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PART I INTRODUCTION

1.0

This document presents the Government of Liberia's Policy for the Telecommunications and Information Communications Technology (ICT) sectors. The Government of Liberia (GoL) understands the important role that telecommunications and ICT play in the Poverty Reduction Strategy (PRS) policy, which is built on the following four pillars –

- i. Enhancing National Security
- ii. Strengthening Governance & Rule of Law
- iii. Revitalizing the Economy
- iv. Rehabilitating Infrastructure and Delivering Basic Services

Liberia's ability to accelerate its economic development process, gain global competitiveness and improve the well being of its people depends on the extent to which it can develop, use, and sell telecommunications and ICT services in one form or another.

The goal is to integrate telecommunications and ICT services into overall developmental objectives, priorities, and programs. Our school systems, health programs, commercial, national security and government programs including procurement activities shall be transformed using ICT as the effective platform to ensure transparency, efficiency and productivity. ICT shall facilitate the outcomes of the National PRS objectives to accelerate economic growth for sustainable national development.

The GoL has embarked on setting a national agenda that involves the telecommunications and ICT sectors to better the lives of its citizens and alleviate poverty through inducing economic activities, improving educational systems and ensuring that citizens are stakeholders in the national policy agenda. This document outlines the strategies to continue liberalization of the telecommunications sector and establish ICT partnerships as a means to improve services delivery and open up new opportunities.

The Telecommunications ACT of 2007 redefined the functions and responsibilities of government agencies including the Ministry of Posts and Telecommunications, the Liberia Telecommunications Authority and the designated National Operator. High level issues of policy-making, regulation enforcements, liberalization, fair competition, universal access, national security and standardization, to name a few, are addressed.

The national ICT Policy is to ensure that services and systems are people-centered, universally accessible and cost-effective. The government's role is to establish a legal regulatory framework and institutional mechanisms to guide the activities of all stakeholders.

In summary, these policies are intended to achieve the modernization and rapid expansion of the telecommunications network and communication systems. The goals are to increase productivity; enhance information sharing; and become global stakeholders in the telecommunications and ICT environment.

The dynamic nature of modern technology in telecommunications and ICT makes it compelling to periodically review and set new policy guidelines. The policy objective shall be set for five years (2010–2015) in support of the World Summit on Information Society (WSIS) target to connect the world by 2015, of which the government's PRS makes up the first two years.

1.1 LIBERIA'S VISION FOR ICT

The Government of Liberia's vision for the ICT and Telecommunication Sector is to promote infrastructure development, integrate information and communications technologies throughout the society to enhance the process of national reform. It seeks to promote national reform by focusing on developing human capacity and accelerating sustainable socio-economic development to eradicate poverty and improve the quality of life for its people.

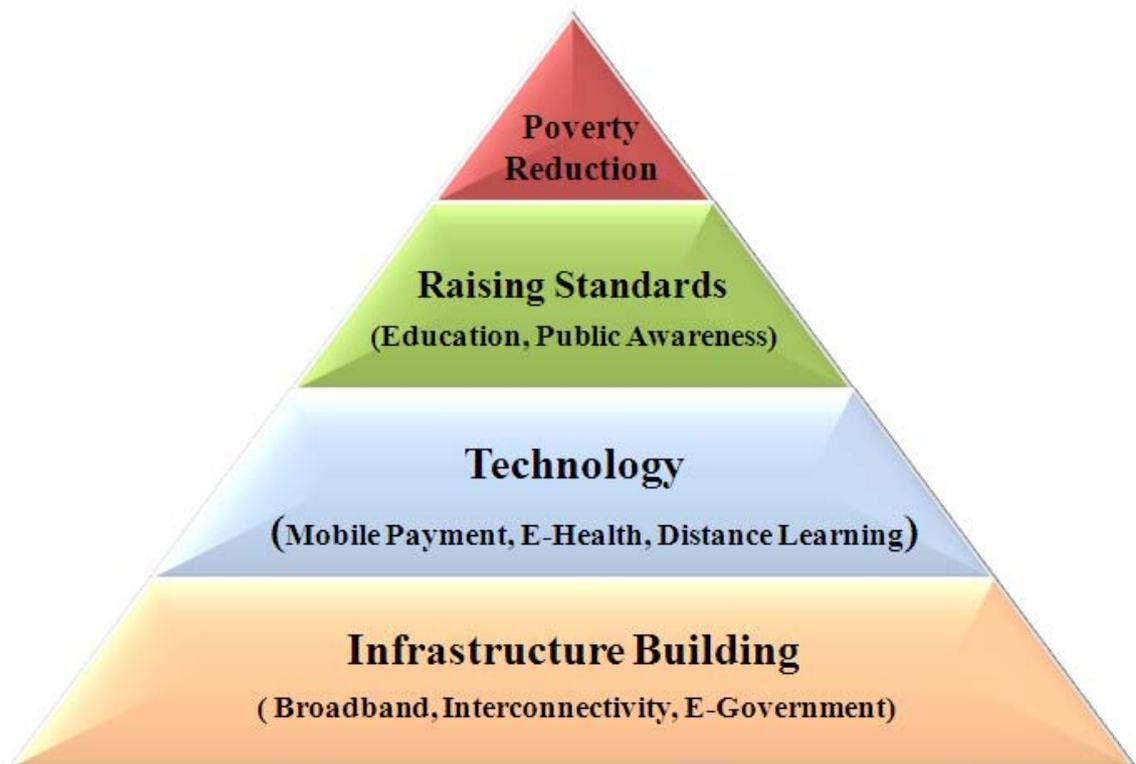


Figure-1: Vision for ICT for Development in Liberia

1.2 TELECOMMUNICATIONS AND ICT DEVELOPMENT

Information and Communication Technology (ICT) is the convergence of communications, computing and information technologies. This convergence makes it possible for new and improved services to be delivered over a diverse range of telecommunication platforms. ICT encapsulates all forms of communications, including telecommunications, information storage and retrieval, the use of the internet, distance learning, information sharing, e-applications, etc. ICT has made information available by means of voice, video, data, text and graphics reliable, faster and efficient. ICT is helping to make the world more interactive and a true global village.

As a catalyst that enhances the development process of every country, ICT helps government expand access to information for its citizens and save cost compared to using paper-based communications or

relying on messengers, vehicles, and other parties. It also provides a much faster link in helping Government to work with the private sector and the civil society.

1.2.1 Telecommunications Objectives

GoL's objective is to stimulate the development of the national telecommunications infrastructure needed to support the delivery of ICT services throughout the country and provide universal access which promotes an information and knowledge-based society. The specific objectives are to:

- a. Encourage partnerships or consortia of corporations and institutions to pool resources together in building the necessary IT infrastructure.
- b. Attract and mobilize internal and external investment.
- c. Coordinate the efforts of Government, the private sector, civil society, development partners and individuals in order to ensure a shared national development vision in telecommunications and ICT.
- d. Optimize the utilization of scarce resources such as spectrum, land, and IT Infrastructure.
- e. Encourage a medium that will enhance research and development.
- f. Establish new regulatory standards and rules and ensure standardization of the national spectrum and frequency usage.
- g. Establish new revenue regimes in the sector to address undervalued license fees; new regulatory fees; new annual operating fees; and spectrum and frequency usage fees.
- h. Establish a Board of Trustees to oversee the management of the Universal Access Program and the Universal Access Fund¹.
- i. Liberalize the telecommunication sector to ensure competitive service markets and affordable prices.
- j. Establish service penetration in the rural areas based on the ITU recommended minimum tele-density of 1 fixed line telephone per 100 inhabitants by 2015².
- k. Establish Local Area Networks (LAN) and Wide Area Networks (WAN) in central and local government offices; urban and rural communities; educational institutions, health facilities; commercial related agencies, security related agencies and financial related institutions.
- l. Collaborate with the Ministry of Education and establish telecommunications curriculum in the high schools, colleges and universities and to build capacity in telecommunications related careers.
- m. Provide five thousand (5,000) career employments for Liberians in the telecommunications and ICT sectors in technical, administrative, operational, teaching, and project management areas by 2013.
- n. Put in place a mechanism for the divestiture of the state-owned telecommunications entity and the promotion of private investments by 2011.

¹ See comments in Universal Access Section – need for any oversight body to include representatives from mobile, fixed and ISP telecom subsectors.

² Note: this requirement may be obsolete or less important now – Internet access or broadband is more relevant measure. We recommend including a policy objective for internet penetration.

- o. To the extent appropriate, focus new telecommunications infrastructure along Development Corridors³ in order to leverage investments in other infrastructure such as roads, railroads, and electrical generation and distribution to achieve the largest impact for the Liberian people.

1.2.2 ICT Objectives

The GoL understands the importance that ICT plays in the Poverty Reduction Strategy (PRS) policy, which promotes economic growth; improvements in infrastructure and basic service (Education & Health) delivery; good governance and rule of law; and enhancement of our national security sector. The GoL's ICT objectives are to:

- a. Support the national Poverty Reduction Strategy (PRS).
- b. Create ICT awareness among stakeholders; Government, the private sector, civil society and the general public.
- c. Establish a National ICT Funding Basket to be used to develop a national infrastructure.
- d. Establish institutional legal mechanisms and a regulatory framework based on international best practice.
- e. Establish guidelines, standard practices, rules and regulations to promote the deployment of ICT networks to support competition.
- f. Create a level playing field among operators and service providers.
- g. Encourage international, regional and global investments in the sector.
- h. Promote affordability and universal access of ICT products and services and also provide opportunities that will promote the use of Open Source Software.
- i. Promote the deployment of ICT networks to all defined cities and urban communities in the country.
- j. Promote the integration of financial and monetary systems.
- k. Establish the framework to integrate government offices and systems (e-Govt) nationwide.
- l. Accelerate the integration of education through (e-learning) and other socio-economic information systems through e-applications.
- m. Develop the human resource capacity and increase ICT literacy in the country.
- n. Help create job opportunities and career employment.
- o. Promote market liberalization, private sector expansion, and fair and effective competition.
- p. Encourage the development of an information super-highway (Internet Backbone) for globalization and convergence.
- q. Collaborate and encourage the development and deployment of ICT networks, systems and services in all Ministry of Education registered educational facilities in the country.
- r. Ensure market prices are reasonable and affordable for all types of users.

³ Development Corridors was a Study conducted by MPEA to pinpoint areas of economic growth opportunities for Liberia under the different sectors of the economy.

- s. Accelerate the creation and management of the domain name for Liberia.
- t. Direct the establishment and creation of centralized and integrated database systems for law enforcement units, national security agencies and the courts.
- u. Encourage GoL's employees to have access to real-time information.
- v. Promote domestic production of ICT (computers & accessories) equipment and the availability of software, network components and spare parts; and ensure that there are reasonable tax incentives for the importation of computers into the country.
- w. Establish an ICT Governing Board to oversee, monitor and evaluate ICT projects and programs;
- x. Provide government agencies, individuals, and civil society organizations with the resources and tools needed to participate in the World Summit on Information Society.
- y. Channel delivery of ICT services and applications so as to achieve national development goals such as food security, public safety, poverty reduction, a healthy population, build a strong and common cultural identity and promote a stable democracy.
- z. Put in place safeguards to prevent cybercrime.

1.3 NATIONAL PRIORITIES IN ICT SECTOR

As in many developing countries, while there may be a reasonable level of commercial telecom services in cities, in Liberia there is extremely limited telecom service in the counties and also in rural areas – no fixed line service, minimal but growing mobile service, and virtually no internet access. The real impact of this lack of rural service is the inability of businesses to thrive in rural areas, lack of farmer information about weather or prices they can sell their crops at, so they obtain poor prices, are unable to contact relatives (such as children attending school, or husbands working) in Monrovia or nearby countries via email or VoIP; and the lack of emergency services. The unemployed rural workers therefore migrate to Monrovia, compounding poverty and crime problems there. The lack of telecom services in most part of rural Liberia also make remittances from urban relatives more difficult, exacerbating rural poverty. Therefore, bridging the urban / rural telecom divide is critical to planning and poverty reduction.

