Chapter One

Introduction

The world is going through an information technology revolution that has drastically changed many facets of the human life, from education, industry, economy, politics to entertainment. In addition, unprecedented capabilities of the information technology to process, store, refine and disseminate data, information and knowledge in a variety of ways across geographical boundaries, has dramatically changed the ways in which governments, the public and private sectors operated all over the world. The emergence and convergence of Information and Communication Technologies (ICT) has therefore remained at the centre of global socio-economic transformations.

Information has become a strategic resource, a commodity and foundation of every activity. In fact ICT is now regarded as a utility such as water and electricity and hence it has become a major factor in socio-economic development of every nation. ICT now plays a major role in education, learning and research in general, agriculture, health, commerce and even in poverty alleviation by generating or creating new jobs and investment opportunities.

As a result of the convergence of information, telecommunications, broadcasting and computers, the ICT sector now embraces a large range of industries and services, hence, the National Information and Communications Infrastructure (NICI) must be developed for integration into the Global Information Infrastructure (GII).

The continent has not fully responded to the clarion call for giving ICT necessary priority in the national development despite a large number of international funding agencies with ICT initiatives in Africa. However, the situation is changing rapidly in recent times, especially after the African Development Forum (ADF'99), held in Addis Ababa in 1999, with the theme, "Challenge to Africa of Globalisation and the Information Age".

Chapter Two

ICT Infrastructure in Africa

We recognize that Africa has the lowest telephone densities (main lines per 100 inhabitants) in the world). Africa also has about 2% of world telephone lines, which is less than those in Tokyo. Africa has the lowest annual growth in teledensity. It has 35 of the world's 49 telecommunication least developed countries of the world. In 1997, the teledensity for Africa was 1.85, while those for Europe, America and Asia were respectively 34, 30 and 6. There are more cellular telephones in Thailand than the whole of Africa[1].

The Internet connectivity index shows the same trend as for telephones. The total number of computer hosts permanently connected to the Internet in Africa (excluding South Africa) in 1999 was estimated to be between 25,000 to 30,000, which is about the same number as that in a small Eastern European country such as Latvia, with a population of 2.5million (compared to the 780 million people in Africa, about 13% of the world population). In 1999, there were about 3 million Internet users in Africa with about 1 million outside of South Africa. This amounted to about 1 Internet user for every 250 people, compared to the world average of one user to every 35 people, and a North American and European average of about one for three people[2].

Chapter Three

African Information Society Initiative (AISI)

In May 1995, the twenty-first meeting of Economic Commission for Africa (ECA) conference of Ministers, which consists of the fifty-three African Ministers of Social and Economic Development and Planning, adopted Resolution 795(XXX) entitled "Building Africa's Information Highway"[3]. In response to this resolution, ECA appointed a High-level Working Group on Information and Communication Technologies (ICT) in Africa to draft an action framework to utilize the ICT to accelerate the social-economic development of Africa and its people. The outcome of the Group's work is the document entitled "Africa's Information Society Initiative" (AISI) which was adopted by all of Africa's Planning Ministers at the subsequent meeting in May 1996. The AISI action framework calls for the formation and development of a NICI plan in every African country, driven by national development priorities. The initiative proposes cooperation among African countries to share experiences of successes. The countries that have so far begun the process of developing in-depth national information and communications infrastructure plans are Benin, Burkina Faso, Cameroon, Comoros, Ethiopia, Lesotho, Namibia, Mozambique, Rwanda, South Africa, and Uganda.

However, over 40 African Ministers are fully convinced that building AISI will help Africa to accelerate its development plans, stimulate growth and provide new opportunities in education, trade, health care, job creation and food security, helping African countries to leap-frog stages of development and raise their standard of living. Therefore, these countries have provided high-level endorsement for ICT development policies.

In the last few years, a large number of ICT development initiatives directed at African countries have emerged. Many of these are based on the AISI, which is increasingly being regarded as the guiding framework on which to base ICT activities in Africa.

In order to develop and upgrade present communication facilities on the African continent, the following programmes are suggested for all the member countries:

• Developing and upgrading national telecommunication infrastructure.

