of which include sustaining infrastructure provision implementation to achieve the targets of the national broadband plan and power supply adequacy, setting up a working group coordinated by FMCT and NITDA to fast track the enactment of draft ICT bills, scaling up of exceptional initiatives through strategic partnerships, raising public awareness on ICT4D strategic action plan activities and that the National Strategic ICT4D plan should be reviewed and updated. He concluded that despite the challenges and obstacles in the environment, substantial progress has been made and that there is huge potential and promise in strategic ICT development for Nigeria and its people.

## PLENARY SESSION 6 PRESENTATIONS

The sixth and final plenary session under the conference sub-theme, “IT Innovations for Security & Crime Prevention” enlightened the conference about the nature and capabilities of IT measures and innovations being deployed to address security and crime in Nigeria.

### Presenters

- IT Strategy for Enabling Security Policy and Intelligence, AVM T. V Udoh, Defense Intelligence Agency
- Building IT innovations for Crime Prevention, Mr. Peter Ihesie, Creator of iPolice

AVM T. V Udoh delivered the presentation on “IT strategy for enabling security policy and intelligence” focusing on “Nigeria community safety & security infrastructure”, which is about the essence and use of the online resource in proffering solutions to the current security insurgence, and other security threats in Nigeria. In starting with an overview of the Nigeria Community Safety and Security (NCSS) infrastructure, the presenter raises the importance of information, noting that globally, strategic planning of safety and security is dependent on availability of information. He expressed concern that in Nigeria, obtaining safety and security information for planning could be cumbersome.

He noted that in view of current safety and security issues, ranging from infiltration of arms, bomb blasts, to pipeline vandalization, etc, the time has come to deploy all available technologies to combat terrorism, as well as oil theft which are ravaging the nation’s economy. What then is the best technology to adopt that fits local content, he queried?

After a slide depicting scenes of police brutality, he remarked that the challenge in safety and security information gathering in Nigeria arises from skepticism. “How will I pass information to the appropriate quarters without endangering or facing insecurity myself?”, “When information passed, will it be acted upon?”, “How can such information get to the authorities without being hoarded by an individual security operative?” – These he said are the typical questions that arise.

At this juncture he stated that their effort to find solutions to such scepticism is what gave birth to the idea of the Nigeria community safety and security infrastructure. According him, it gives the citizen the platform for participation in crime prevention and control. He then displayed slides depicting part of the online resource to show how members of the public can use the initiative. He stressed that the infrastructure enables citizens to: report crime and suspicious activities, while facilitating discussion

forum and live chats, dissemination of public enlightenment articles, providing platform for public opinion and serving as help desk. He also spoke of measures put in place to deter criminals from exploiting and manipulating the system.

He described the operational framework through a diagram indicating roles of Federal Government, security agency, stakeholder and the technical developer connecting to NITDA and NSA at the centre. In another slide he showed NCSS at the centre of consumer to national safety & security, with all security agencies linked to NCSS. In closing he emphasized the need to ensure effective citizen participation in crime prevention and control, especially in view of the waves of insurgency attacks and other security threats. Harping on the essence of translating scepticism to trust, he stated that there is no greater weapon than the power of information in fighting crime.

The emphasis of the “Building IT innovations for Crime Prevention” presentation by Peter Ihesie was on employing innovation tools and supporting policies to address crime in Nigeria. He started with a question – Crime, What is it about? He answered by telling the audience that it is a violation of norms or values that threatens a society. Adding perspective to his definition, he stated that crime is cultural, crime is relative and crime is real. He identified the prevalent crimes in Nigeria as kidnaping, terrorism corruption, armed robbery, bribery and domestic violence. decrying the severity of the terrorism threat in Nigeria, he buttressed this by bringing up the fact that Nigeria is among the top 5 countries in the Global Terrorism Index which he indicated are 1. Iraq 10, 2. Afghanistan 9.39, 3. Pakistan 9.37, 4. Nigeria 8.58 and 5. Syria 8.12

Peter Ihesie identified politics, educational system, family, economy and community as the factors involved in creating criminals in Nigeria, noting the wide range of factors. He then named social media, CCTV technology, tracking device, mobile phones and innovative applications as ICT tools for crime prevention.