There is a critical need for high capacity broadband links to access international internet in order to support business, education, e-Government, and access the information society. A secure inter-governmental network among ministries will be less useful if the ministries and agencies do not have access to international internet. All non – broadband global connections are very expensive and therefore provide limited capacity to users.

Government shall continue to explore every means of building a terrestrial fiber optic network as its national backbone. It shall also continue to pursue other options to access marine fiber optic links as a point for global connectivity to provide a long term solution to its infrastructure challenge.

GoL will also seek to focus investment in telecommunications and ICT infrastructure along development corridors within the country, in order to leverage investment in other infrastructure to provide a greater impact on Liberian citizens and their access to ICT.

This policy also recognizes that the lack of a functional electrical grid and roads in Liberia are substantial

constraints to the roll out of ICT infrastructure in rural Liberia. GoL understands the substantial role which lack of electricity infrastructure in rural areas plays in holding back rural service. Without addressing these deficiencies on a priority basis, it will be difficult for Liberia to bridge the urban - rural telecom divide.

NATIONAL ICT4D PRIORITY PROJECTS FOR LIBERIA

Name of Project	Development Impact
Establish national level ICT4D Steering Committee	ICT4D Steering Committee is the high-level Governance and policy making body for ICT in Liberia; it will ensure that planning and investments in ICT programs support GOL's Economic Growth & Development Plan 2012-2027 Vision.
Validate and Enact National ICT Policy	Liberia will have a national ICT policy in place which will be the foundation for ICT development, help in meeting PRS and MCC objectives, and joining the World Society for Information Sharing (WSIS) community
Technical/Financial Assessment for obtaining International Gateway Connection for Liberia via multiple broadband technologies	Potential to expand and restructure Liberia's Internet and global connectivity infrastructure to provide immediate and significant strengthening of, and benefits to, ongoing ICT4D initiatives to meet PRS and MCC objectives in the long run
Implement Inner Monrovia Fiber Optic Backbone	Connect Govt. Business, NGOs, Civil Society, and Key Sectors, and Link them to the International Gateways.
GOL ICT Infrastructure Assessment	Develop framework for e-Government standards and information sharing in Gov't.
Policy Reform for restructuring Internet Infrastructure and Inter-connectivity to raise it to international level of performance	Bring Liberia's Internet infrastructure up to international standards, resolve bottlenecks and make connectivity affordable
Enact National ICT Supplementary Acts to complement the Telecommunications Law of 2007; and also implement policy objectives in-line with ECOWAS ICT Supplementary Acts.	Establish the regulatory framework for starting e-Government in Liberia by establishing an enabling policy and operational regime
Establish Chief-Information-Officer (CIO) Regime in Line Ministries which will be headed by a CIO Council	Liberia for the first time will have a formal CIO structure in the executive line ministries, governed by a CIO Council, comprising senior technology officials of key ministries who will be responsible for all aspects of ICT including budgetary and operational authority
Implement E-Government Policy and Standards for Implementation	The advent of Government provision of E-services to Liberian citizens using the Internet: this will be a major leap in meeting PRS goals and bridging the ICT gap

PART II

2.0 SECTOR ORGANIZATIONS

2.1 MINISTRY OF POSTS & TELECOMMUNICATIONS (MP&T)



Figure-2: Central Complex Housing the Ministry of Posts & Telecommunications
Carey & McDonald Streets, Crown Hill, Monrovia

The Ministry of Posts and Telecommunications (MP&T), which is a cabinet position, is tasked by the Telecommunications Act of 2007 to develop telecommunications policy. As the policymaker, the MP&T heads the sector and advises the GoL on telecommunications and ICT matters. This document provides policy guidance in the following telecommunications and ICT related issues:

2.1.1 ICT Legal and Regulatory Framework

- a. Establishment of an institutional legal mechanism that balances the interests of consumers with the creation of an environment that fosters robust profitable ICT for development programs.
- b. Enactment of new laws to promote trust and confidence in a digital environment.
- c. Establishment of a sustainable institutional framework to coordinate, support and monitor the implementation of ICT policy, strategies and plans.
- d. Ensuring that policies, rules and regulations developed for the ICT sector advocate regulatory transparency, protect the consumer, promote competition and support technological neutrality.

2.1.2 National Budget

- a. Coordinate with related government agencies and stakeholders on national budget issues.
- b. Support the national budget based on one-time license fees, government applicable taxes, frequency usage and maintenance fees; contributions to universal access funds; dividends from the national operator; and revenue from access charges.
- c. The MP&T shall advise the GoL through annual budget consultations on the financial value of the sector and expected financial contributions to the national budget.

2.1.3 Networks Deployment and Accessibility

- a. Encourage private sector involvement in the deployment of telecommunications infrastructure and ICT networks in county headquarters and all major cities of the fifteen counties with social, economic, commercial and financial activities by 2013.
- b. Provide universal access and universal service to rural communities with a minimum of five hundred (500) inhabitants by 2013.
- c. Create a Universal Access Program Governing Board with oversight responsibility for the Universal Access Program.

2.1.4 Career Employment and Capacity Building

- a. Provide professional employment and career path for at least five thousand (5,000) Liberians in the telecommunications and ICT sector by 2013.
- b. Introduce compulsory ICT curriculum in high schools and vocational institutions.
- c. Introduce telecommunications and ICT curriculum in universities, colleges and post high schools.
- d. Develop a national plan to revolutionize our educational systems by providing for every student and instructor to use computers as the primary communications tool.
- e. Invest in educational and human resource development.
- f. Promote job training and career opportunities in the telecommunications and ICT sector.
- g. Represent the government and head any delegation at local and international conferences, meetings, forums and seminars relating to telecommunications and ICT policy.

2.2 LIBERIA TELECOMMUNICATIONS AUTHORITY (LTA)

The LTA shall have primary responsibility for regulating and implementing the government's policies for the sector. The Act establishes a regulatory framework based on international best practices in the region. The Act validates the on-going sector reform and mandates the LTA to standardize the existing licensing regime for service providers as well as harmonize spectrum allocations with international trends and effectively manage frequency assignments and related processes. The policy supports the LTA's objectives to:

- a. Develop Regulations, Orders and Rules that will govern the sector and implement national telecommunication policy.
- b. Standardize the nation's frequencies and spectrum bands and ensure that our national spectrum usage is in harmony with neighboring countries and in keeping with ITU regulations.

- c. Provide market analysis that will assist in determining resource assessment, government taxes, license value and other sector contributions to the national budget.
- d. Provide technical and demographic guidance to the GoL in determining new entrants to the sector.
- e. Provide technical information on network service types, new technologies and availability of scarce resources.
- f. Ensure that the market has the appropriate mix of telecommunication technologies and communication services in each market category.
- g. Ensure that the sector supports all the deliverables of the poverty reduction strategy.
- h. Manage and maintain frequency allocations and assignments amongst spectrum users such as the service providers. This will ensure that frequency assignments are properly shared where feasible and harmful interference is avoided.
- i. Exclusively administer Liberia's domain, the use of dot.lr and issue guidelines and regulations to safeguard its usage
- j. Establish quality of service guidelines, monitor network performance of operators and ensure they meet appropriate performance standards.
- k. Ensure compliance with the Telecommunications Act of 2007, LTA's Regulations, Rules and Orders.
- l. Represent the government and head delegations at local and international conferences, meetings, forums and seminars relating to Telecommunications and ICT regulatory issues.

2.3 THE NATIONAL OPERATOR (LTC / Libtelco)

The Liberia Telecommunications Corporation (LTC / Libtelco) has been designated the National Operator by the Telecommunications Act of 2007.



Figure-3: Central Office of Libtelco, 18th St., Sinkor, Monrovia

The policy recognizes that LTC was originally chartered through legislation to provide telecommunications services such as data and video communications and high-speed broadband networks services. The national operator shall also be required to provide secured government network, including e-services.

This policy acknowledges SCHEDULE A of the Telecommunications ACT of 2007, which grants LTC the permission to establish and operate all manner of telecommunications facilities; and to provide telecommunication services, as provided for in one or more licenses issued by the LTA.

The long-term goal of the Government of Liberia (GoL) is to promote greater private sector ownership and control of the public telecommunications facilities and services in the country. By 2011, GoL intends to divest part or its entire stake in LTC. The terms and conditions of LTC's divestment and privatization shall be determined by GoL. The procedure for privatizing LTC must protect the consumer and take into account the public interest.

The Policy requires Libtelco to get the concurrence of, and work in harmony with the Ministry of Posts and Telecommunications (MP&T) and the Liberia Telecommunications Authority (LTA) before embarking on any major sector undertaking that may have implication on policy and regulation – pending the elaboration of the National Operator's responsibilities and functions pursuant to the Telecommunications Act 2007.

National Operator

The current policy, which supports GoL's Poverty Reduction Strategy (PRS), defines the National Operator within the following objectives, which shall be implemented in accordance with regulations and guidelines issued by the LTA:

- a. Support the Poverty Reduction Strategy.
- b. Provide networks to support universal access when called upon by the LTA.
- c. Pay the appropriate government taxes on goods sold and employees' income.
- d. Pay all regulatory fees and charges as well as contribute to the Universal Access Fund.
- e. Report to the Ministry of Finance any and all annual capital gains and/or net earnings from participation in any of the competitive markets.
- f. Support the provision of broadband communications systems and networks.
- g. Support the provision of international gateway network.
- h. Develop transmission networks using terrestrial technologies like fiber optics and cable systems.
- i. Develop, deploy and maintain national land based infrastructure, in addition to such infrastructure developed, deployed and maintained by other operators.
- j. Provide high speed data transmission and real time information sharing communication systems.
- k. Ensure government networks are secure and reliable.

2.3.1 Fee Waivers and Duty Free

The Policy acknowledges that GoL holds one hundred percent (100%) equity shares in Libtelco. Therefore, as long as Libtelco remains a wholly-owned GoL enterprise, Libtelco shall be granted duty free and tax exempt privileges guided by the provisions stipulated in the Republic of Liberia tax law as it relates to State-Owned Enterprises and Public Corporations.

This Policy requires Libtelco to provide, *inter alia*, telecommunications services that promote socio-economic benefits and government efficiency programs as national obligations. The Policy also recognizes that consistent with Liberia's Strategy for the Resolution of Domestic Debt and Arrears, GoL may still owe Libtelco uncollected monies for goods and services.⁴ In consideration of the foregoing, LTA may issue an exemption order that grants a license to operate without payment for said license. Such exemption shall not apply to radio spectrum and telecommunications regulatory fees.

Regarding duty free privileges to which Libtelco is entitled, as a State-owned enterprise, those duty free privileges shall be rescinded or adjusted on a pro rata basis, if GoL sells or assigns all or part of its equity stake in Libtelco to private investors.

2.4 SERVICE PROVIDERS/ OPERATORS

Currently, the telecommunications sector in Liberia has five (5) Individual Licensed Operators, one National Operator and several Internet Service Providers. The policy encourages the LTA and market players to develop standardized processes that are based on consultations, public hearings and negotiations as stipulated in the Telecommunications ACT of 2007. The policy objectives are to liberalize the sector and:

- a. Open the telecommunications and ICT sector to private investment and competition.



Figure-4: Liberian business women using mobile phones to contact customers for their wares

⁴ Based on an audit conducted by UK-based firm Panel, Kerr, and Foster, Inc., (PKF) at the request of GoL in 2008.