• *Continental interconnectivity* through the development of national data communication hubs, provision of data communication gateways to link Africa to the rest of the world and establishing the necessary interconnectivity between the telephone and data network in Africa.

- Implementation of a number of small, quick impact pilot demonstration projects in some African countries.
- *Integrated Rural Development* through the sharing of rural public access telecentres, mobile computing and telecommunications resources, will be established at selected locations with support from international donors.

National Information and Communications Infrastructure (NICI)

The AISI adopted the term "National Information and Communications Infrastructure (NICI)" policies and plans to emphasize the importance of communication in the ICT development plans of the African countries, and other ICT initiatives already going on in Africa[4].

NICI's plans and strategies have become high on the agenda and African countries like the developed world are confronted with the challenge to be responsive and flexible to the convergence of telecommunications, audio-visual and computing technologies. These plans and strategies are made to reflect the overall development priorities, redefine sectoral policies and support the introduction of new regulatory frameworks. This will improve efficiency, and mobilize resources for building national information and communication infrastructure among member countries.

Most African countries belong to the industrially weak and agriculturally dominated economies. NICI led socio-economic development policies, strategies and plans are expected to transform these economies into Information and Knowledge Economies (IKE).

NICI development process in Africa

The Development of NICI policies and plans is being sponsored by African Governments, ECA, the Carnegie Corporation of New York, and the International Development Research Centre (IDRC) of Canada, through its Acacia-communities and information society in Africa programme. Other partners like United States Agency for International Development (USAID), United Nations Development Programme (UNDP), United Nations Education, Scientific and Cultural Organization (UNESCO), and World Bank are also supplementing ECA's effort in developing NICI activities in member states[4].

The 23 countries that are involved in NICI activities are: Benin, Burkina Faso, Burundi, Cap Verde, Cote d'Ivoire, Gabon, Ghana, Guinea, Ethiopia, Mali, Malawi, Mauritania, Morocco, Namibia, Nigeria, Rwanda, Senegal, Sudan, South Africa, Tanzania, Tunisia and Uganda.

The NICI development process is summarized as follows:

- Need Assessment
- Sensitisation and high level policy workshop
- Preparation of NICI plans which involves:
    (i)   Identification and selection of programmes, projects and initiatives.
    (ii) Development of programme profiles for each of the identified programmes, projects and initiatives.

- Validation workshop (including more sensitization)
- Preparation of policy including:
    (i)   Discussion on policy coordination and implementation organs.
    (ii) Policy implementation
- Resource mobilization
- Resource Deployment
- NICI programme implementation and monitoring
- NICI programme evaluation

Development of NICI plans is not only a series of procedures and technical prescriptions, but it should also be seen as new phenomena and culture for information sharing to reduce the information gaps between different parts of the population. Collaboration and adhesion of decision makers and all stakeholders to the information society concept is essential for the success of the NICI plans to be developed in member states.

African countries are requested to establish national teams responsible for the development of NICI policies, plans and strategies, the identification of priorities and the setting-up of mechanisms and procedures for follow-up and implementation. Therefore, the development of NICI plans is undertaken by teams working with all stakeholders, with the aim of reaching a consensus among the various sectors on the needs priorities and actions to be undertaken.

Status of NICI development activities in African countries[5]

The following are examples of what has been achieved at country level in the NICI development process in Africa:

- Ghana's Vision 2020 recognizes the strategic role that ICTs will play in the realization of its objectives. It specifically recognizes that in this modern era, it is ICTs that drive productivity, make possible private initiative and creativity, and bestow competitive advantage to the production of goods and services in an open and liberal economy. Ghana has recently launched an ICT strategic policy for the country.

- Morocco is setting up the Morocco Wide Area Network (MARWAN) to link via a fibre optic network, all research institutions and universities in the Kingdom and to develop a nationwide virtual library and research laboratory.

- Rwanda has put in place an ICT-led Development Vision that aims at modernizing the Rwandan economy and society using ICTs as an engine for accelerated development and economic growth, national prosperity, and global competitiveness.

