

commonwealth ICT Invest '17

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partnerships
to connect
the next billion

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Event Report

Commonwealth ICT Investment Forum for Emerging Markets

Partnerships to connect the next billion

DFIC Conference Centre, Dubai, 10-12 April 2017

Executive Summary

Key topics:

- ICTs for socio-economic development
- National development plans and the role of ICTs
- Financing by multilateral donors and development banks
- Role of commercial lenders in financing ICTs
- Leveraging investment funds to finance ICTs
- Role of venture capital
- Creating innovative financing packages

The **Commonwealth ICT Investment Forum for Emerging Markets** was held 10-12 April 2017, at the Dubai International Finance Centre (DIFC) Conference Centre. The Investment Forum with the theme “Partnerships to connect the next billion” was organised by the Commonwealth Telecommunications Organisation (CTO) with the support of the Telecommunications Regulatory Authority (TRA) of the United Arab Emirates.

The Forum attracted very high level participants over the three days, 74 delegates from 16 countries and 37 institutions conferred, networked and socialised and came away with a much better understanding of developments and issues facing the sector. Organisations that sponsored or funded the forum include Du, Etisalat, Government of United Arab Emirates, Telecommunications Regulatory Authority (TRA), Telecommunications Authority of Trinidad and Tobago, Nigerian Communications Commission, Tetra Tech. Details on the organisations that attended can be found in Annex One.

DAY ONE: OPENING CEREMONY

The event was opened by Honourable Afamasaga Rico Tupa'i, Minister, Ministry of Communication and Information Technology.

Dignitaries present in the opening ceremony included:

- i. Gilbert Peterson, Chairman, Telecommunications Authority of Trinidad & Tobago (TATT) and Chairman of the CTO Council
- ii. Osman Sultan, Chief Executive Officer, Du, United Arab Emirates
- iii. Shola Taylor, Secretary-General, CTO

In his welcome address, Gilbert Peterson called upon participants to engage in the forum with open minds, and find solutions to address connectivity of the next billion. He urged stakeholders in the ICT sector to find ways to address the challenges of inadequate investment in ICTs. He expressed the view that public investment in ICT is a moral obligation.

Osman Sultan in delivering his Keynote address “Dreams of Yesterday, Reality of Today; Headlines for Smart Conversations” said the ICT revolution has enabled yesterday’s dreams to become today’s reality and predicted that today’s dreams will be tomorrow’s reality. He recounted how, several years ago, as Chair of ITU working group for Arab world, he had proposed, against strong opposition, that being connected be treated as a basic human right. He was delighted that today the vast majority of people agree that broadband connectivity is a human right.

Significant points from his presentation included:

- Artificial intelligence is enabling us to move from Data to Information, to Knowledge, and on to Wisdom
- Technology is transforming the way we do things, and in the process life expectancy is improving: 100 is the new 60
- Business cycles are reducing significantly, and new business models emerging (Uber, AirBnB, Skype, WhatsApp, Alibaba, Facebook, You Tube)
- Eight of the ten most valued companies are from the ICT industry
- The United Arab Emirates has made a conscious decision to be at the forefront of the Digital Wave. Its Smart Government initiative aims to make Dubai the Smartest and Happiest City in the World

In his opening address, Shola Taylor, Secretary General of the CTO, thanked the Government of the United Arab Emirates, and the Telecommunications Regulatory Agency for agreeing to host the Forum and Osman Sultan, Chief Executive Officer of du, for sharing his experience. He gave an overview of the issues likely to be discussed in the Forum, in a presentation on “Investing in a Changing ICT Environment: Challenges and Partnership Opportunities”, where he highlighted the need to invest in connectivity, and cybersecurity. He thanked the sponsors and all media partners, and invited all to the CTO Forum that will be held in Maputo, Mozambique in 11-15 September 2017.

Opening session ended with the signing ceremony of the host country agreement for the Broadband Pacific Forum 2017, by Hon. Afamasaga Rico Tupa'i, Minister of Communications and Information Technology, Samoa, and Shola Taylor, Secretary

General of the CTO. The Commonwealth Broadband Pacific Forum 2017 will take place in Apia, Samoa, 25 - 27 July 2017.