- b. Provide availability, affordability and reliability of telecommunications and ICT products and services to the public.
- c. Offer modern technologies and variety of service types.
- d. Increase the value of the sector.
- e. Improve service and product delivery.
- f. Contribute to ICT literacy and human resource capacity building.
- g. Support the poverty reduction strategy (Pillar-4).

2.5 MARKET STRUCTURES

2.5.1 Operations & Services

The government recognizes that technology and the marketplace are changing and will continue to evolve in the future. The traditional market structure must also evolve with these changes to allow for flexibility in consumer choices, marketing options and new technologies.

The goal of this policy is to promote accessibility, cost-efficiency and best quality telecommunication operations and services.

- a. MOBILE TELECOMMUNICATION OPERATIONS:** The policy is to liberalize the market and support the licensing of other mobile operations. The strategy is to open the market and support the licensing of other operators without saturating the market, consistent with market analysis and international best practice. Licenses are required to provide wireless services, interconnect with other service providers and allow the provision of voice telephony, data transmission and video services.
- b. INTERNATIONAL TELECOMMUNICATION OPERATIONS:** The policy is to open the market to other operators for the provision of international traffic termination, which uses satellite technology and/or land-based networks (cable, fiber optics) to route traffic to destinations outside Liberia and terminate international calls in Liberia. The strategy is to support the licensing of up to six (6) licenses for facilities-based international gateway operations.
- c. FIXED TELECOMMUNICATION OPERATIONS:** The policy is to open the market and support the licensing of regional fixed facilities-based operations for the provision of land based and terrestrial telecommunications networks, which uses fiber optic, cables and wire lines to route traffic/calls between other carrier facilities and to end-users. Fixed licenses shall also be required to provide international call termination services.
- d. UNBUNDLED OPERATIONS:** The policy supports telecommunication public licenses to be issued based on service types and not technology. The policy recognizes the following service types – mobile, fixed wireless, fixed lines, international terminations, next generation platforms, Internet and VOIP to name a few. As advancements in modern technologies are introduced, the LTA and the policy-makers shall define the roles and standards of new service-types and technologies.

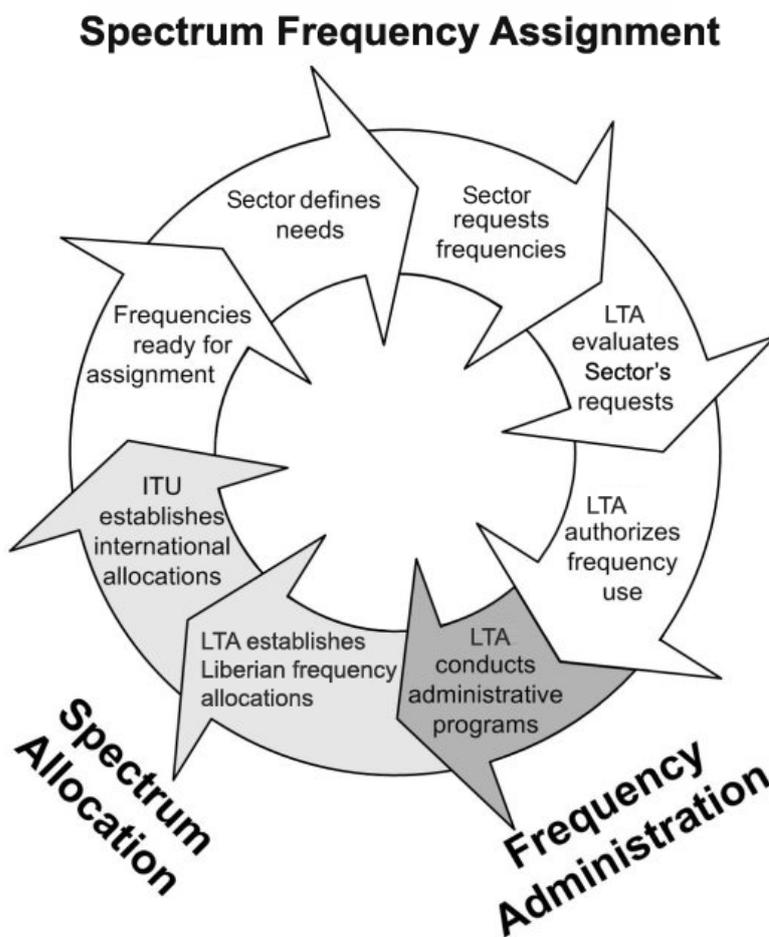
2.5.2 Spectrum & Frequency Management

The policy is to maximize returns in the utilization of spectrum resources for improvements in the telecommunications, broadcast, air navigation, marine, weather reporting and health (x-ray) equipments in the country. The Policy requires that the regulatory authority develop the Advanced Automated Spectrum Management System (ASMS) to enhance frequency management, planning, allocation and assignment;

The policy recognizes that spectrum usage falls within various categories and the LTA shall collaborate with related government agencies in establishing transparent procedures for the licensing of spectrum and frequencies. Below are the categories and related government agencies responsible for policy:

SERVICE TYPE	GOVERNMENT AGENCY
Telecommunications	Ministry of Post & Telecom
Broadcast	Ministry of Information
Air Navigation	Liberia Civil Aviation Authority
Marine	Bureau of Maritime Affairs
Wireless (X-Ray) Medical Equipments	Ministry of Health
Weather Report Equipment	Ministry of Transport

LTA is also that all by ITU such Rescue Industrial Medical other such specified regulations that purpose



required to ensure spectrums set aside as the Search and frequency, the Scientific and (ISM) Band and bands allocated for programs under ITU are dedicated for in Liberia.

Figure-5: Example of Spectrum Frequency Allocation Process

The LTA is also required to ensure that the comprehensive frequency planning and allocation appropriates an exclusive band for the use of Government free of interference, monitoring and other such practices as not to render the integrity of government communication vulnerable.

2.5.3 Granting Licenses

The policy recognizes the provision in the Act that promotes two types of licenses – Individual Licenses and Class Licenses. However, the policy supports further liberalization of licensing so that the practice of issuing detailed individual licenses to specific telecommunications service providers will be replaced by a general authorization regime. Under general authorizations, few, if any, conditions are included in a license issued to a specific service provider. Instead, regulatory conditions are generally established in rules or regulations that apply equally to all service providers of the same class (e.g. cellular mobile providers) or across the whole telecommunications industry. With increased liberalization, this policy recognizes that some regulators are also removing all authorization requirements for some telecommunications services. These service markets are then open to entry by any new service providers, without restriction.

The policy also encourages a technology-neutral environment for network investment and service provision, in order to best take advantage of convergence and new technologies in telecommunications and ICT, and in other sectors. This policy supports the transition of mobile and fixed licenses to universal licenses, recognizing the need for universal licenses in order to support the investment in networks based on 3G and other technologies in order to roll-out access to international connectivity to urban and rural users in Liberia on a cost effective basis.

- a- **INDIVIDUAL LICENSE** authorizes the operation of infrastructures that are incapable of providing infrastructure leasing service, but capable of connecting to a public network to provide services. Application service providers who wish to offer services using leased facilities will also be covered under this framework. Furthermore, all service providers that will require assignment of scarce resources will be in this category. Where the use of scarce resources would be required, the LTA shall exercise its regulatory authority over the allocation of such resources in connection with the issuance of licenses.
- b- **CLASS LICENSE** authorizes non-facility-based operators and non-public service providers to resell services; and for private networks to be dedicated to closed users. There shall be no limitations on the number of Class Licenses issued by the LTA for services subject to such authorization. The LTA may in certain instances introduce limits if it determines, consistent with this policy that additional licenses would not be in the public interest.
- c- **UNIVERSAL / UNIFIED LICENSE** authorizes the operation of a public network (irrespective of technology) that is capable of providing capacity service and offering voice, data and video services, which are made available to the general public for a fee.

2.5.4 Transparent Procurement Procedures

The policy supports the following transparent and procurement procedures in granting Individual Licenses. The LTA shall determine the application criteria, terms and conditions associated with granting Individual Licenses and frequency authorization. The policy supports any of the following transparent procedures:

- a. Public Tender
- b. Bidding
- c. Competitive Auctions

The entire transparent procurement procedure shall not exceed sixty (60) days. Once qualified applicants are selected, the procedure for concluding license agreements shall not exceed thirty (30) days.

2.5.5 Direct Applications Procedures

The policy shall promote shorter processing intervals for Class Licenses for applications for telecommunication networks and systems that address the following National Poverty Reduction strategy issues:

- a. Rural Telephony: the provision of rural telecommunication services.
- b. Broadcast Services: the provision of radio and television services.
- c. Internet Service Providers: the provision of public Internet access and VoIP services through “Tele-Centers” and “Internet Cafés”.
- d. Satellite Broadcast: the provision of satellite TV and radio operations.
- e. Private Networks: the provision of telecommunications and ICT services to private entities, public corporations and closed user groups.

The entire procedure of awarding Class Licenses or Authorization shall not exceed thirty (30) days.

2.5.6 Financial Obligations

The policy promotes national budgetary support through the collection of government taxes, business registration fees, application fees, license fees, spectrum/frequency fees, sector development levies, universal access contributions and international access charges to name a few. The LTA may issue Regulations, Orders or Rules to establish fee regimes that support government budgets, the operations of the LTA and the development of sector.

2.5.7 Investment Incentives

The GoL recognizes that substantial capital investments are required to procure and install telecommunications and ICT networks. The GoL is also aware of the profits and revenue from these investments. In support of investment incentives, the LTA shall assist and inform the National Investment Commission (NIC) and the Ministry of Finance (MoF) on duty free and tax break privileges

for telecommunications and ICT operators and products. The policy supports investment incentives for the following telecommunications and ICT services:

- a. **Universal Access Programs:** These are programs that support the deployment and installation of telecommunications and ICT networks using contributions from the Universal Access Funds. These privileges shall benefit service providers who undertake the development of telecommunications and ICT networks in designated universal access communities.
- b. **Basic Services Networks:** The National Poverty Reduction Strategy (PRS) promotes the modernization of the nation's educational and health systems. Investors, manufacturers and operators shall be encouraged through tax incentives to manufacture, supply and/or deploy ICT networks directly to nationwide educational, agricultural and health programs

2.5.8 National Backbone Infrastructure and Global Connectivity

The policy supports the development of a national telecommunications backbone, which requires major funding from the GoL and capital investments from the private sector. The procurement and shipping of network equipment and the implementation and installation of the infrastructure will require the GoL to review tax privileges and duty free programs for the completion of the project.

The Government of Liberia recognizes that broadband connectivity which provides large bandwidth, high speed and reliability, is essential for effectively connecting Liberia's people, institutions and places. As previously published by MP&T in local media, the Government of Liberia's development goals for the communications and telecommunications sector are to modernize networks and create added value through the effective utilization of ICTs that make use of wireless solutions, submarine and terrestrial cable systems, and national fiber optic infrastructure.

The MP&T, as the sector Ministry, in consultation with the LTA and other stakeholders, has designated broadband connectivity, through a variety of transmission platforms, as essential to enhance the growth and development of the ICT and telecommunications sector, both in the short and long term.

The MP&T is cognizant of the fact that resolving such capital-intensive infrastructural challenges requires a combination of sound and practical initiatives, including the development of public-private-partnership models and the creation of an appropriate regulatory framework that safeguards the policy objectives of the Liberian Government. These objectives are to ensure open access to broadband connectivity for our people, a liberalized environment without monopoly control, and non-discriminatory, affordable pricing to support development.