- Senegal is implementing a study entitled "Senegal 2015", which examines a number of issues to which ICTs could provide responses — such as adaptation of the education system, expansion of social communication, strengthening of self reliance, management of the effects of increased urbanization, and revitalization of rural areas.

- South Africa is developing a proposal to set up an ICT strategy, which will consolidate all of the existing government networks in one "Intranet" based on a high-speed fibre optic backbone to be built by the telecommunication operator.

- Tunisia has developed a national strategy with emphasis on information and communication infrastructure by setting up a nationwide Internet backbone with cyber cafes co-funded by the Government and the private sector.

The following 12 countries have completed development of their NICI plans in 1999: Benin, Burkina Faso, Egypt, Ghana, Mauritania, Morocco, Mozambique, Rwanda, Senegal, South Africa, Tunisia and Uganda.

Chapter Four

ICT in Nigeria

As a developing nation, Nigeria aspires to participate effectively and become a key player in the emerging information age. To achieve this, the nation needs to have in place a highly efficient information technology system driven by a vibrant national IT development strategy.

In October 1999, the government issued a document on Telecommunications Development and Investment Opportunities in Nigeria. This document contains a lot of investment opportunities in telecommunication sector. With the government re-affirmation of the privatization plan and appointment of additional carrier, it is planned that the target in Table 1 will be achieved.

Table 1: ICT Development in Nigeria by 2005

Capacity	Lines
1999	700,000
2001	1,500,000
2003	3,000,000
2005	8,000,000

Current Infrastructure for IT in Nigeria

The current infrastructure for IT in Nigeria is very poor. The Very Small Apperture Terminal (VSAT) and Internet services licences approved by Nigerian Communications Commission (NCC) are given on Table 2.

Table 2: Number of VSAT and Internet Services Licenses

	Operating Fees paid	Not Operating Fees paid	Not Operating Fees not paid	Total
VSAT	12	14	36	62
Internet Services	30	35	71	136

Source: Nigerian Communications Commission[6]

The market is yet to feel the major contribution from the private sector despite the large number of licenses issued. This is apparently due to the absence of major multinational companies in the industry. The Government is thus encouraging joint venture participation to improve efficiency and facilities in the sector.

The nation can be said to have been late in joining the rest of the world in information technology development, but the progress has been encouraging. Some of the current IT trends that took place in recent times are summarized later.

National Policy on Telecommunications

The Federal Government had taken several steps in the past to restructure the telecommunication sector, with the hope of improving the efficiency and availability of the nation's telecommunications facilities. One such step was the establishment of the Nigerian Telecommunications Plc (NITEL) from the merger of the telecommunication division of the defunct Posts and Telecommunications (P&T) with the former Nigerian External Telecommunications (NET).

The new National Policy on Telecommunication was approved in October 1999. It covered issues such as policy objectives, management structure, finance and funding, manpower development and training, research and development, local manufacture, safety and security, satellite telecommunications, international perspective and policy implementation and review[7].

Some of the highlights are:

- There shall be a minimum of two national carriers including NITEL. A third carrier may be licensed thereafter on the basis of economic viability.

- There shall not be more than 4 digital national cellular operators for an initial period of 5 years, with the possibility of increasing the number in the future, based on viability and technical feasibility. The modalities for appointing the carriers shall be competitive and transparent.

- The policy seeks to create the right environment for investors to participate in the rapid development of the Nigerian telecommunication network.

- The enabling environment for achieving a network roll-out programme of, at least, 2 million additional fixed lines and 1.2 million mobile lines (evenly spread across the country) by the year 2001. Accordingly, the communication industry will be de-regulated to allow new entrants, while the government-owned national carrier, NITEL and the mobile cellular operator, M-tel shall be privatized to create a level-playing field for service providers and thereby ensure the attainment of government's policy issues.

This plan is still modest realizing that the population of Nigeria is about 120 million people. The overall target is a teledensity of 10 per 100 people. With the envisaged effective participation of private investors, the achievement is expected to be more than the highlighted plans earlier. The investment requirements are tremendous. In order to achieve this modest teledensity, considerable investment will be required in such areas as local area network, increased digitalization of exchanges and larger bandwidth transmission systems.