Session One: Leaders Session - Investing in ICTs to Meet the SDGs

- In 2016, the global community embarked on processes for attaining 17 Sustainable Development Goals to be achieved by 2030
- Crucial success imperatives include:
 - Necessary investment; Some estimates place the investment needs of low and lower-middle-income countries to reach SDGs to be as high as \$1.4 trillion per year
 - effective public, public-private and civil society partnerships,
 - innovative financing mechanisms
- CTO is lending a helping hand by organising this Forum with the objective of facilitating partnerships between those who require investments with those who have funds to invest to promote investments in ICTs.
- The CTO, being an inclusive body, has opened this event to non-Commonwealth countries as well.

Hon. Afamasaga Rico Tupa'i, Minister of Communications and IT, Samoa,

He started by stating that Samoa is committed to increasing investments in ICT and that the Government is considering various incentives to attract investment capital. He went on to say that one of the reasons for his participation in the forum, is to look for successful models for attracting investment in ICT.

- Samoa has embarked on Submarine cable projects that are meant to cut the price of bandwidth to 1/10 of the present cost of \$500 per megabyte.
- Samoa will set up data centres and implement platforms for e-Commerce, e-Health, etc, for sharing with its Pacific neighbours.

Professor Umar Danbatta, Chief Executive/Executive Vice-Chairman, Nigerian Communications Commission (NCC)

He said that Nigeria is looking for increased investment in the ICT sector. He described the attractive investment environment in Nigeria, including:

- Large population of 175-180m people
- Areas of investment clearly defined.
- Regulator is a partner with other institutions of government
- Incentives: Waivers on taxation,
- Access to foreign exchange for telcos has been discussed with Financial regulator
- NCC has licensed infrastructure providers for Lagos and Abuja, and will license more for other regions.

Mlamli Booi, Chief Executive Officer of Sentech, South Africa

He started by talking about Over-The-Top (OTT) experiences in South Africa, and described South Africa's unique political and social economic environment. He then went on to describe the role of Sentech in the market:

- Sentech was entrusted with delivery of content; initially analogue.

- Market is moving towards digital.
- Have invested approx. \$180million, in infrastructure for digital TV.

SA connectivity policy:

- We need to connect all to internet.
- Have started rolling out broadband using fibre. Not able to reach all parts.
- Government is considering establishing a pan-African satellite and there is a need to go to the investment community to generate funding for the project.
- Coordinate with our neighbours.

Q&A session:

Q1: How much will the e-Platforms in Samoa cost

A1: They are estimated to cost \$20m, but some platforms may run shared services to reduce cost.

Q2: How are we going to fix the problem of corruption?

A2: In Nigeria today, we are fighting corruption and instilling discipline. Investors should complain when they meet obstacles. Our youth are active on social media and are creating jobs. There is a desire to embrace the changes that are happening.

Q3: A Saudi company has a satellite covering Africa. Why does Africa need a satellite?

Q4: We are aware that there is coverage of the region. Our view is to defend our sovereignty by having our own satellite. Moreover, we are spending a lot on satellite capacity and this will lead to saving.

Q4: There was a one child one laptop concept, but today you need 3 devices for the classroom. Can we have these manufactured in Africa?

A4: The local manufacturing sector is an important sector in Nigeria.

Q5: We are excited about extending services to the unserved, including the illiterate. How are we going to address the challenges of privacy, hacking, and cybercrimes when all are connected?

A5: In Samoa, we are attending to the cybersecurity issues by introducing filters to content for schools.

A5: There is a cyber security risk. It's the responsibility of the operators to ensure that networks are secure.

Q6: There are problems in the Nigerian financial sector. Some telcos can't service their forex obligations.

A6: The problem is being addressed. Telcos will be given forex but not for repatriation, but to be used for Nigeria's needs.

Session Two: Regulating to Attract Investment and Stimulate Business Confidence in Future Technology

Keynote Address: "The future of Regulation in a Continuously disruptive technological environment" by Robert Willian Middlehurst, Vice President, International Regulatory Affairs, Etisalat, United Arab Emirates

- Regulation is lagging technology trends.
- Lamented creation of the building blocks of regulations that are likely to hinder the progress that future generations will need.
- Without new regulations 5G will not work.

Presentation: "Challenges of a Regulator in a continuously disruptive technological environment", by Devi Annamalai, Head of Legal Division, Malaysian Communication and Multimedia Commission (MCMC).

- Communications law needs to be continuously reviewed and improved to protect the consumer.
- Other challenges include disruptions to established business models, and ensuring the sustainability and competitiveness of the national communications infrastructure.
- A new policy framework aims to, among others:
 - Ensure universal access to robust and sustainable infrastructure
 - Develop and drive adoption of enabling platforms
 - Sustain vibrant local content development and distribution
 - Provide safeguards to online content and social media users
 - Drive regional harmonisation across ASEAN

Q&A

Q1: There seems to always be a rivalry between ICT Regulators and Competition Authorities.