The Government of Liberia recognizes the tremendous opportunities presently available to provide broadband connectivity to Liberia through submarine fiber optic cable projects, which will provide alternative international gateway connectivity. In this regard, the MP&T encourages all major operators to work with the LTA to establish a public-private partnership venture that will lead to shared ownership in landing submarine fiber optic cables and constructing terrestrial networks. The MP&T shall promote the enabling legal and policy environment in support of this goal, which recognizes that current service providers with international gateway licenses may exercise the option to collectively or individually finance the investment(s) required to purchase, deploy, install and own submarine fiber optic cable systems to supplement their existing international gateways.

In conformity with its regulatory functions, the LTA shall play a crucial role in this process by spearheading consultations among willing parties to facilitate the formation of national consortia to achieve this national imperative of providing broadband connectivity to Liberia. The LTA shall also formulate the regulatory framework required for the implementation of this crucial policy objective that will guard against monopoly control of fiber optic facilities, as well as facilitate open access and ensure non-discriminatory and affordable pricing. Furthermore, the LTA shall evaluate the implementation of broadband projects to determine progress and challenges and submit appropriate reports and recommendations to the MP&T.

This Policy creates the enabling environment to improve global wireless connectivity, develop land-based networks and negotiate access to undersea fiber networks and all other such options. The MP&T is tasked with the responsibility to initiate policy discussions for the deployment of land based and undersea telecommunications infrastructures.

This Policy encourages partnership through consortia of players in a transparent way to help fund access to undersea cable and other such projects that will foster sector viability.

The LTA shall be responsible to ensure that every operator has fair access to facilities such as fiber optic cable for both national and global connectivity.



Figure-6: The Africa Coast to Europe Submarine Cable (ACE) Feeds Liberia’s National Backbone

PART III REGULATIONS

3.0

3.1 National Numbering Plan

The policy supports both an international and a domestic numbering plan, which is designed to develop customer identification and addressing mechanisms for telecommunications information. Currently, the national dialing plan is designed to identify the country, the information of the Service Provider or Operator and the customer.

The LTA is tasked with the responsibility to develop numbering schemes that ensure the identification of operators and customers in call processing. Each processed telecommunications call must have a numbering format for identification and billing purposes.

3.2 National Numbering Administration

The LTA shall develop, manage and implement the National Numbering Plan, taking into consideration the following:

- a. Designation of sufficient capacity to meet growth in demand for telephone services, taking into account the characteristics of available technologies; the forecast growth of population; the geographic distribution of demand; and the prospect of increasing telephone density, particularly in the more prosperous business communities;
- b. Designation of numbering capacity for the future introduction of services, which may be new to Liberia, but has been proved to be commercially successful in other countries;
- c. Spare numbering capacity in the form of codes and number ranges that are not associated with any known services and therefore potentially suitable for unforeseen expansion or the introduction of brand new services;
- d. Significance in the first few digits of national numbers to enable callers to recognize service characteristics and call charges, and for network operators to be able to route calls sufficiently;
- e. A neutral position in the allocation of numbering capacity, to support fair competition where multiple operators are competing to provide services to existing and new customers;
- f. Independent identification and association of codes and number-blocks with geographic areas and non geographic services, so that the Numbering Plan is not locked in to any structure that network operators use to provide services, nor to the names of particular exchanges.

3.3 Numbering Plan Designations

The International Telecommunications Union (ITU) has established +231 as the Country Code for Liberia. Prior to the existence of the LTA, the MP&T established “00” as the International Escape Codes. International ICT organizations have established Internet Protocol (IP) Addressing schemes. This policy

supports the LTA's structuring and management of the national numbering plans and IP addressing schemes for the following designations:

- a. Numbering Plans for Carriers providing Land Based Services
- b. Numbering Plans for Operators providing Mobile Services
- c. Numbering Plans for Regional Identification
- d. Numbering Plans for Emergency and Information Services
- e. Numbering Plans for Special Services
- f. Numbering Plans for Premium Rate Services
- g. Global IP and Internal IP Addressing Schemes (.lr domain names)
- h. Internet Exchange Point(s)

With advances in technologies, the LTA, from time to time, may establish additional numbering plan designations.

3.4 Interconnection Services

The policy supports the requirement that all service providers operating a telecommunications network and providing telecommunications services must provide interconnection, subject to negotiated commercial agreements. The LTA shall establish and administer the interconnection regime in a non-discriminatory and transparent manner. The LTA shall also promote fair competition for all operators, ensuring adequate quality of the service for the purpose of transmitting traffic between subscribers of different networks.

Operators may exercise the option to negotiate interconnection agreements among themselves on such terms and conditions as they may desire, so long as such terms are non-discriminatory to other market participants and consistent with the principles of this Policy. In the case where parties are unable to reach satisfactory interconnection agreements, through negotiations, the LTA shall intervene to determine interconnection terms, either through mediation or specific interconnection ruling.

The policy supports the LTA to establish general terms, conditions and methodologies that it will apply in reviewing interconnection proposals, including the basis for determining interconnection charges. These charges must be cost-oriented and based upon the unbundled cost of network elements required for interconnection.

Any operator determined by the LTA to be the Dominant Service Provider (under the Telecom Act) in an interconnection market is required to publish a Reference Interconnection Offer (RIO), indicating all conditions (price, technical, administrative, etc) of interconnection to their networks, which will be available to all potential interconnecting operators. The RIO and other provision of interconnection procedures must be approved by the LTA through Regulations, Orders or Rules.

All interconnection arrangements shall include formal service level agreements between the parties, which identify minimum quality of service standards that each party is obligated to meet in the provision of interconnection services, and the remedies and compensation terms for failure to meet such standards.

a. Network Equal Access

This Policy supports the notion that all customers shall be afforded equal access to all competing service providers in a market. This means that customers should have the opportunity to choose among the services of all competing providers, without cost penalties or unduly burdensome technical barriers. The cost of providing equal access will be shared on a non-discriminatory basis by all competitors.

b. Anti-Competitive Behaviors

The policy supports the authority of the LTA in determining the human and financial resources required in the effective application of competition policies. The objective of competition policy is the establishment of a fair, transparent and non-discriminatory telecommunications market environment. The policy supports the general framework for the functions and responsibilities of the LTA, and of licensed operators, in achieving effective competition. Based on the Telecommunications ACT of 2007 and this Policy, the LTA has the authority to define specific procedures, rules, regulations and administrative structure to ensure that competition policy is effective.

c. Dominant Service Providers

The LTA shall define regulations to establish dominant service providers and what constitutes Significant Market Power (SMP) based on market shares, control of infrastructure, technological advantages, absence of competition, privileged access to financial resources, bundling of services/products, economies of scale, scope of vertical and/or horizontal integration, distribution network(s) links with other markets and collusion issues, among other factors.

d. Tariffs

The policy recognizes the basic economic theory that prices for services are best set by the market where there is fair competition. Where there is weak competition or the presence of SMP, the LTA shall adopt methods and tariff regulations that are consistent with the Telecommunications Act of 2007 and international best practice, including, but not limited to, price cap regulation, rate-rebalancing and other forms of cost-based regulation. Tariffs for public telephone services shall be based on the duration of the call and the actual connection time.

The LTA shall implement procedures that establish official call duration and billing requirements. This Policy supports the requirement that a completed call must be billed to the actual second.

The tariffs and tariff related information filed and approved by the LTA shall be published and made available to the general public. The policy supports a consultative process between the LTA and the Operators before adopting any new methods of tariff regulations.

3.5 Quality of Service (QoS)

The LTA shall ensure that the telecommunications services of licensed operators are of adequate quality to meet the needs of users, and shall establish standards and regulations to monitor service quality.

Licensed and authorized operators will be required to submit periodic reports on their performance according to LTA determined standards, and the LTA will be empowered to verify these reports through independent investigation.

Consistent with the QoS standards and regulations established by the LTA for compliance by all service providers, all public telecommunications operators shall be required to establish service level agreements with their customers, which identify the minimum quality of service standards to which customers are entitled, and the remedies and compensation available when service falls below such standards.

The LTA shall establish Regulations, Rules and Orders requiring operators to respond appropriately to customer complaints and inquiries, and provide reasonable and convenient access to customer service representatives. The LTA shall also establish a Consumer Desk at the LTA that will be responsible to investigate customer complaints

The LTA shall publicize the Quality of Service performance of Operators on a region-by-region basis, and shall establish specific requirements for compensation and recourse where required standards are not met.

a. Consumer Affairs

The policy supports that the LTA is responsible for protecting consumers of telecommunications services from unfair and deceptive marketing practices, and from unwarranted use of private customer information. The LTA shall establish regulations for monitoring and preventing such behavior, including such penalties for operators who violate these standards as the legislature may authorize.

The LTA shall also establish formal complaint review procedures, and shall require all licensed and authorized telecommunications operators and services providers to establish their own procedures for responding to customer complaints. The LTA is also responsible to implement public awareness programs to inform customers of their rights and options, and to publicize its activities and invite public participation.

Service providers shall retain accurate records of all customer charges and invoices for a period of at least twelve (12) month\|s from the later of the date the charges were incurred or the billing date, and shall make those records available to the LTA upon request.

Where the LTA has a concern about a problem relating to billing practices, it may require service providers to publish information on billing systems or billing practices or to take such other steps relating to their billing systems or billing practices as the LTA may consider appropriate.

b. Public Safety

The national policy on public safety is for carriers and operators to provide emergency facilities within their networks to respond to individual and national crises. Among the public safety issues that this policy addresses are emergency calls to the local police; ambulance and medical facilities; domestic and child abuse centers and the local fire department.

The MP&T shall coordinate with the LTA and related government agencies to ensure that the safety of the general public is a priority. As stipulated in the Telecommunications ACT of 2007, during national emergencies, carriers and operators shall coordinate with designated government

agencies to provide basic communication facilities for government to better inform citizens and strategically manage the crisis.

The policy supports the responsibilities of the GoL to protect Liberian citizens and residents and provide relevant information for crisis and emergency situations. In cases of public disasters or national emergencies, the LTA Regulations, Rules and Orders shall require the service providers to comply with any directions relating to telecommunications services issued by the government ministry responsible for disaster coordination to alleviate problems faced by the public.

The LTA shall develop regulations for Operators to provide communication services that address medical emergencies and public security in all communities and localities. These emergency and security communication services shall be coordinated with the health facilities and police departments across the country.

c. SIM Card Registration

The Policy directs LTA to ensure that every SIM Card in use within Liberia is duly registered and that the Service Provider issuing the SIM Card shall have a registry reflecting such registration. Every SIM Card user or potential SIM Card user must present one of the following instruments of identification:

1. Voter's registration card
2. Driver's license
3. Valid ID Card
4. Passport (both Liberians and Aliens) where applicable.

LTA shall also institute remedial strategies to ensure that all SIM Cards issued prior to the promulgation of this policy meet this policy objective in line with enhancing national security to make individual users of services accountable for their actions.

3.6 National Emergency & Security

The basic telecommunication operations must ensure that our national security laws are not violated. Operators and international carriers shall assist the government on national security breaches and violations that are caused by transmission of information over their networks.

In the case of a national emergency or national security concerns, the GoL may invoke relevant provisions of the Liberian Constitution where the President of the Republic of Liberia assumes direct control of all telecommunications and communications services and networks.

National emergency and security concerns include war, economic sabotage or espionage operations. The LTA in collaboration with the appropriate national security agencies shall ensure that the public is properly informed and appropriate measures are communicated.

When it becomes necessary the MP&T, in collaboration with the LTA and all national security agencies, shall institute corrective policy measures to address national security threats and breaches emanating from transmission of information over telecommunications and ICT facilities. These corrective measures shall include limiting the number of international gateway networks in operation and mandating that operators and carriers install adequate facilities to monitor and track information on their networks in real time.