The poor telephone infrastructure in Nigeria has been a stumbling block to the development of information technology, especially Internet penetration in Nigeria. Internet penetration for Africa is less than 1%, despite a 12% world population; the situation in Nigeria is even worse. However, the emerging technologies such as broadband satellite, VSAT and wireless provide wonderful opportunities for Nigeria to leap-frog into the information society age. These technologies have been exploited in order to accelerate IT development in Nigeria.

There was the successful auction of the GSM licenses in Nigeria. Three companies have been licensed to provide GSM services. All the companies have started operation and it is envisaged that the contribution of the three companies will improve the telephone density in Nigeria.

The National Information Technology Policy (NITP)

The Federal Executive Council approved a national IT policy in March 2001 and the implementation started in April with the establishment of the National Information Technology Development Agency (NITDA), charged with the implementation responsibility. The policy recognized the private sector as the driving engine of the IT sector. NITDA is to enter into strategic alliance, collaboration and joint venture with the private sector for the actualization of the IT vision, which is to make Nigeria an IT capable country, using IT as an engine for sustainable development and global competitiveness. It is also to be used for education, job creation, wealth creation, poverty eradication and global competitiveness.

Emphasis is to be laid on the development of National Information Infrastructure Backbone (NIIB) and the Human Resources Development. In addition, Information Technology Parks are to be developed in Abuja and in each of the six geo-political zones.

The policy recognizes the private sector as the driving engine of the IT industry. The Government is prepared to enter into alliances, collaboration and joint ventures in order to achieve the goals and objectives of the IT policy. The private sector will be encouraged through incentives, similar to those in the export-processing zone.

Areas of Growth of IT in Nigeria

Information technology has applications in almost all spheres of human endeavour. Developing a sustainable economy through IT, implies applying information and communication technology in all the main sectors of the economy. This sectoral application of IT has been recognized in formulation of the IT policy, which involves the development of the following areas of the economy[8].

- Human Resource Development
- Infrastructure
- Governance
- Research and Development
- Health
- Agriculture
- Urban and Rural Development
- Trade and Commerce
- Arts, Culture and Tourism
- National Security and Law Enforcement
- Fiscal Measures

The National Information Technology Policy (NITP) addressed the various objectives pertaining to these aspects of the economy and the strategies that are to be adopted in applying IT for making these sectors economically sustainable.

Human resource development

Qualitative manpower is one of the most important determinants of viable and sustainable economies. Countries like India have built a highly skilled manpower base to attract a lot of foreign exchange earnings that have given their economy a lot of viability and a high level of sustainability. Developing quality manpower in IT and related disciplines will help the nation develop a pool of IT engineers, scientists, technicians and software developers. These human resources will advance the country technologically and also bring a lot of foreign exchange, which will give the currency a lot of stability in the international market. The foreign exchange that can be realized is comparable to our earnings on oil exportation.

Developing human resources will involve the following strategies:

- Making IT mandatory at all levels of educational institutions through adequate financial provision for tools and resources.
- Developing relevant IT curricula for the primary, secondary and tertiary institutions.
- Establishing facilities for electronic distance learning networks and ensuring effective Internet connectivity in both urban and rural communities, and the nomadic education.
- Empowering IT institutions and development centres' to develop IT capacities at all levels.

Infrastructure development

The nation requires NIIB as the gateway to GII, which is highly essential for economic development and sustainability in this information age and the global knowledge driven economy. The government through the NITDA will create NIIB in collaboration with the private sector, that will interconnect with state and local information infrastructures.

An information infrastructure among other things will:

- Create an ubiquitous and affordable technology with an "open standard" approach, scalable and capable of adapting to changes.
- Provide a reliable and secured gateway to the GII.
- Stimulate the creation and sharing of national and international knowledge.
- Encourage private sector investment in IT, particularly in information infrastructure.
- Encourage the private sector to invest, design, deploy and operate independent information infrastructure.