At this stage he introduced iPolice as an innovative tool for crime prevention. Describing iPolice further, he mentioned its features such as easy access to police station phone numbers, access to emergency numbers nationwide, security tips and education on mobile, security notifications and reports and crime reporting /feedback. He also announced to the delight of the audience that iPolice won the prestigious 2012 World Summit Award (WSA) for mobile content under the m-government & participation category.

Peter Ihesie concluded by emphasizing that the fight against crime in Nigeria is the responsibility of all and requires a coordinated approach supported by innovative ICT security systems. He called for the formulation of policies that will support the deployment and usage of ICT in crime prevention, training and retraining of security agencies on new technologies and improvement of their general welfare package.

Summary of Communique issued at the end of the 2014 Edition of the eNigeria Conference and Exhibitions Held from November 18-20, 2014 at the Congress Hall, Transcorp Hilton Hotel, Abuja.

## 1.0 The Conference

1. Commended the theme of the conference as a consequential follow up to last years conference and observed that the success of the local content initiative would depend on the deliberate creation of market driven opportunities through which Nigerian ICT products and services could be delivered.
2. Noted with delight that ICT now contributes over 10% to Nigeria's GDP. The Conference ascribed this to the 2011 creation of a ministry dedicated solely to ICT development, and the emphasis of President Jonathan's administration on a more strategic and deliberate focus on the ICT sector.
3. Commended the recent launching of a 50million US dollars Venture Capital fund for SMEs by the Ministry of Communication Technology and the seeding of 22million US dollars ICT focussed VC fund by NITDA into the fund. The conference expressed optimism that the venture fund would help in alleviating the funding problems experienced by techpreneurs in the industry;
4. Commended NITDA for the establishment of pilot technology innovation hubs in Lagos and Calabar as prelude to the evolution of a viable innovation ecosystem.

## 2.0 Recommendations

1. Although the Conference had expressed satisfaction with the strides being made in developing the indigenous ICT industry, it cautioned against falling into the trap of protectionism or poor quality, if there is a perception of a guaranteed market. It further advised that:
  - a. Local manufacturers and service providers should strive for international certifications in process improvement and enterprise IT governance frameworks such as COBIT 5.
  - b. The Federal Ministry of Education and Policy Makers should put attention on STEM (Science, Technology, Engineering and Math) education, including the establishment of industrial design, robotics and artificial intelligence courses in tertiary and secondary schools as the basis for sustained growth in national

development initiatives.

2. The Conference:

- a. called on the Federal Government, NITDA and ICT stakeholders to adopt deliberate, planned, and sustained multi-stakeholder approach towards investing in ICT governance and standardization, and investing in ICT infrastructure for power, broadband, cloud computing and big data) to consolidate on the achievements made in the sector, especially now that Nigeria is considered the largest economy in Africa, with a record of close to 7% growth in each of the last five years;
- b. Called on NITDA to collaborate with stakeholders to provide good business environment, quality education, peace and security for the youth as the foundation for business transformation;
- c. Called on the federal government and players in the ICT industry to pay close attention to child online protection issues in the country;
- d. Called on NITDA to collaborate with stakeholders to establish and manage a National Software Directory, and to develop a distinctive national software master plan

3. The Conference also considered the propriety of a forensic database and secure information network for timely information sharing among law enforcement agencies. The Conference therefore called on law enforcement agencies to collaborate with NITDA to establish a national crime database and information infrastructure backbone to facilitate citizen participation and multi-stakeholder approach in crime prevention and management.

### 3.0 Conclusion

In conclusion, the Conference expressed gratitude to Mr. President, The Ministry of Communication Technology, the sponsors of the Conference, members of the board of NITDA, ICT stakeholders and the media for their support in making the 8th edition of the eNigeria Conference and Exhibitions a success.