For purposes of this policy, national security threats and breaches fall under two (2) categories:

- a. **Subversive Activities:** When a person or persons with ill intentions utilize telecommunications and ICT networks to plan activities that will disrupt our peaceful way of life and threaten the political, social and commercial stability in the country.
- b. **Financial:** When service providers and operators do not report accurate information regarding revenue generating activities from their networks. Government taxes and economic assessments of the sector are based on revenue earned by market players. Where there is proof that inaccurate information is being submitted, the LTA may shut down the gateway in question and impose appropriate fines and or penalties against the offending operator.

3.7 Network and Equipment Type approvals

The policy support any and all approval procedures by the LTA to register and certify telecommunications and communication network equipments imported in Liberia. The policy urges LTA to:

- a. Further ensure that equipment so certified meets conventional or recommended international standards;
- b. Ensure equipment does not cause interference or harmful to the public;
- c. Provide manufacturer warranties and established guarantee from related government agencies (Ministry of Commerce, General Service Agency);
- d. Provide releases for network and subscriber equipments coming into the country.

3.8 Co-Location

The policy encourages and promotes the sharing of telecommunication infrastructures by operators including collocation to:

- a. Create network redundancy;
- b. Maximize services and prevent network outages;
- c. Reduce operational cost and ensure affordable services.



Figure-7: Co-location of equipment by Service Providers

The policy shall not allow building of infrastructure such as separate towers by each operator in a given area where an existing tower can co-host other operators. Infrastructure sharing can lower operational costs and as well consumer costs. LTA shall formulate regulation to save Monrovia and other such communities from becoming “tower communities.”

3.9 Rights-of-Way

The policy supports the use of public land and facilities to install telecommunications networks for services to the general public. The LTA shall develop procedures for operators to lease public property for the provision of telecommunications services. The LTA shall also assist operators, where necessary, to negotiate with appropriate government agencies or private owners for lease agreements on properties and rights of way.

3.10 Dispute Resolution

The policy supports the resolution of disputes as stipulated in the Telecommunications ACT of 2007 and any other administrative and/or constitutional laws of the Republic of Liberia.

PART IV

UNIVERSAL ACCESS

National Penetration and Global Connectivity

4.0

4.1 Market Penetration and Teledensity

The policy supports that all telecommunications and ICT operators commit in their license agreements to provide coverage and service across the country in such a way that coverage and competitive services are provided as uniformly as possible across the country. The objective is to promote market penetration in non universal access communities where competition is effective and successful financial activities are a reality.

In accordance with the Telecommunications ACT of 2007, the LTA shall establish specific obligations and responsibilities for all licensed telecommunications and ICT operators in Liberia, and ensure that advancement towards universal access and service goals is a common goal of all participants in the market.

In the licensing arrangement, the LTA in consultation with operators should identify commercially viable communities and ensure robust competition in each geographical coverage area of the country. The government's goal is to expand telecommunications and ICT market penetration to at fifty-five percent (55%) of the population by 2013.

4.2 Universal Access Policy

The policy is to ensure that service providers are encouraged to participate in the deployment of telecommunications and ICT networks in designated universal access communities. This policy supports the deployment of payphones and communication equipments in public places and community facilities. In the event that service providers are unwilling to participate, the national operator is mandated by the Telecommunications ACT of 2007 to utilize part of the universal access fund to provide the basic telecommunications and ICT services in these communities.

The government will promote universal access programs especially in educational facilities; community health centers; local government offices; tele-centers and Internet Cafés; and other public and private community centers. The objective of the policy is to install telecommunications and ICT networks in forty-five percent (45%) of universal access designated communities in Liberia by 2013.

4.3 Universal Service Policy

Universal Service is defined as telecommunications facilities and ICT services delivered to individual homes and business establishments in rural communities. Citizens in these communities shall be given the opportunity to purchase basic telephone, Internet and video services at affordable prices. In addition to private homes, these services shall be installed in educational and health facilities; government offices and community centers; and religious establishments and business centers

The successful implementation of the universal service programs will promote market penetration and the use of telecommunications and ICT services by individuals and private establishments in the rural areas.

4.4 Universal Access Fund (UAF)

The Universal Access Fund (UAF) shall be established to fund the deployment and installation of telecommunications and ICT networks in designated universal access communities. Financial

contribution to the UAF shall be provided by the GoL, all telecommunications and ICT Service Providers and domestic and international private organizations. An account at an approved commercial bank shall be established to house and distribute the funds for development of telecommunications and ICT networks to designated universal access communities.

All licensed telecommunications and ICT service providers shall be assessed UAF fees. The fee shall range from half of one percent (0.5%) to a maximum of two percent (2%) of the annual gross revenues of each licensed operator. The GoL shall make annual contributions to the fund through the national budget. The administrators of the fund shall encourage donations and contributions from local and international private organizations. Alternatives such as “pay or play” to fulfill universal access obligations shall also be considered.

All licensed operators shall be eligible to obtain financing from the UAF, based on rules and procedures established by the Universal Access Governing Board.

PART V

5.0 ICT GOVERNANCE STRUCTURES

ICT Policy, Strategies and E-Functions

The National ICT Policy shall stimulate the processes towards meeting the critical needs for investing in the social infrastructure to promote socio-economic development. It shall support ECOWAS ICT regional programs that seek to create competition, accessibility, equitability, transparency as well as safeguard the development of the sector. The ICT program also seeks to pursue the Millennium Development Goals (MDG) as well as other global deliverables.

5.1 Government and Global Deliverable Objectives: WSIS and MDG

ICT has been recognized as one of the critical tools to achieve national transformation and development process. Investing in education, health and other socio-economic development programs shall yield sustainable results using ICT as a vehicle towards achieving those objectives. ICT’s indispensable role in making World Summit on Information Society (WSIS) and Millennium Development Goals (MDG) a reality depends on national plan and programs.

5.2 Pursuing World Summit on Information Society (WSIS) as a Priority Objective

Achievement of the Liberia and World Summit Information Society goals are a critical priority. The GoL’s agenda to connect people, places and institutions is in support of World Summit on Information Society objectives, WSIS, seeks to bridge the digital divide and accelerate access to services. These include prioritizing our national programs to:

- a. Connect towns and villages with ICT and establish community access points.
- b. Connect public libraries, culture centers, museums, post offices and archives with ICT.
- c. Connect hospitals and health centers with ICT.
- d. Connect all central and local government departments and establish websites.
- e. Adapt all primary and secondary schools curriculum to meet global objectives.
- f. Meet ECOWAS standard access criteria of 500 persons per “bundled service” in member countries.

The GoL shall facilitate the achievement of the above objectives by creating an enabling environment of lower or reduced import taxes on IT-related equipment such as computers, accessories and peripheral equipment needed for schools, health centers, community based organizations, et al.

5.3 Pursuing Millennium Development Goals (MDG) as a Priority Objective

The GoL shall employ ICT as an effective tool to help realize Millennium Development Goal objectives. ICT shall also play a key role in achieving Millennium Development Goal in Liberia.

These goals are to:

- a. eradicate extreme hunger and poverty;
- b. achieve universal primary education;
- c. promote gender equality and empower women;
- d. reduce child mortality;
- e. improve maternal health;
- f. combat HIV/AIDS, malaria and other diseases;
- g. ensure environmental sustainability;
- h. develop global partnerships for development;

5.4 National ICT Governing Board

This policy hereby establishes the National ICT Governing Board to oversee, monitor and evaluate the operations and implementation of ICT objectives and programs. The National ICT Governing Board shall set the mandate and programs of the ICT sector. The ICT Governing Board shall be comprised of the members of the ICT for Development (ICT4D) Steering Committee, which includes members from GoL Ministries; the LTA, mobile, fixed and ISP operators and other sector stakeholders. The existing ICT4D Steering Committee comprising of senior government officials and representatives from all sectors of the economy (civil society, NGOs, private sector and others) shall become the National ICT Governing Board.

5.5 ICT Champions and the CIO Governing Council

The President of Liberia shall assume the leadership of the National ICT Champion network. All heads of public institutions such as Ministries, Agencies and Academic Institutions shall play equally supporting roles in their various institutions as local ICT Champions to promote the usage of ICT in Government. As such, the executive line ministries shall nominate a champion from each ministry who will become a part of the CIO Governing Council once the CIO Regime is established.

The CIO Governing Council shall be responsible for interpreting the vision of the ICT Governing Board which represents the vision of the country. Its membership shall include representatives from all Ministries, the LTA, Public Agencies and mobile, fixed and ISP operators. The National CIO Governing Council will be headed by the Vice Chairman of the ICT Governing Board.

All stakeholders including government Ministries and agencies shall ensure budgetary allotment to support ICT objectives and programs in their respective organizations.

5.7 Chief Information Officer (CIO)

The ICT Government Board shall commission a central implementing body called the Chief Information Office, (CIO). It shall be housed at the Ministry of Posts & Telecommunications. The CIO shall comprise

core staff to include systems engineers, technicians and several policy staff. It shall coordinate with every ICT Unit across Ministries and agencies to help GoL determine how ICT can help transform government processes, by making it efficient, transparent and citizen-centric.



Figure-9: Bridging the Digital Divide by accessing mobile communications

5.7.1 Functions of the CIO

The CIO shall be responsible for formulating programs in pursuit of the vision of the ICT Governing Board. This shall include:

1. Setting standards for computer hardware and software within government, i.e approved operating system(s), type and version of office tools and type(s) of network equipment.
2. Providing adequately protected Internet and email access for use by government offices and employees as well as intra-government ministries;
3. Creating an efficient and cost effective intra-government communications and information sharing system (ICT-enabled tools for sharing, collaborating on and storing documents and electronic transactions
4. Setting and ensuring compliance with basic computer security procedures (to prevent computer viruses hampering the use of ICT by the government);
5. Defining a government enterprise architecture across ministries that includes
 - Where software applications need to be integrated or have interfaces; which software applications will be shared across the government (e.g., those related to human resources and payroll); which ministries are responsible for which data bases; and how databases will be defined (e.g., to ensure that individuals and businesses are consistently identified across ministries);
 - Ensuring that security, confidentiality and risks are well assessed, as well as putting in place rules with the appropriate strategies to enforce them;

- Managing the procurement processes related to ICT to not fall behind technologically because of a slow process; not stifle innovation; and how to use technology to help strengthen Liberia's own small ICT sector;
- Establishing a transparent governance process related to the use of ICT that will balance decentralized actions with the need to manage standards and rules centrally;
- Strengthening transparency; improve citizen participation in government and support the growth of Liberia's businesses – instilling a strong focus on customer satisfaction regardless of who the customer is (e.g., an internal government unit, a citizen, resident or business);
- Setting performance measures to enable the GoL – and citizens – to monitor how well the GoL is doing in using ICT to achieve its Poverty Reduction Strategy;
- Building the capacity of GoL's employees to use ICT effectively and also provide them adequate compensation and incentives.

5.8 Cyber Security

Repression of offences related to cyber criminality is a challenge every responsible government faces today. The Budapest Convention which established the enormity of the problem has set some indicators to help member countries of the UN create a healthy cyber environment. Regarding the need to network in keeping our nation safe from being a haven for cyber criminal enterprise, Liberia shall collaborate with other member states of ECOWAS and other well-meaning countries to pool expertise as well as share experiences in creating a network to safeguard cyber security.

Cyber criminality as a new domain threatening digital-based economies requires serious attention. Providing the framework to address conventional offences such as theft, swindle, the receiving of stolen goods, blackmail and other damages through the use of the internet shall be a priority in this regard. The CIO shall play key roles in designing programs to combat cybercrimes.



Figure-10: A representation of Cyber Security

5.9 Cyber Crimes

The national ICT Policy recognizes the urgent need to safeguard the ICT Sector from cybercrimes. Cybercrime constitutes a real threat to the security of computer networking and the development of the information society in Liberia and the sub region. Using other unauthorized means to extort money from banks, hacking into other people emails are examples of cybercrimes. This policy, based on the ECOWAS Directives associated with the cybercrime repression framework approved by ECOWAS ICT Ministers, presents broad guidelines of strategy for the repression and prevention of cybercrime in Liberia as it is in other EOWAS member countries.