Due to the vast expanse of the country and the non-existence of information technology infrastructures in most locations in the country, NIIB will be based on a VSAT network that will be coordinated through a base station that will be located at the Federal Capital Territory, Abuja. Figure 1 gives a pictorial representation of the planned NIIB. This will then be linked to the existing GII. Other facilities like the fibre optic network provided by the private sector and other organizations like the "Africa One" project, will also form part of this backbone.
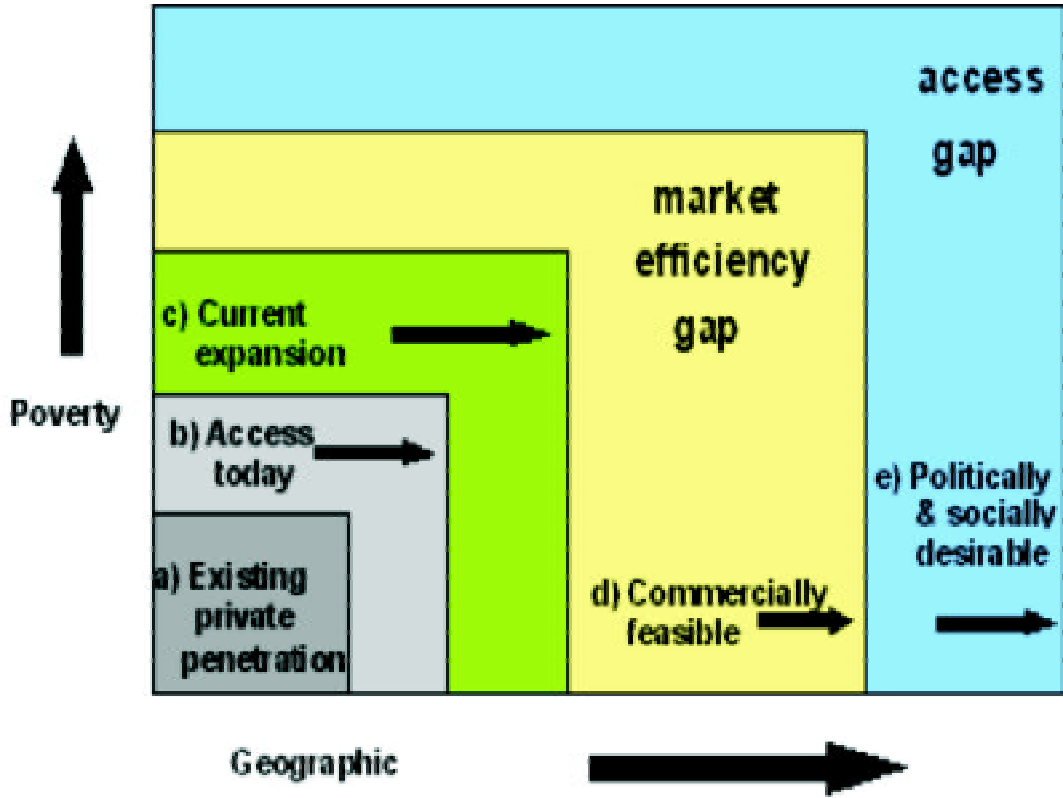
Figure 1: Pictorial Representation of the Planned National Information Infrastructure Backbone (NIIB)

NITDA is planning to develop a configurable and scalable NIIB to achieve a minimum capacity of 5.0Gbps, using a combination of optical fibres, satellite communications and wireless technology.

Agriculture

The nation shall use IT to re-engineer agriculture for the purposes of maximizing food production, improving food self-sufficiency and security, increasing output for industrial raw material utilization, providing employment, economic growth and minimizing environmental abuse and degradation.

Nigeria is mostly an agricultural and natural resources producing state. The farmers (for example cocoa farmers), will have access to the international market for their goods, thus eliminating the loss of profit through middlemen. That is, it should be possible for a local community such as a village with Internet services provided by a tele-centre, to have access to the Internet and should be able to monitor the price trend of their commodity. The Internet services can be utilised for the projection of the culture of our nations and our people and provide other tourist attractions. African dresses such as "adire", embroidered cloth, can be sold on the Internet. Internet services can also lead to creation of new wealth through small and medium enterprises as off-shoots of the information infrastructure.