A1: There is always antagonism because they both deal with competition.

Q2: Why don't we regulate ISPs

A2: In Malaysia, we regulate ISPs in order to ensure Quality of Service and ensure that ISPs take responsibility for cybersecurity.

Q3: How are Regulators working to keep up with technology changes?

A3: The CTO provides training for Regulators on technology, policy and regulatory trends.

Session Three: Project Showcase

PRESENTATION: “Broadband Internet Connectivity to Secondary Schools in Kenya”, by Catherine Ngahu, Chairperson, Universal Service Advisory Council, Kenya.

- Project is being implemented in partnership with the Ministry of Education, Science and Technology.
- First phase; 5 Mbps to 896 secondary schools selected by the Ministry spread across the country
- Selected based on e-readiness criteria, that included:
 - Secure electricity supply from a constant local diesel or solar powered generator station.
 - Secure computer lab with UPS and at least 10 computers in working order, printer and projector.
 - At least one full-time, Government salaried teacher of computer studies.
- In Phase II disadvantaged schools will be supported by USF to acquire basic ICT equipment.

Presentation: “Easy Pay in Bangladesh: A mobile Application-Based e-Wallet Platform”, by Sayeeful Islam, Managing Director, SSL Wireless, Bangladesh.

- SSL Wireless is a pioneer in the field of Mobile Financial Services, Mobile Value-Added Services, Electronic Payments, etc.
- With Easy Pay, customers load their wallets from their bank accounts or from Easy Pay Agents.
- Uses of Easy Pay
 - transfer funds to other wallets,

- recharge their mobile airtime,
- pay utility bills,
- purchase from e-commerce stores, and
- make physical payments over the counter.
- Easy Pay currently being tested in Kurdistan
- Easy Pay services will be extended to:
 - grocery shops,
 - departmental stores,
 - small hair-cutting saloons,
 - road-side restaurants,
 - Taxi Cabs, and
 - Bus, train, boat services, etc.
- Competitive advantages of SSL Wireless
 - licensed as PSO (Payment Systems Operator) by the central bank
 - existing service agreements with 70+ Banks & FIs
 - partnered with all telecom operators
 - connected to 5 utility billers
 - connected to 1000+ online merchants
 - service provider to 800+ SMEs and Corporations
 - service provider to 52+ Print, Media, TV, Radio and News agencies
 - service provider to 16+ Mobile Handset companies
 - proven expertise and industry experience in the team

Session Four: Innovative Investment Mechanisms & Partnerships to Fund ICT Investment Projects

Presentation: “Investment Mechanisms to Fund ICTs”, by Dr. Ini Urua, Senior Vice President (East and Southern Africa), Africa Finance Corporation.

- Africa Finance Corporation is an international institution established by treaty between independent sovereign states
- Current Members: Nigeria (Host Country), Ghana, Guinea Bissau, Sierra Leone, The Gambia, Liberia, Guinea Conakry, Chad, Cape Verde, Gabon, Côte d’Ivoire, Rwanda and Uganda
- Prospective Members include: Kenya, Mozambique, Tanzania, Zambia, Cameroon, Senegal, Mali and Mauritius, AfDB (African Development Bank), EBID (ECOWAS Bank for Investment and Development) and EADB (East African Development Bank)
- AFC Conceived to fill a critical infrastructure void in the African Market
- Returns are attractive relative to more developed markets, yet there are few successful projects due to lack of project structuring expertise and risk capital
- AFC brings an understanding of key risks relating to projects and ensures that all project risks are well mitigated
- Project preparation needs to cover Risks (Environmental, Social aspects, Policy & Currency Changes)
- AFC assists in assembling strong project consortiums to ensure project bankability
- Elaborated Funding mechanisms and desirable Project enhancements including:
 - Early Stage Project Support
 - Early Stage Equity Capital
 - Technical Advisory
 - Debt Syndication

- Mezzanine Financing
- Financial Advisory
- Innovative Financing Solutions
- Gave an example of AFC's role in MainOne submarine cable project

Presentation: “Internet Infrastructure”, by Nilmini Rubin, Vice President Tetra Tech, USA

- “Build once” approach saves money & the environment. Gave examples of Projects in Philippines and Kenya
- Lamented digital gender divide that is increasing
- Urged development of projects across sectors, communities and genders.
- Urged integration of Internet in economic reforms and development planning
- Quoted William Gibson “The future is already her: It’s just not very evenly distributed”.