The policy of the GoL is to incorporate the ECOWAS Directives related to cybercrime into the Criminal Code of Liberia. These provisions include crimes involving fraud; the use of IT equipment to commit offences; prohibition of child pornography; hate messages, threats and insults; crimes against humanity; and new intangible media and national defense. (*Note:* Appendix A to this Policy provides detailed descriptions of these crimes).

5.9.1 Method of Proof

Electronic documents shall be accepted as proof to establish an offence committed through electronic transactions, provided the person from whom they emanate can be identified and that they are kept in such conditions as to guarantee their integrity.

5.9.2 E-Legislation

GOL shall enact electronic legislation (e-Legislation) in line with the following core values to protect the integrity of all electronic transactions in Liberia. Specifics described above constitute offences related to ICT equipment, programs and services, among others.

5.10 Internet Service Providers

The policy is to impose no limitations on the entry, provision and operations of Internet services. To promote and encourage Internet networks, these services are subject to minimal financial obligations and regulatory oversight. Internet Service Providers (ISPs) are required to contribute to the national Universal Access Fund (UAF).

ISPs must provide public Internet access services and demonstrate continued public operations in order to retain their licenses. The LTA shall, through appropriate Orders, Rules or Regulations, ensure that ISPs provide Internet access services to customers at affordable prices within this policy period.

ISPs shall be encouraged to provide legal VoIP services under their licenses in order to expand access by Liberians to low-cost methods of communicating with each other, as well as with relatives and other people and businesses inside and outside Liberia.

5.10.1 Internet Telecenters

Public Internet access points, such as “Internet Cafés” and “Telecenters” shall apply to the LTA for Class Licenses; however, such application shall not require payment of fees. Such license may be revoked by the LTA for violation of required standards of services, or unauthorized provision of bypass (VoIP) services, as the intent of this policy is to encourage the legal provision of VoIP services in Liberia. Public Internet providers are subject to inspection to verify compliance.

5.10.2 Electronic Data Services

The policy is to encourage operators in a liberalized sector to provide systems and networks that support electronic data application services like e-government, e-business, e-commerce, e-agriculture, e-health, e-security, e-learning and e-banking to name a few.

The policy mandates that by 2013, government institutions with related functions interface with each other using communication systems that provide electronic data sharing as well as access to the information highway.

5.11 E-Services

The Government of Liberia has a vision to create a knowledge based society by using Information and Communications Technology (ICT) in all aspects of development and governance. Pioneering efforts will be made through the National ICT Policy mechanism to ensure the benefits of ICT reach the citizens - urban and rural, rich and poor, literate and illiterate and all residents. The Government is conscious of the dangers of the 'digital divide', and will make special provisions for reaching the 'information have-nots'.

5.11.1. E-Services Portal

Looking at 'service' from the citizens' point of view, the GoL will seek to redefine citizen services through e-Services portals using state-of-the-art technologies which will be first launched as a pilot project in one county and will be rolled out nationwide over a period of time. It will offer an integrated approach: integrating GoL ministries at the national and county levels, integration of services like Government-to-Citizen (G2C) and Business-to-Citizen (B2C), focusing on reliability, accountability, transparency, and scalability.

5.11.2 Salient Features of e-Services Vision

E-Services will offer a wide spectrum of citizen-friendly services that will save citizens the bother of running around to various governmental departments. Typical e-payments would cover the following types of transactions: paying utility bills such as electricity bills, water and sewerage bills, telephone bills, property tax, sales tax, etc. Over a period of time, the system can grow and provide other additional services to include registration of births and deaths, issuance of birth/death certificates, licensing and license renewal, medical permits, drug licenses, as well as the issuance and renewal of trade licenses.

5.11.3 E-Procurement

GoL shall use e-Procurement (as part of E-Government) as one of the vehicles to achieve its PRS objectives through good governance by establishing, for example, a Simple, Moral, Accountable, Responsive and Transparent (SMART) Government regime. Towards this end, GoL intends to implement e-Procurement across key ministries and agencies responsible for procurement of goods and services.

E-Procurement is the purchasing of goods and services using the internet. It automates and integrates the buyer and supplier (seller) processes by leveraging the capabilities of the Internet. It automates the complete procurement process right from sourcing to purchase order, invoicing and electronic payment. With regards to tenders, it automates the following processes:

- a. Requisition creation and approval.
- b. Cost estimation
- c. Tender creation, approval and tender publishing.

- d. Issue of tender announcements.
- e. Sale of tender documents.
- f. Submission of bids by suppliers and contractors.
- g. Modification of bids by suppliers and contractors.
- h. Bid status tracking by suppliers and contractors.
- i. Technical evaluation.
- j. Commercial evaluation.
- k. Award of contract.

Using e-Procurement, the concerned ministry will develop a Request for Expression of Interest (REOI) inviting tenders to be published on the e-Procurement “Marketplace” for suppliers to respond.

The suppliers will view the tender and if interested, they can purchase/download the tender schedule document by paying the tender fee either electronically through the Internet or manually and submit their bids online. The suppliers will scan the documents and certificates that they are required to submit along with their bids and upload the scanned copies as part of their bids. The procurement department will, at the specified date and time, open the technical bids of all the suppliers and evaluate them in keeping with the regulations of the Public Procurement and Concessions Commission (PPCC). Subsequently, the commercial bids of the technically qualified suppliers shall be opened for evaluation. After the commercial evaluation, the contract will be awarded to the successful supplier. At every stage of the tender, the tender initiator, approvers and the suppliers are informed about the status of the tender through email notifications and the tender status bar.

5.12 E-Government

Electronic Government (e-government) services improves access to knowledge of Government services as well as provide sa vehicle to consolidate peace and strengthen democracy. Article 15c of the 1986 Liberian Constitution provides that there shall be no limitation to the public’s right to be informed about the activities of government and its functionaries. E-government programs under this policy shall seek to achieve that objective.

A comprehensive telecommunications and ICT program as articulated in the Poverty Reduction Strategy (PRS) document provides solution to some of the problems that retard national development.

The CIO shall ensure that e-government applications adequately delivers government-related information and services to the public through the use of ICT. These services shall include various administrative application forms;\ as well as information pertaining to national identification cards, passports, driver licenses, birth certificates, death certificates, marriage certificates, and voter registration cards to name a few.

E-government services will have links that the public, interested institutions and individuals will follow in accessing information or sharing information about government and its services.

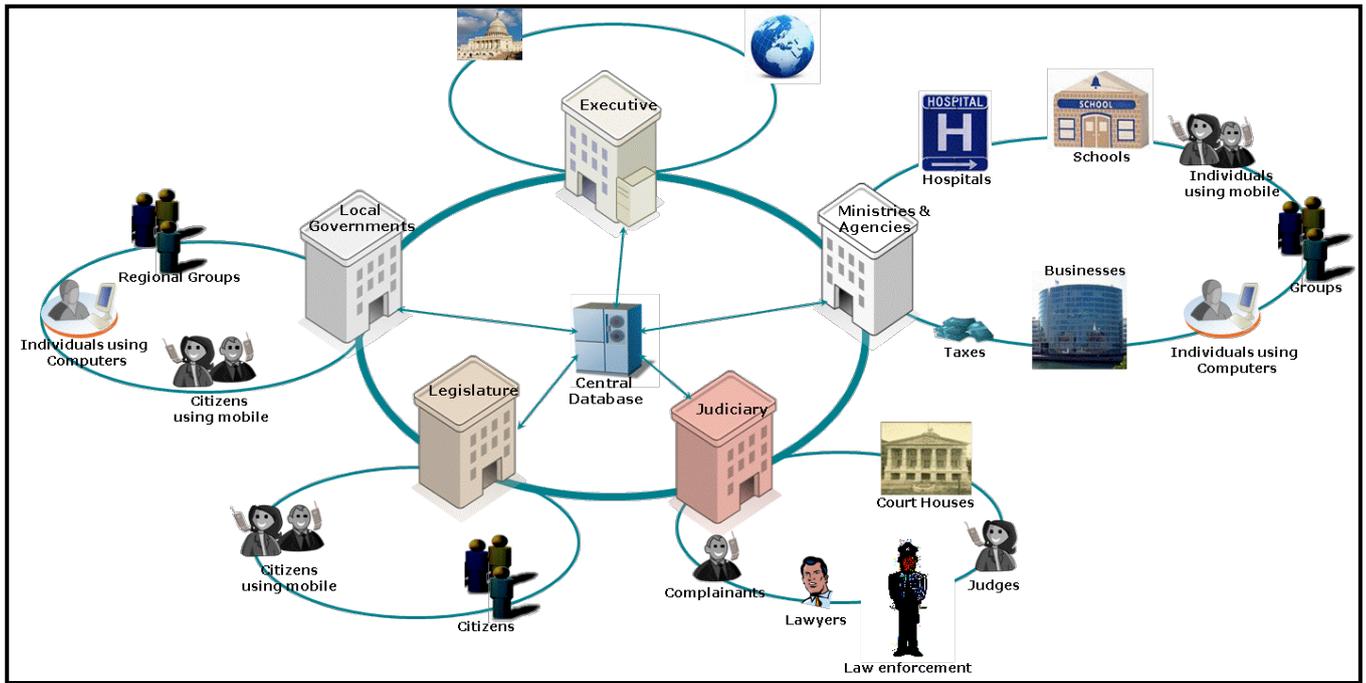


Figure-11: High level view of E-Government

While the policy mandates all government institutions to adopt an interactive web presence, the following sites are some active links to learn about GoL programs and other relevant information:

- Ministry of State for Presidential Affairs: www.emansion.gov.lr;
- Ministry of Planning and Economics Affairs: www.mopea.gov.lr
- Ministry of Posts & Telecommunications: www.mopt.gov.lr
- Ministry of Finance: www.mof.gov.lr
- National Social Security & Welfare Corporation: www.nasscorp.org.lr
- Liberia Telecommunications Authority: www.lta.gov.lr
- General Auditing Commission: www.gacliberia.com



Figure-12: Participants at ICT Consultation Forum at Thinkers Village

5.12.1 E-Commerce

Electronic commerce (e-commerce) offers tremendous growth opportunities for businesses in Liberia. E-Commerce enables local businesses to access potential markets throughout the world. It also provides information about regulatory procedures and government requirements for local and international businesses, thereby lowering overhead and marketing costs and reducing barriers to entry for commercial organizations. The e-commerce strategy is designed to:

- a. Review and when necessary develop new laws and regulations to govern e-commerce and trade at national, regional and international levels;
- b. Cultivate a culture of e-commerce in the country, which supports e-business transactions;
- c. Promote affordable access to ICT products and services;
- d. Educate all stakeholders about the benefits and risks associated with e-commerce;
- e. Encourage and support the creation of a national association of e-commerce users.

5.12.2 E-Health

A healthy and well-developed human resources base is important to the success of the National Poverty Reduction Strategy (PRS). The equitable distribution of health resources and strengthening of health institutions ensures efficient and effective service delivery. The GoL is committed to e-health strategies that will save lives, strengthen health institutions, improve access to health facilities and reduce the cost of health care services. The e-health strategy is formulated to achieve the following:

- a. Provide an effective and cost-efficient means for distributing health and disease prevention information to the public;
- b. Build a health network that enables institutions and individuals to exchange electronic records, share information and deliver quality services in both urban and rural areas;
- c. Assist health care workers by improving health care administration and management;
- d. Improve the performance of health care facilities through the deployment of Health Management Systems;
- e. Use electronic systems to ensure an efficient and standardized process for recording patient information;
- f. Improve accessibility to medical research, information sharing and training through on-line educational programs and applications;
- g. Incorporate ICT training as part of the core curricula for health care professionals;
- h. Promote the development of telemedicine applications so as to improve accessibility and reduce the cost of health care delivery and services in the country.