Farmers' co-operative societies could share experience with others on-line. Farmers, traders and carpenters, can join physical and on-line co-operatives to learn new ways of surviving.

Employing IT in the re-engineering of the agricultural sector will include the following:

- Food security (e.g. crop yield forecasts, agricultural production, pest control and famine early warning)
- Introduction of new technologies (e.g. biotechnology and genetic engineering)
- Aid in the environmental monitoring and assessment of natural resources (e.g. forests, soils, minerals, fisheries, wildlife), with the aid of data from satellites (e.g. degradation)
- Ensure sustainable development planning
- Mitigation of natural disasters (e.g. flooding)
- Ensure the development of coherent regional policies on the management of natural resources
- Agro-vision: Mapping of land to crop type, adequate long-term information on planting and harvesting times for planning purposes. With Agro-vision, it is possible to map meteorological information with other existing agricultural-based statistics, to predict the best conditions for exploiting our very rich agricultural potential.

Trade and commerce

Every economy depends on their trade and commerce potentials. The volume and quality of trade coupled with the spread, determine the socio-economic potentials of the nation. IT has changed the way we trade in recent times, hence, the global trend of electronic commerce and business as the internationally accepted mode of doing business.

Nigeria is yet to fully benefit from the electronic (e)-commerce and e-business. However, with its introduction, the nation will enjoy the following benefits:

- Commerce on the Internet can entail the following:
    (i)   Marketing on the Web
    (ii)   Intranets, a communication tool, for company and specific communication
    (iii) Manufacturing
    (iv)   Marketing, sales and support
    (v)   Public Relations
    (vi)   Direct Sales
    (vii) On-line Shopping
    (viii) Marketing Research
    (ix)   Sale information on the Net.

- Intranets link companies and specific communities to:
    (i)   Enhance relations with customers
    (ii)   Improve communications between national, regional and international company partner(s)
    (iii) Increase company power, efficiency, processes, speed, quality of production and decreases production costs on the enterprise structure
    (iv)   Strengthen company capacity via on-line forms, training and project information, provided by every sector of the company and made available to the rest of employees instantaneously
    (v)   Encourage the team spirit and involvement
    (vi)   Network access extension to company customers through "Extranets".

Arts, culture and tourism

Nigeria is a nation extremely rich in arts, culture and tourist attractions. Most of these rich attractions of this nation are either unexploited or totally neglected. We are not different from other nations in terms of this. Why are arts, culture and tourism industries a lot more developed?

The development of a nation lies on its people. This includes the local communities and authorities, state and the federal authorities. Introduction of IT into the urban and local communities in this country will boost tourism and trade of our local arts and culture.

Individuals, communities and local government councils can now expose their rich cultural heritage and tourist attractions through web sites, multi-media virtual gallery and low cost broadcast, and video and film industries.

National security and law enforcement

Security of a people in connection with economic sustainability cannot be compromised at

all. National security entails working to protect and promote the interest, assets and safety of Nigeria, Nigerians and those we work with in the global environment are developing knowledgeable manpower with commensurate discipline and IT skill-set. These are capable of efficiently generating and effectively utilizing information in a timely manner, for national decision-making. Foreign investors will naturally prefer an environment that can guarantee security of life and property.

We are all aware of so many successful security arms of foreign governments like the FBI and CIA (USA), KGB (Russia) and SAS (British). Their success can be mostly attributed to the use of IT in fighting crimes, spying and managing migrations of the citizens.

IT can be employed in the national security and law enforcement (NSLE) through:

- Using IT to combat contemporary and emerging security threats and challenges that are being re-defined by information technology.

- Raising awareness and educating NSLE personnel at all levels on the use, benefit and risks of new IT environment.

- Appropriately informing and protecting our citizens, government, infrastructure and assets from illegal and destructive activities found in the global electronic environment. Thus, enhancing the confidence of our nation and its partners and citizens, government and infrastructure.