During panel session **Dr. Catherine Ngahu, Chairperson, Universal Service Advisory Council, Kenya**, talked of Innovative funding mechanisms: Kenya is experimenting with Mobile Money in raising money to fund infrastructure. M-Akiba is an infrastructure bond for small amounts.

Major General Abdullah Alosaimi, Chief Executive Officer, Taqnia Space, Saudi Arabia, explained that Taqnia Space is a Government-owned company. It works with City of Science and Technology, uses USF funds and is a new entrant in the telco business targeting the airline industry. It will provide connectivity to Saudi Airlines for Live TV, Cellular coverage, etc. On Saudi Airlines connectivity will be free for economy class passengers.

Q&A

Q1: Where can we learn about how to structure PPPs

A1: Tetra Tech has an Institute to train in PPPs. One of the lessons is to get it right at the structuring stage. Investment in infrastructure lowers risks of investment in other projects.

A1: AFC is an anchor investor in projects in Ghana and Rwanda. AFC ensures that a project is technically and financially well structured. We ensure to develop local capacity as expatriates take a lot of money.

Q2: Why has the USF in Pakistan only utilised about 50% of the USF funds?

A2: The funds are used to work on projects which last more than one year, so some of the funds we are holding are already committed. Currently we collect \$60m annually and spend \$100m, so the surplus will be exhausted over time.

Q3: Is AFC looking for government projects or any? What are your criteria? What’s the smallest size of project that AFC can fund?

A3: We are more private sector oriented, we prefer private sector management. Minimum equity is \$10m.

DAY TWO

Session Five: The Future of Technology in Addressing the Access Gaps and Enhancing Smart Communities

Presentation: “From 2G to 5G Opportunities and Challenges” by Dr. Mohames Madkour, Vice President Wireless Network Marketing & Head of Global Demand Generation, Huawei.

- Went through a 32-year journey: showing telecom industry value shift
- Human experience is at the heart of the moves
- Most predictions say that 4G poised to take off in 2020
- All services will be delivered by mobile apps
- Key Drivers: Mobile Network, Sensors, Man-Machine interface, Cloud Computing, Big Data & AI
- Govt role crucial for better ICT.

Presentation: “Strategies for Enabling Smart Communities” by Ms. Devi Annamalai, Head of Legal Division, Malaysian Communications and Multimedia Commission (MCMC),

- Smart Communicates are building block of a smart nation and ultimately a smart ASEAN
- Objectives of Smart Communities:
 - To improve quality of life using ICT
 - To realise the benefits of using ICT for productivity
 - To empower community in raising their competitiveness regionally and globally
 - To generate creativity and innovation culture amongst the community
- Smart Community Principles:
 - Bottom Up Approach
 - Replicability, Scalability, Reachability & Sustainability
 - Need for Local Champions
 - Involvement of Local Authorities
 - Collaboration with Institution(s)
 - Local Content & Application Development
 - Infrastructure Improvement
- Implementation Strategy:
 - Concept presentation to Authorities
 - Establishment of Task Force
 - Implementation
 - Ongoing Monitoring
- Presented Case Studies of:
 - Kemaman Smart Community
 - Road to 2017 - Smart Langkawi
- More information about Smart Communities in Malaysia can be obtained at <http://komunitipintar.my/>

Saleem Alboolshi, Executive Vice President (Infrastructure & Technology), du, United Arab Emirates

- Du is working on connectivity for achieving the SDGs.
- We are striving to meet demands for higher throughputs, low latency, low cost,

- We are witnessing the following new trends:
 - Virtualisation
 - Improve time to market
 - New Services.
 - More robotisations
 - More Fibrelisation
 - More Infrastructure sharing
 - More Smart Partnerships
 - More Smart Cities
- Smart Communities need several things:
 - When you have good Infrastructure, many things happen on top of it. e.g. innovation/applications,

Jawad Abbassi, Head of Middle East & North Africa, GSMA.

He highlighted the Need for:

- Local champions
- Government actions in:
 - Harmonising spectrum
 - Allowing competition
 - Development of a knowledge economy
- He observed that 5G will not work without reviewing spectrum policies
- We are active in the innovations parks.
- Mobile Connect allows multiple mobile services because of the trust between customer and the network operators.