5.12.3 E-Agriculture

The GoL has identified agricultural productivity and food security as one of the major pillars of the National Poverty Reduction Strategy (PRS). In this connection the GoL recognizes that ICTs have the potential to revolutionize the management of the agriculture sector and improve food security. As such, the GoL is committed to improving information sharing flows between farmers, consumers, and agriculturists, which will lead to higher crop yields; production that is more responsive to consumer needs; and greater market access. ICTs can also be used to improve crop planning as well as the

following: monitoring and forecasting production yields; tracking and locating livestock throughout the country; create a database to register livestock levels and prevent theft; and control the spread of diseases. The national e-agriculture strategy is to accomplish the following:

- a. Computerize all records related to agricultural management;
- b. Create an on-line agricultural information system to provide strategic information on agro-technologies and techniques, weather forecasting, pricing and marketing information;
- c. Work with the private sector to find a cost-effective means of meeting the communication needs of the sector;
- d. Develop and maintain a nation-wide geographical information system to monitor agricultural land use and manage natural resources at national and district levels;
- e. Encourage farmers and agriculturalist to conduct transactions of their products on the Internet;
- f. Link rural agricultural producers to markets.
- g. Monitor the sustainable utilization of natural resources in agriculture production

5.12.4 E-Forestry

E-Forestry is the showcasing of national forestry programs and the dissemination of information electronically regarding the specific species of plants and animals located within the Liberian landscape as well as the identification of their location under a holistic national policy. Such programs shall not be limited to cataloguing how endangered species must be protected but it shall also provide developments of all kinds about the Liberian Forestry Sector.

5.12.5 E-Education

The GoL recognizes the importance of education in alleviating poverty. Since 2006, investments in education and human resource development have been a major priority of the Poverty Reduction Strategy (PRS). The Liberian Government is committed to a comprehensive program of rapid deployment, utilization and exploitation of ICTs within the formal educational system as well as vocational institutions. The national e-education strategy aims to:

- a. Encourage all educational institutions to invest in computers and to connect to the Internet;
- b. Promote electronic distance learning, training and virtual learning systems to compliment and supplement campus-based education and training systems;
- c. Develop ICT curricula for all levels of the educational system;
- d. Work with the private sector to create affordable packages and schemes under which students, teachers and educational institutions can afford ICT products and services;
- e. Develop standards for the certification of ICT professionals;
- f. Encourage public and private sector apprenticeship programs, internship, co-opts and work-study programs in ICT;
- g. Encourage the private sector in its delivery of on-the-job ICT training and

- re-training programs;
- h. Improve access to e-learning to people of disabilities.

5.12.6 E-Security

The nation's security in terms of border security, policing, intelligence, military and criminal rehabilitation is integral to the National Poverty Reduction strategy. The objective of the security sector is to improve the systems that gather, document and share information; The GoL in collaboration with its international partners are committed to promote information management systems that will track criminals and criminal activities; share information amongst security related agencies; document border crossing activities; and ensure that intelligence community gathers information are in real-time. The national e-security strategy seeks to:

- a. Deploy ICT systems in all security related agencies;
- b. Develop ICT training programs for security professional;
- c. Encourage information sharing amongst security agencies;
- d. Install ICT and information management systems in the judicial and court systems.

5.13 Gender, Youth and People with Disabilities

The Government of Liberia is committed to deploying ICT as tools in the process of ensuring gender equality, empowering and recognizing women and youth in the implementation of the Poverty Reduction Strategy (PRS) and the development process. It can be used to reduce inequalities in gender and to also improve the lives of the disabled with the necessary technologies that can enable them to communicate more effectively with the world. It also helps the physically immobilized to study and work from home through the use of the internet.

The objective is to promote gender equality in areas of education, employment, land ownership and other social benefits. The national strategy is to:

- a. Develop ICT training and awareness programs targeted at youth and women;
- b. Include a gender perspective in the development of ICT applications;
- c. Make access to ICT education, training and literacy equitable at all institutions of learning.
- d. Introduce innovative ICT programs to support, facilitate and encourage the private sector and development partners to sponsor rehabilitation programs for challenged individuals.

Figure-13: New generation of students accessing information to enhance learning

PART VI MONITORING AND EVALUATION

6.0

6.1 Universal Access Governing Board

The oversight responsibility of the national Universal Access Program shall be delegated to a Governing Board established by the Ministry of Posts and Telecommunications. The Ministry of Posts and Telecommunications shall strengthen its telecommunications and technical department to monitor the successful implementation of the telecommunication objectives. The functions of the Universal Access Governing Board includes but are not limited to:

- a. Establishing performance indicators that will measure the effectiveness of ICT programs and initiatives;
- b. Establishing rules and procedures for determining which operator(s) shall receive financing from the Universal Access Funds (UAF);
- c. Setting standards to ensure project accountability and transparency;
- d. Ensuring effective project management for all regional ICT initiatives and projects;
- e. Approving funding and disbursement for the development of universal access communities;
- f. Ensuring the financial management of the universal access “Escrow” account in accordance with PART V; SECTION 23 (2) (3) of the Telecommunications ACT of 2007

6.2 Universal Access Governing Board Composition

The governing board shall consist of five (5) members:

- a. The Ministry of Posts and Telecommunications who shall serve as Chairman;
- b. The Liberia Telecommunications Authority who shall serve as Secretary;
- c. The Ministry of Internal Affairs responsible for county development projects;
- d. A Sector Representative
- e. The Liberia Chamber of Commerce.

6.3 Universal Access Implementation Committee

The installation of telecommunication networks in designated universal access communities shall be delegated to an implementation committee headed by the Liberia Telecommunications Authority (LTA) and consisting of all Mobile Service Providers; and the National Operator. The functions of the implementation committee are to:

- a. Identify communities for installation of telecommunication networks;
- b. Provide technical information and make recommendations to the Universal Access Governing Board for funding;
- c. Monitor the installation and maintenance of telecommunication networks in Universal Access communities.
- d. **Conducting periodic surveys to monitor the implementation process;**

- e. Evaluating the impact of telecommunication policy on the growth of the national economy;
- f. Reviewing technical and statistical reports for potential universal access communities;

6.4 Program Management Office (PMO)

The Ministry of Posts & Telecommunications shall take proactive leadership in establishing a Program Management Office (PMO) in the Department of Technical Services to monitor, evaluate, and supervise the implementation of programs designated under this policy. The PMO shall, in consultation with various key actors, assign timeline to programs across the telecommunication and the ICT Sector. The PMO shall be staffed with professionals with proven capacity on e-government, e-health, e-education and other e-services. The Ministry shall collaborate with developmental partners to attract people with the requisite skills to take over the responsibilities of said office. One of such areas to seek funding to staff the unit is the Senior Executive Service, SES.

6.5 Stakeholders' Annual Forum

The National ICT Governing Board shall host an annual Stakeholders' Forum with service providers, operators, users, software vendors, equipment suppliers, public and private institutions. The forum shall address current challenges in the sector; issues surrounding new technologies; and consumer related developments.



DEFINITIONS

Accessibility: Ability to access information and services by minimizing barriers of distance and cost.

ACT: Telecommunications ACT of 2007.

Anti-Competitive Behavior: To create unfair market practices by promoting monopoly in the provision of telecommunication services in the sector. (*Note: Unless stipulated in government policies in reference to national security or validation of revenue for tax purposes, the LTA shall ensure that licensees comply with the anti-competitive laws pursuant to the Telecommunications Regulations of 2007 and the Telecommunications ACT of 2007*).

Authentication - A security measure designed to verify an individual's authorization to access computer or security information.

Authority: As used in this document, means the Liberia Telecommunications Authority.

Authorized Frequency: Spectrum frequency assigned to a company or corporation by the Liberia Telecommunications Authority (LTA).

Basic Telecommunications Service: Services offered to subscribers that provide a telephone connection to place calls or receive calls from other telecommunications carriers or persons.

Botnet (also zombies) - A collection of computers subject to centralized remote control by an outside party, usually without the knowledge of the owners, using surreptitiously installed software robots. The robots are spread by trojan horses and viruses. The botnets can be used to launch denial-of-service attacks and transmit spam.

Broadband: A band with a high range of frequency, normally used as synonymous with high-speed connection.

Broadcasting Service: Transmission of radio or video programming to the public on a free, pay, subscription or other basis, whether by cable television, terrestrial or satellite means, or by any other means of telecommunications.

Call Completion Rate: Ratio of successfully completed calls to the total number of attempted calls.

Calling Line Identity: Information generated by a telecommunications system that identifies the calling number and forwards that information through that telecommunications network to a receiving telecommunications system.

CATs - Small FBI Cyber Action Teams made up of computer analysts, forensic investigators and malicious-code experts ready to travel anywhere in the world where a cyber intrusion occurred.

CDMA: Code Division Multiple Access - a technology that uses a spread spectrum technique that allows multiple users to use a single channel to communicate, it offers third generation enhanced voice, data and video transmission services.

Circuit: Physical connection or path of channels or conductors and equipment between two given points through which an electric current may be established.

CLASS License: License issued for a defined type of service (e.g. ISPs, GSM, Radio, VSAT, etc.).

Commission: As used in this document, the Governing body of the Liberia Telecommunications Authority (LTA) under Part 111, Section 9 of the Telecommunications Act of 2007.

Connectivity: Two or more devices/entities being linked or connected by means of some technology.

Cyber crimes: Using Computer and internet to intentionally commit an illegal act.

Cyberspace - An environment in which digitized information is distributed on networks of computers.

Cybersecurity - Measures taken to protect computers or critical infrastructure, although some experts suggest that it is about protecting everything of value.

Cyber warfare - Using computers and the Internet to attack others via their computer systems. Targets may include military computer networks, power grids, banks, and government and media Web sites. Most often the goal is to disrupt the functioning of the target system.

Cyber warriors - Military specialists, law enforcement officials, computer forensics experts and civil engineers who defend national and economic security assets.

Denial-of-service attack - Flooding the networks or servers of individuals or organizations with false data requests so they are unable to respond to requests from legitimate users.

Development Corridors: Study conducted by Ministry of Planning and Economic Affairs (MPEA) to pinpoint areas of economic growth opportunities for Liberia under the different sectors of the economy.

Dominant Service Provider: operator(s) designated to have significant market power or otherwise to be dominant in one or more telecommunications service markets pursuant to the Telecommunications ACT of 2007. Major Telecommunications Systems Provider or licensee with 51% of market share in a particular service type shall be declared by the Commission in its publication to be a dominant service provider.

ECOWAS: Economics Community of West African States.

Encryption - A method of protecting information by transforming it using a cipher so only those who have the key can read it.

Fiber Optics: The technique of transmitting light through long, thin, flexible glass fibers, plastic or other transparent materials.

Fixed Service: Service of radio or other communication conducted between specified fixed points.

Gateway: A point of entrance and exit to another system, such as the connection point between a local area network and an external communication network (WAN, Internet, etc.).

GSM: Global System for Mobile Communications is the most popular standard for mobile telecommunications technology used widely in most continents.

Hacker - A person with special expertise in computer systems and software. A hacker who attempts to gain unauthorized access to computer systems is a "cracker."

Hactivist - An individual who breaches Web sites or secured communications systems to deliver political messages, including those related to foreign policy, or propaganda. It has been described by Naval Postgraduate School Professor Dorothy Denning as "the marriage of hacking and activism."

Identity management - A method of validating a person's identity when he/she tries to access a network.