- The Federal Ministry of Justice, in collaboration with NITDA, and after due deliberation with IT and sectoral experts, will frame appropriate legislation in the following areas:

   (i)   Computer Crimes

   (ii)   Digital Signature

   (iii) Tele-Medicine

   (iv) Tele-Education

   (v)   Intellectual Property/ Copyright

   (vi) Consumer Protection

   (vii) Media Convergence

   (viii)Electronic Government

   (ix) Electronic Commerce

Fiscal measures

IT can greatly aid the development of our economy. This has been propounded in the previous sections of this book. Many of the sectors of the economy have not been able to grow, as they should, because of the inappropriate operating environment during the implementation of the policies.

It is therefore necessary for the government to introduce a series of fiscal measures, in order to stimulate further investment and growth in the IT sector. This can go hand in hand with the creation of the needed favourable investment climate for the development of a globally competitive IT enabled economy.

Software investment opportunities

Many of the IT applications discussed, will surely require well-developed software for their implementation. Nigeria is being propelled to an IT information society with heavy demand on the software industry. Programming language design, systems software development and applications programs shall be required in the sector.

The software industry will provide highly profitable investment channels for Nigerians; who have acquired expertise in providing the necessary services. The following sectors will call for a lot of software development: Education, banking and financial sectors, insurance, engineering, health, transportation (land, air and sea) and the petroleum and energy sectors.

Offshore software development, in particular programming, will provide opportunities for the Nigerian youth to earn foreign currency, without leaving the Nigerian soil. Young Indians generated a lot of income in foreign currency as a result of the programming and general software development for the millennium bug or Y2K compliance. Nigerians have the intellect and creativity required for software development, if the necessary training can be offered.

IT parks

The government shall invest in the establishment of IT Parks. Infrastructure facilities shall be provided in such a park and the private sector shall be encouraged to establish IT factories, training centres and other IT undertakings in such a park. Fiscal incentives shall be provided in order to encourage the private sector investment in such a park. These parks may be treated in a similar way to the Export Processing Zones, enjoying the same incentive package.

There has been a surge of interest on the part of the major multi-national IT companies. In the last one year, SAP, the largest software company in Europe and Microsoft, the largest software company in the world, has established offices in Nigeria. Compaq, the second largest computer hardware company in the world has opened offices. NIIT, the computer training giant opened the third and fourth training centres in Nigeria in March 2001. All these foreign countries, in addition to the numerous Nigerian companies, are ready to invest in the IT sector. The Nigerian government can provide the necessary infrastructures in the IT parks, with favourable investment conditions, in order to encourage these IT companies to invest in the Nigerian IT parks.

Mobile internet units (MIUs)

The government shall also invest in Mobile Internet Units (MIUs). The units are devised to aid the teaching of IT in remote places all over the country. The MIU is made up of a bus, whose interior is restructured into an Internet centre, with the provision of computers, local area network, printers and photocopy machines. The unit will include a mounted radio antenna that will enable the unit to communicate with a main VSAT station, that will be providing it with Internet connectivity as it roams from one local community to the other. A small generator shall be provided for the bus, coupled with some cooling facilities, in order to protect the life

of the equipment. According to the national plan, 25 units of MIUs will be deployed in 2002, 24 units in 2003 and another 24 units in 2004.

Implementation Strategies of the IT Policy

The Federal government of Nigeria has accorded IT a national priority. This is evident by the approval of the NITP and the subsequent establishment of the NITDA as the implementation agency. The NITP approved in April, has created an enabling environment for the development of IT in Nigeria. The Government has been encouraging the private sector to invest in IT, since this is a virgin sector with potentials of the order of billions of dollars. Actually, IT effects on socio-economic development of the nation can be likened to that of the oil sector.

The present focus of the agency is to provide an enabling environment for the "kick-starting" of IT development in Nigeria. This has been going on in the form of awareness campaign for Nigerians to support and embrace IT. This campaign has already started producing some positive results. The major IT events in the country in the recent past are enumerated as follows:

- Zinox Technologies Ltd has developed the first indigenous and made in Nigeria set of computer systems. The systems were designed to work with the unfriendly operating environment of the country, which most of the foreign branded systems normally cannot cope with. Zinox is the first step towards the creation of made in Nigeria IT technologies.