Session Six: Government Strategies for Stimulating ICT Demand and Investment

Keynote Address: “PPP for Samoa Submarine Cable”, by Honourable Afamasaga Rico Tupa’i, Minister of Communications and IT, Samoa.

- Submarine cable company established
- Follows sustainable open-access wholesale cooperative model
- Core Objective: network diversity and availability
- Samoa has offered other islands opportunity to partner.
- Government got grant from ADB, \$32m, on-lent at 1% over seven years.

Presentation: “Government Strategies for Stimulating ICT Demand and Investment”, by

Graham Butler, Chairman, Bitek Group

- Every country needs to consider how to control its internet.
- Lamented how Skype and other OTTs are ‘eating’ the revenues of telcos and regulators.
- Today, many companies don’t need to buy a telco licence, they just steal the traffic
- Do you know what OTT services are on your network? Do they contribute to costs? Are they lawful intercept compliant?
- Quoted 2016 numbers of OTT services:

Crypto-currencies	479
VoIP/P2P/IM (Chat	268
Social Networks	210

Real-Time Entertainment	33
Mobile Money Transfer Operators	105
Online Gaming Operators	73
Online Gambling Operators	584

- Suggested that a solution is not switch off OTT (like Skype and WhatsApp), you can introduce fair usage rules, e.g. 20minutes free per day, and pay thereafter
- Best and Fair way to fund Universal Service is by calling minutes = X cents per minute
- Elaborated a solution model for lawful data capture and access
- Bitek monitors 93 types of VoIP
- Bitek will pay for the equipment to monitor traffic and protect your network for share in revenues.

During a panel discussion that followed, **Lumko Caesario Mtinde, Chief Executive Officer, Universal Service and Access Agency of South Africa**, stated that in South Africa the USF is to be dissolved and a digital fund established.

Session Seven: Enabling Investments in Regional Markets was combined with Session Eight: Project Showcase

Presentation: “Strategies to Develop Regional ICT Markets”, was presented by Edmund Katiti, Chief Executive Officer of FikiyaTech Consulting on behalf of Isaias Barreto Da Rosa, Commissioner for Telecommunications and Information Technologies, Economic Commission for West African States (ECOWAS)

- Core objective of the ECOWAS in ICT is the establishment of a single Digital Market in West Africa
- Objective has 2 main pillars:
 - Development of broadband infrastructure
 - Harmonization of ICT policies
- The broadband infrastructure encompasses
 - Terrestrial broadband network
 - Submarine fibre optic cable:
 - Six international submarine fibre optic cables: SAT2, SAT3, MainOne, GLO1, WACS & ACE
 - A total of 25 landing stations
 - All costal countries (except Guinea Bissau) are connected
 - All landlocked countries have at least two connections through neighbouring countries
- Challenges:
 - National broadband connectivity yet to be completed in Guinea, Liberia and Sierra Leone and Guinea Bissau
 - High connectivity cost for landlocked countries: 70% of the international connectivity cost is the terrestrial transit
- Harmonization of the Telecommunication/IT policy in the ECOWAS region
- Supplementary Acts adopted by Heads of States:
 - Harmonization of Policies and of the Regulatory Framework for the ICT Sector,
 - Legal Regime applicable to Network Operators and Service Providers;
 - Access and Interconnection in Respect of ICT Sector Networks and Services;

- Numbering Plan Management;
- Management of the Radio-Frequency Spectrum; and
- Universal Access/Service;
- Electronic Transactions;
- Personal Data Protection.

Presentation: “Highlights of the Central African Backbone (CAB) Project”, by Ngandele Shu Afanwi, Support Staff, CTO Central Africa Regional Office.

- The CAB project is USD 273 Million cross-border optical fibre infrastructure project connecting the capitals of several Central African states (Cameroon, Central African Republic, Chad, Republic of Congo, Gabon, Democratic Republic of Congo and Sao Tome & Principe).
- World Bank and African Development Bank raised USD 206 Million
- The regional project was adopted by the Economic and Monetary Community of Central Africa (CEMAC) Heads of States through a common declaration during their Summit in N’Djamena, Chad, in 2007.
- The 10-year project is being implemented in 5 phases
- He mentioned two e-Health project in Cameroon:
- The cardiopad is a tablet computer that collects a reading and forwards it to a heart specialist via a mobile network.
- GiftedMom Application helps get vital information to pregnant mothers. GiftedMom won the very first Commonwealth ICT Applications Competition last September 2016 in Nadi, Fiji, organised by the CTO as part of its 115th anniversary celebrations.
- More information about the Central African Backbone (CAB) Project can be obtained at https://en.wikipedia.org/wiki/Central_African_Backbone

Project presentation: “TUI-Samoa Submarine Cable”, by Tuaimalo Ah Sam, Chief Executive Officer, Ministry of Communications and Information Technology, Samoa.