Incident management - Executing a defensive response when a network's security is threatened.

Interconnection Agreement: Agreement between interconnect provider and an interconnect operator in relation to the interconnection of their telecommunication systems.

ICT: Information and Communications Technology.

ISP: Internet Service Provider.

ITU: International Telecommunications Union, headquartered in Geneva, Switzerland.

Leased Line: Dedicated telecommunications connection for exclusive use of a customer.

Liberia: Republic of Liberia.

Liberia Telecommunications Authority (or LTA): Regulatory authority established for the telecommunications industry in the Republic of Liberia and empowered by the Telecommunications ACT of 2007 to regulate the telecom sector.

License: Individual license or a “CLASS” License issued pursuant to the Telecommunications ACT of 2007 and the Telecommunications Regulations of 2007.

License: Authorization for the operation of a telecommunications network or provision of a telecommunications service.

Malicious code (also malware) - Any code that can be used to attack a computer by spreading viruses, crashing networks, gathering intelligence, corrupting data, distributing misinformation and interfering with military or civilian operations including navigation, transportation, logistics, communications and command and control functions.

National Operator: Refers to the Liberia Telecommunications Company (Libtelco).

National Policy Strategy: National Poverty Reduction Strategy (PRS) to revitalize the economy, enhance national security, strengthen governance and the rule of law, and rehabilitate infrastructure and delivery of basic services, reduce poverty and contribute to economic development.

National Telecommunications Policy: Current government policy for telecommunications to address social, economic and infrastructural developments; developed by the MP&T, MPEA, LTA and other stakeholders of the industry.

Numbering Plan: Method of assigning specific numbering prefixes or codes, to provide unique telephone addresses or identities to a user-network interface.

Pharming - A method of capturing sensitive information (such as Social Security numbers and passwords) by fooling a user into entering such information on a fake Web site that masks as a legitimate one.

Phishing - Using fake e-mail to trick individuals into revealing personal information, such as Social Security numbers, debit and credit card account numbers and passwords, for nefarious uses.

Point of Interconnection: Point of exchange of traffic between the telecommunication system of a local access provider or mobile cellular communication operator, and another licensed telecommunications network operator.

President: Democratically elected head of the Republic of Liberia.

Price Cap: Maximum allowable upward price adjustment, based on certain economic factors.

Private Operator: Licensee of a telecommunications system that provides telecommunication services.

Public Operator: Provider of a public telecommunications service or a public cellular mobile communications service.

Public Procurement & Concession Commission: Commission established by legislation to ensure transparency and accountability in public procurements and concession agreements.

Public Voice Telephony Services: Commercial provision of direct transport, switching or routing of voice telephony in real time between network termination points.

Radio Communication: Transmission of signals by means of electromagnetic waves transmitted using radio spectrum.

Radio Spectrum License: License to use identified radio/spectrum frequency issued pursuant to the Telecommunications ACT of 2007.

Regulations: A set of binding rules established by the LTA pursuant to the Telecom Act of 2007.

Risk Management - Identifying vulnerabilities in a network and developing a strategy to protect against attack.

Roaming Service: Roaming is a general term that refers to the extending of connectivity service in a location that is different from the home location where the service was registered.

Rural Community: Towns and villages with less than 5,000 people as per the June 2008 Liberia Institute of Statistics and Geo-Information Services (LISGIS).

SAT3: Third phase development project for South African Telecommunications undersea fiber optic transmission infrastructure that connects to other global networks carrying high-speed voice, data and video traffic to and from countries in Africa.

Script kiddie - An unsophisticated cracker who uses cracking tools found on the Internet to gain access to poorly protected computer systems.

Server - A computer set up to provide information on request via a network.

Service Agreement: Means any agreement between an operator and a subscriber or subscribers relating to the provision and use of a telecommunications service.

Service Provider: A person or entity under permit or license by the LTA that provides a telecommunications service to the public or who owns or operates a telecommunications network used to provide telecommunications services to the public.

Service Quality Requirements: Conditions of license established by the Commission pursuant to Part VI, Section 25 of the Telecommunications Act of 2007 for the purpose of improving the quality and delivery of telecommunications services in Liberia.

Spam - Unsolicited bulk e-mail that may contain malicious software. Spam is now said to account for around 81 percent of all e-mail traffic.

Spoofing - Making a message or transaction appear to come from a source other than the originator.

Spyware - Software that collects information without a user's knowledge and transfers it to a third party.

Subscriber: Any person provided with a telecommunications service by a licensee, and who is responsible for payment of all charges and rentals.

Subscriber Line: Telecommunications link connecting the local telecommunications center to the subscriber's premises or telephone instrument or system.

Tariffs: Fees or charges levied by a telecommunications service operator to its subscribers.

Telecommunications Act of 2007: Current legislation for the telecommunications sector in the Republic of Liberia.

Tender Process: A procurement process inviting Bidders to submit proposals in response to a Request for Proposal (RFP).

Trojan horse - Code masking as a useful program that when activated performs malicious activity such as locating protected passwords or damaging data on a computer's hard disk.

Virus - A program designed to degrade service, cause inexplicable symptoms or damage networks.

Universal Access: Ensuring the provision of telecommunications services to the general public pursuant to the universal access policy of the Telecommunications ACT of 2007.

Universal Access Fund: A Fund established pursuant to the Telecommunications Act of 2007 to facilitate connectivity to bridge the digital divide, among other things.

Universal License

Urban Community means towns and villages with more than 5,000 people according to statistics from Liberia Institute of Statistics and Geo-Information Services (LISGIS), June 2008.

VSAT: Very Small Aperture Terminal for wireless transmission services, normally used in satellites.

WiMAX: Wireless Interoperability Microwave Access, which is a telecommunications technology that provides voice, data and video services over radio waves.

Appendix A

Description of Cybercrimes included in ECOWAS Cybercrimes Directives

5.9.3 Fraud

A. Fraudulent access to computer systems

The act by which a person fraudulently accesses or attempts to access the whole or part of a computer system;

B. Fraudulently remaining in a computer system

The act by which a person fraudulently remains or attempts to remain within the whole or part of a computer system.

C Interfering with the operation of a computer system

The act by which a person impedes, alters or attempts to impede or alter the functioning of a computer system

D. Fraudulent input of data in a computer system

The act by which a person fraudulently inputs or attempts to input data into a computer system;

E. Fraudulent interception of computer data

The act by which a person fraudulently intercepts or attempts to intercept computerized data during their non-public transmission to, from or within a computer system through technical means;

F. Fraudulent modification of computer data

The act by which a person fraudulently damages or attempts to damage, delete or attempts to delete, deteriorate or attempting to deteriorate, alter or attempts to alter, modify or attempt to modify computer data.

G. Fraudulent production of computer data

The act by which a person produces or manufactures a set of digital data through fraudulent input, deletion or suppression of computerized data stored, processed or transmitted by a computer system, resulting in counterfeit data, with the intent that it be considered or used for legal purposes as if it were genuine.

H. Use of fraudulently obtained data

Liberia, like other ECOWAS Member States shall undertake to adopt such legislative measures as may be necessary to establish as a criminal offence the act of knowingly using data thus obtained.

I. Fraudulently obtaining any benefit whatsoever

The act by which a person fraudulently obtains any benefit for oneself or for another person through the input, alteration, deletion or suppression of computerized data or through any other form of interference with the functioning of a computer system

J. Fraudulent manipulation of personal data

The act by which a person, even through negligence, processes, personal data or causes personal data to be processed without having complied with the prerequisite conditions stipulated by the relevant law on personal data provided for in each ECOWAS Member State.

5.9.4 Using IT Equipment to Commit Offences

A. Obtaining equipment to commit an offence

The act by which a person produces, sells, imports, possesses, distributes, offers, transfers or makes available equipment, a computer program, or any device or data designed or specially adapted for committing an offence, or any password, access code or similar computer data by which the whole or any part of a computer system can be accessed.

B. Participation in an association or agreement to commit offences

The act by which a person participates in an association that is formed or an agreement that is established for the purpose of preparing or committing one or several of the offences described in this policy

5.9.5 Prohibiting Child Pornography

A. Production of child pornography or pornographic representation

The act by which a person produces, records, offers or makes available, distributes or transmits child pornography or pornographic representation through a computer system

B. Import or export of child pornography or pornographic representation

The act by which a person procures for oneself or for another person, imports or causes to be imported, exports or causes to be exported, child pornography through a computer system;

C. Possession of child pornography or pornographic representation

The act by which a person possesses child pornography or pornographic representation through a computer system or in any other computer-data storage medium;

D. Facilitation of access of minors to child pornography, documents, sound or pornographic representation

The act by which a person facilitates access of a minor to pornographic pictures, sounds or representation

5.9.6 Hate Messages, Threat and Insults

A Possession of racist or xenophobic written documents or pictures through a computer system

The act by which a person creates, downloads, disseminates, or make available in whatever form, written documents, messages, photographs, drawings or any other depictions of racist and xenophobic ideas and theories by means of a computer system.

B. Threat through a computer system

Any threat through a computer system to commit a criminal offence against a person by reason of his belonging to a group that is characterized by race, colour, ancestry or national or ethnic origin or religion, to the extent that this belonging serves as a pretext for such a threat to that person or a group of persons that is distinguished by one of the foregoing characteristics.

C. Insult through a computer system

Any insult to a person through a computer system by reason of his belonging to a group that is characterized by race, colour, ancestry or national or ethnic origin or religion, to the extent that this belonging serves as a pretext for such an insult to that person or a group of persons that is distinguished by one of the foregoing characteristics.

5.9.7 Crimes against Humanity

A. Intentionally denying, approving or justifying acts or crimes against humanity by means of a computer system

Any intentional act to deny, approve or justify acts of genocide or crimes against humanity by means of a computer system.

B. Aggravating Circumstances

Under this policy, the use of ICTs to commit common law offences such as theft, fraud, possession of stolen goods, breach of trust, extortion, terrorism, and money laundering or the commission of organized crimes shall constitute an aggravating circumstance.

C. Violations against computer data-related property

Under this policy, any person who violates the property of another person, particularly computer data, through theft, fraud, possession of stolen goods, breach of trust, extortion, and blackmail commits an offence.

D. Media offence committed through the Internet network

Media offences committed through the Internet network shall be subjected to the penal provisions of this Directive.

5.9.8 New intangible Media and National Defense

Under this Directive, the use of new intangible media, such as "digital data" or "computerized files" which are kept secret in the interest of national defense shall not constitute an offence.

A. Criminal liability of Corporate Bodies other than Public Entities

Any corporate body, excluding the State, local authorities and public establishments, can be held liable for any of the offences described in this Directive that are committed for their benefit by their representatives. Such liability shall not exclude the liability of individuals who commit such acts or abet the commission of such acts.

B. Confiscation

In the event of conviction, the court may decide that materials, equipment, instruments, computer program or data, as well as proceeds from an offence and belonging to the convicted person be confiscated.

C. Effective, proportionate and dissuasive criminal penalties

The offences stipulated under this policy shall be punishable under the criminal jurisdictions of ECOWAS. Sanctions shall be proportionate and dissuasive.

D. Maximum term of imprisonment

The offences set out in this policy shall be punishable by a maximum prison sentence not exceeding or below the sentence provided in respect of crimes or offences committed within ECOWAS. Include local laws

E. Search or access to a computer system

The examining magistrate may carry out searches or effect seizures or have access to any computer system in order to establish the truth. However, where seizure of the electronic medium is undesirable, the data required to understand it shall be copied on a computer data storage medium and sealed. Where the exigencies of information so require, and where there is reason to believe that computerized data recorded in a computer system can be lost, the examining magistrate shall order any individual to keep

and protect in secret the integrity of data in his possession or under his control.