- UNITEC, a conglomeration of ten companies will soon launch their own brand of computers assembled in Nigeria.

- The United States Nigeria Development Institute (USNGDI) is setting up community resource centres in the six geopolitical zones and the Federal Capital Territory (FCT), Abuja. The pilot project is nearing completion at the National Women Development Centre. This particular centre will house about 50 computer systems, printers and other IT accessories. The centre will also be connected to the Internet and will provide both local and International telephones and fax services, access to television and radio broadcasts, event hosting, computer-based training and business services.

- Microsoft Corporation is building a digital village in Owerri.

- Many states in the country are taking up the intiative to start major IT development projects.

    (i)   Jigawa State Ministry of Science and Technology is setting up a VSAT-based broadband network and ICT institute.

    (ii)   Akwa-Ibom State government is building an IT Park in the state capital.

    (iii) Lagos State Government has invested a lot in a rapid computerization of all the government ministries. The state government has also donated a lot of ICT facilities to most of the state-owned educational institutions.

    (iv)   Ebonyi State Government has some programmes on the pipeline for the development of a state-owned IT park at the state capital.
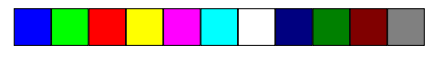
Development of IT in the Nation can be said to be at an infancy level when compared to the level of development in most of the developed nations of the world. However, Nigeria has the potential of becoming a key player in the information society in the near future, using IT as the engine for sustainable development and global competitiveness.

The Government recognizes IT as a strategic imperative for national development and is taking cognisance of its immense benefits. The Government has resolved to provide considerable national resources, both financial and otherwise for the realization of the National IT Vision. An e-commerce/e-readiness conference/workshop took place in the first quarter of 2001 to deal with policy matters in the sector.

Conclusion

It is obvious from this that information technology has become a powerful key for sustainable economic growth. Information technology has been recognized globally as the major ingredient for socio-economic development of any nation. Therefore, to fully harness the full potentials of information technology for sustainable economic development, there is the necessity to establish the necessary IT infrastructure.

Africa has been left behind in this global trend. The world has moved from the reliance on natural resources to a new knowledge-based foundation, where the wealth and powers of nations are directly dependent on the strength of their information technology and the associated human capital. In this area, the development and successful implementation of IT policy in African countries holds great hope for the sustainable economic development of the continent.

It is the responsibility of all African governments and the private sector to transform our digital divide to digital opportunity. E-commerce, e-business, e-financing, e-banking and others hold the future for our economic transformation and growth. Africa must be truly part of the ICT revolution.

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Acronyms and Abbreviations

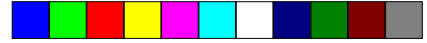|	
ADF	African Development Forum
AISI	Africa's Information Society Initiative
ECA	Economic Commission for Africa
FCT	Federal Capital Territory
GII	Global Information Infrastructure
ICT	Information and Communication Technologies
IDRC	International Development Research Centre
IKE	Information and Knowledge Economies
MARWAN	Morocco Wide Area Network
MIU	Mobile Internet Unit
NET	Nigerian External Telecommunications
NIIB	National Information Infrastructure Backbone
NICI	National Information and Communications Infrastructure
NITDA	National Information Technology Development Agency
NITEL	Nigerian Telecommunications
NITP	National Information Technology Policy
P & T	Posts and Telecommunications
UNDP	United Nations Development Programme
UNESCO	United Nations Education, Scientific and Cultural Organization
USAID	United States Agency for International Development
USNGDI	United States Nigeria Development Institute
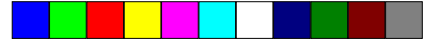
African Response to
the Information
Communication
Technology
Revolution

Case Study of the ICT
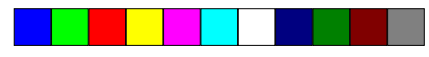## Development in Nigeria

G. Olalere Ajayi

Contents

Acronomys and Abbreviations

African
Response to
Communication
Technology
Revolution

G. Olalere Ajayi

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