He stated that the Government of Samoa is committed to developing broadband connectivity and substantially reducing the cost of communication. This is demonstrated by its keen involvement in the development of 3 submarine cables.

- Projected maps showing submarine cable routing
- Pictures of:
 - Cable landing station
 - Internet exchange point
 - Disaster Resilience Centre
 - Hosting and hub facilities

Session Nine: Investing in Cybersecurity, Cyberspace and ICT Applications

Presentation: “aeCERT” by Eng. Mohammad Bushlaibi, Forensics Analyst, Telecommunications Regulatory Authority, United Arab Emirates

- aeCERT provides the following services:
 - Advisory, Education and Awareness services
 - Vulnerability assessment
 - Penetration testing
 - And makes recommendations based on the results
- aeCERT Goals:

- Enhance the cyber security law
- Enhance Info. Security Awareness in United Arab Emirates
- Build national expertise in Info. Security
- Establish a national centre to disseminate cyber security info
- Provide a central trusted point of contact for cyber security incident
- Coordinate with domestic and international CSIRTs and related organizations
- Become an active member of recognized security organizations

Presentation: “Transforming the Internet Ecosystems”, by Baher Esmat, Vice President, Global Stakeholder Engagement Middle East, ICANN

- ICANN maintains and management unique identifiers used to communicate on the Internet
- Issues top Level Domains (TLDs) like .com, .org, etc, including the new generic TLDs which have spurred Competition, Innovation and Choice.
- Top-Level Domains being used in new ways e.g. Brands, Cities and Common Interest Groups
 - Fosters reputation online
 - Increases visibility & revenue potential
 - Creates correlation between cities and their businesses, businesses and their products, and communities and their interests
- Gave examples of industry specific TLDs, e.g. dotBank for the baking industry:
 - Founded by a coalition of banks, insurance companies and financial services trade associations
 - Created an innovative, more secure platform for delivering banking products, services and information
 - Trusted TLD with robust security measures to ensure confidentiality and integrity of communications
 - Registration is restricted to the banking community
 - Hundreds of banks have moved their online presence to .bank

Presentation: “Opportunities for Establishing Cyber standards for SMEs: A Commonwealth Approach” by Shola Taylor, Secretary General of the CTO.

- IASME is an information assurance standard managed by The IASME Consortium that is particularly suitable for Small and medium-sized enterprises (SMEs).
- Cyber threats facing SMEs
 - Potential targets for Cyber-attacks. Nearly 43% of attacks targets SMEs
 - 60% of SMEs close after a Cyber attack
 - Most SMEs are concerned about data
- Standards & Technologies
 - Promote the use of Information Security (IS) Standards
 - Monitor compliance of IS standards
 - Participate in IS standards development
 - Promote IS standards for procurement
 - Track and monitor new technologies & trends, especially tools used by hackers
- Showed the Status of Cyber Essentials (CE) Implementation in 7 Commonwealth countries

Presentation: “Aspects of the AU Convention on Cyberspace Security and Personal Data Protection”, by Edmund Katiti, Chief Executive Officer of FikiyaTech Consulting, and former Head of the NEPAD e-African Programme,

representing Moctar Yedaly, Head of Division, Infrastructure & Energy, African Union Commission.

- Legal Framework: Chronology of AU Ministerial decisions to develop the convention
- Objective and Goal: To harmonize e-legislation related to e-transactions, personal data protection, cybersecurity promotion & fight against cybercrime
- Development Process: Key steps taken in the drafting and review of the draft convention
- Adoption Process: Validation, translation, and adoption processes
- Chapters:
 - Chapter I: Electronic Transactions
 - Chapter II: Personal Data Protection
 - Chapter III: Promoting Cybersecurity and Combating Cybercrime
 - Chapter IV: Final Provisions

Lively Panel and Q&A

Q1: Delegation of new top level domains seem to have disadvantaged emerging markets more and corporations in developed economies are looking to take domains like dotAmazon and dotZulu

A1: ICANN has transparent multi-stakeholder policy development and implementation mechanisms where all stakeholders are encouraged to participate. Government concerns can be raised through the Governmental Advisory Committee (GAC).

Q2: There is a black market in the sale of IP addresses

A2: ICANN does not deal directly with the allocation of IP addresses. These are handled by Regional Internet Registries (RIR). The original batch of IPv4 addresses were allocated before ICANN was established but today we have inexhaustible supply of IPv6 addresses.

After a lively exchange, some recommendations were proposed:

- Governments in emerging markets should promote the use of country code Top-Level Domains (ccTLDs) and/or regional Top-Level Domains like dotAfrica, by requiring:
 - Government Ministries/Departments to register their websites and email addresses with the country ccTLDs
 - Every company registered (and new ones registering) in a country to get a domain name registered with the local ccTLD

DAY THREE

Session Ten: Focus on Broadcasting Investment Opportunities

Keynote Address: “Challenges of Meeting Investment Requirements for the Broadcasting Infrastructure for South Africa” by Mlamli Booi, Chief Executive Officer, Sentech, South Africa.

- The work of Sentech involves aggregation of content at the head-end, multiplexing and distribution of same via satellite, fibre, and microwave, to 220 transmission sites nationwide.
- Content Distribution Infrastructure cost components:
 - Linking: Satellite up and downlinks, Terrestrial linking – Fibre, Microwave
 - Core: Head-end and Network management system

- Transmitter sites: Energy, Site build and roads, Transmitter system
- Infrastructure Program for Investment
 - DTT migration
 - DTT infrastructure build completed
 - Digital-to-digital migration and restacking implementation over the next three years;
 - DTT Contact centre required
 - Terrestrial linking infrastructure for improved performance and for the future of broadcasting
 - Deployment over the next three years
 - Green energy generation in transmitter sites – implementation over the next five years
 - Pan African satellite under consideration
 - Digital radio under consideration
 - DAB+ in broadcast band III
 - DRM30 in medium wave and short wave
 - DRM+ in FM
- Challenges:
 - Economic outlook: Slow economic growth
 - Competing demands for the national fiscus
 - Implementation capacity
- Investment Opportunities:
 - Backhaul infrastructure – Fibre linking of broadcast infrastructure
 - South African's proposed pan-African communications satellite;
 - DTT Contact centre to support digital migration
 - Development of data centre and data recovery centre
- As far as digital migration is concerned, it is estimated that 14 million set-top boxes will be needed and these will be manufactured in the country. The South African government has decided to give 5 million Set-Top Boxes to the poor.
- There are two state-owned ICT infrastructure companies in South Africa: Broadband Infracore for building fibre infrastructure and Sentech for wireless infrastructure.
- For more information about projects and investment opportunities, visit www.sentech.co.za

Panel Discussion:

Jean-Pierre Blais, Chairperson & Chief Executive Officer, Canadian Radio-Television & Telecommunications Commission

He described how the Canadian broadcasting industry has evolved over the years and how it has fought to overcome the influence of its big southern neighbour. He also described the analogue to digital migration in Canada.

- Today Canada has national as well as commercial broadcasters. Radio broadcasting is mainly free over the air, while Television distribution is by cable, satellite and Internet.
- Licensed broadcasters build their own infrastructure for over the air broadcasting.
- There is a trend of scheduled programming being replaced by on-demand programming.

Session Eleven: Spectrum Pricing Options and Impact on Investment

Shola Taylor, Secretary General of the CTO

- Talked of Nigerian experience with spectrum auction and spectrum auction debate/controversy in South Africa
- There should be separate licences for services and for spectrum.
- Cardinal principle is spectrum pricing: Where there is high demand, use auction – as its transparent. There should be a reserve price, based on comparable market prices and other local environmental considerations.
- On the questions of why should we worry about the price of the auction, if the operators are willing to pay:
 - One view: Financial advisors advise on the value of spectrum, often without considering the ability of some consumer to pay
 - Other view: If the value is high, it will cost the consumer
- There are different designs of auctions.

Ammar Hamadien, Head of Strategic Engagement, Middle East & North Africa, GSMA.

- Regulators have tendency to want to raise substantial upfront government revenue by charging high licence fees. This sometimes results in undesirable consequences.
- Mobile operators are acquiring broadcasters. Wave of convergence is continuing.

Session Twelve: Investing to Connect the Next Billion: A Viable Roadmap

This session discussed the noteworthy outcomes from the Forum and came out with the following recommendations:

1. Noting the number of ICT projects requiring financing, and noting the observation of the Africa Finance Corporation that the main challenge to funding ICT projects is poor project preparation, it was recommended that the CTO should look for appropriate capacity-building solutions to address this gap.
2. Governments in emerging markets should promote the use of country code Top-Level Domains (ccTLDs) and/or regional Top-Level Domains like dotAfrica, by requiring:
 - a. Government Ministries/Departments to register their websites and email addresses with the country ccTLDs
 - b. Every company registered (and new ones registering) in a country to get a domain name registered with the local ccTLD
3. Stakeholders from emerging market and especially governments should take a more active part in Internet Government discourse, as these discussions often have important implications for distribution and use of critical Internet resources.
4. Noting the increasing cyber threats, the Forum recommended that:
 - a. businesses, governments and other connected institutions should take concrete steps to protect themselves against cyber threats.
 - b. CTO should provide cybersecurity training for law-enforcement and judiciary in emerging markets.
5. CTO should provide frequency management training and in particular handling of spectrum auctions.
6. Policy makers and Regulators should develop forward-looking policies and regulations that will not unduly restrain future technologies and services.
7. Noting that the revenues of Universal Services Agencies are reducing as most of them are dependent on declining telco revenues due to OTTs and traffic diversion by unlicensed operators, there is need to look for other funding models. The CTO is requested to undertake a study on Universal Service funding frameworks across the

Commonwealth and beyond and make appropriate recommendations to its members.

8. Emerging markets should adopt Tetra Tech's "Build It Once" approach where infrastructure development should cover as many services (ICT, power, transport, water, etc) as are practically possible.
9. Noting that availability of power is one of the hindrances to connecting the last one billion people, the CTO was requested to facilitate the exchange of experiences in appropriate legislation to facilitate mini-power generation and distribution.

Session Thirteen: Closing Ceremony

In his closing remarks, **Shola Taylor, Secretary General of the CTO** announced that the CTO has commenced discussion with the Government of the United Arab Emirates and the Telecommunications Regulatory Authority to host the ICT Investment Forum again next year on the dates 26-28 March 2018. He thanked them for hosting the event and went on to thank delegates and sponsors; Du, Etisalat, Huawei, Tetra Tech, TATT, and the NCC.

Hon. Afamasaga Rico Tupa'i, Minister of Communications and Information Technology, Samoa thanked the delegates, and applauded CTO for always being ready to share best practices with its members. He reminded delegates to diarise and attend the Broadband Pacific Forum 2017 which will be held in Samoa in July.

In his closing Remarks the **Chairman of CTO Council, Gilbert Peterson**, thanked all those who shared their projects with the delegates, and those who shared their knowledge, like Nilmini Rubin's guidance on how to structure PPPs. He said that emerging markets will continue to take advantage of CTO expertise to develop their ICT sectors. He ended by thanking the government and people of the United Arab Emirates for their hospitality and thanked all delegates for their fruitful engagement in the discussions, before declaring the Forum closed.

Participating countries and organisations:

Country	Organisation
Afghanistan	Afghan Wireless Communication Co.
Bahamas	Utilities Regulation & Competition Authority (URCA)
Cameroon	CTO Regional Office
	Telecommunications Regulatory Board (TRB)
Canada	Canadian Radio-television and Telecommunications Commission (CRTC)
Guinea-Bissau	National Regulatory Authority of Information and Communication Technologies
Iraq	Next Generation Communication
Kenya	Communications Authority (CA)
Malaysia	Malaysian Communications and Multimedia Commission (MCMC)
Nigeria	Nigerian Communications Commission (NCC)
	Association Of Telecommunication Companies Of Nigeria (ATCON)

	Broadbased Communications Limited
	Silicon Valley Limited
Pakistan	Secure Tech Consultancy (Pvt) Ltd
	Universal Service Fund, Ministry of Information Technology & Telecommunication
Samoa	Ministry of Communication and Information Technology
Saudi Arabia	Saudi Technology Development and Investment Co. (TAQNIA Space Co)
South Africa	Commonwealth Telecommunications Organisation
	Department of Telecommunications and Postal Services
	SENTECH
	Universal Service and Access Agency of South Africa
Trinidad & Tobago	Telecommunications Authority of Trinidad and Tobago
United Arab Emirates	Bank of China
	Bitek Global Limited
	Du
	Etisalat
	Huawei
	Measat
	Nigeria Embassy
	Resolution Consulting, LLC
	Telecommunications Regulatory Authority (TRA)
United States America	Tetra Tech Ltd
International organisations	African Finance Corporation
	Commonwealth Telecommunications Organisation
	GSMA
	Internet Society
	Internet Corporation for Assigned Names and Numbers