ABBREVIATIONS

Abbreviation	Full Name
2G	Second Generation
3G	Third Generation
4G	Fourth Generation
ABAT	Asiwaju Bola Ahmed Tinubu
ACE	African Coast to Europe
ACP	African, Caribbean, and Pacific Group of States
ADS	Aligned Documentation System
AEC	African Economic Community
AEO	Authorised Economic Operator
AfDB	African Development Bank
AGIS	Abuja Geographic Information System
AHP	Analytic Hierarchy Process
AIM	Application Implementation Methodology
ALTON	Association of Licensed Telecommunications Operators of Nigeria
ANC	African National Congress
ANSI	American National Standards Institute
APC	All Progressive Congress
APGA	All Progressives Grand Alliance
API	Application Programming Interface
ARPU	Average Revenue per User
ASCON	Administrative Staff College of Nigeria
ASPA	American Society for Public Administration
ATCON	Association of Telecommunication Companies of Nigeria
ATM	Automated Teller Machine
ATV	Abuja Technology village
AU	African Union
AUC	African Union Commission
B/Ds	Bureaux and Departments
B2G	Businesses to Government
BATMIS	Budget and Tax Management Information Systems
BB4NG	Broadband for Nigeria
BCA	Benefit/cost Analysis
BcN	Broadband Convergence Network
BCP	Business Continuity Plan
BPP	Bureau of Public Procurement
BPR	Business Process Reengineering
BPSR	Bureau of Public Sector Reforms
BRICs	Brazil, Russia, India, China, and South Africa
BRM	Business Reference Model
BSC	Balanced Scorecard
BWA	Broadband Wireless Access
c-Government	Conventional Government
C-Tech	Cable Technology
C2G	Citizens to Government

Abbreviation	Full Name
CA	Certificate Authority
CAC	Corporate Affairs Commission
CAGR	Compound Annual Growth Rate
CANI	Computer for All Nigerians Initiative
CBN	Central Bank of Nigeria
CBP	Calabar Broadband Project
CCC	Community Contact Centres
CCNA	Certified Cable Networking Administrator
CD-ROM	Compact Disc Read Only Memory
CDMA	Code Division Multiple Access
CDP	Capacity Development Program
CEO	Chief Executive Officer
CERT's	Computer Emergency Response Teams
CGWIC	China Great Wall Industry Corporation
CIC	Community Information Centre
CIMS	Citizens Information Management System
CIO	Chief Information Officer
CITI	Cape Information Technology Initiative
CITO	Chief Information Technology Officer
COBIT	Control Objective for Information Technology
CORS	Continuous Operating Reference Station
COTI	Central Officials Training Institute
CPIC	Capital Planning, Investment and Control
CPN	Computer Professionals Registration Council of Nigeria
CRC	Community Resource Centre
CRSG	Cross River State Government
CSAS	Computer Skills Audit Solution
CSF	Critical Success Factor
CSP	Country strategic Paper
CTC	Certified True Copy
CTD	Communication Technology Development
CTO	Chief Technology/Technical Officer
D-8	Developing-8
DAC	Development Assistance Committee
DB	Database
DBAS	Digital Budget and Accounts System
DFID	British Department for International Development
DG	Director General
DGD	Democratic Governance for Development
DICT	Directorate of Information and Communication Technology
DISCOs	Distribution Companies
DIT	Diploma in Information Technology
DLC	Distance Learning Centre
DMB	Digital Multimedia Broadcasting
DMZ	Demilitarized Zone
DPP	Democratic Peoples Party
DR Site	Disaster Recovery site
DRM	Data Reference Model
DS-3	Digital Signal -3

Abbreviation	Full Name
DTM	Digital Terrain Model
E-GDI	Electronic Government Development Index
e-GIF	e-Government Interoperability Framework
e-Government	Electronic Government
e-GP	Electronic Government Procurement
e-TCC	Electronic Tax Clearance Certificate
EAI	Enterprise Application Integration
ECA	Economic Commission for Africa
ECCDE	Early Childhood Care Development and Education
ECOMOG	Economic Community of West African States Monitoring Group
ECOWAS	Economic Commission for West African States
ECS	Emergency Control System
EDGE	Enhanced Data Rates for GSM (Global System for Mobile) Evolution
EDI	Electronic Data Interchange
EDMS	Electronic Document Management System
EFA	Education for All
EFCC	Economic and Financial Crimes Commission
EGDI	e-Government development index
EIF	European Interoperability Framework
EIP	Enterprise Information Portals
EIU	Economist Intelligence Unit
EMIS	Education Management Information Systems
EMTS	Emerging Markets Telecommunication Services
EOSG	European One-Stop Government
EPB	Economic Planning Board
EPI	e-participation index
EPSRA	Electric Power Sector Reform Act
ETP	Education and training programs
ETRI	Electronics and Telecommunications Research Institute
EU	European Union
EV-DO	Evolution-Data Optimized
FAA	Federal Account Allocation
FAAN	Federal Aviation Authority of Nigeria
FAO	Food and Agriculture Organization of the United Nations
FAQ	Frequently Asked Questions
FCDA	Federal Capital Development Authority
FCSC	Federal Civil Service Commission
FCT	Federal Capital Territory
FDI	Foreign Direct investment
FEA	Federal Enterprise Architecture
FEA -PMO	Federal Enterprise Architecture Program Management Office
FEC	Federal Executive Council
FEMA	Federal Emergency Management Agency
FGN	Federal Government of Nigeria
FIRS	Federal Inland Revenue Service
FM	Frequency Modulation
FMARD	Federal Ministry of Agriculture & Rural Development
FMCT	Federal Ministry of Communication Technology
FME	Federal Ministry of Education
FMF	Federal Ministry of Finance

Abbreviation	Full Name
FMITI	Federal Ministry of Industry, Trade, and Investment
FMoW	Federal Ministry of Works
FOI	Freedom of Information
FOIA	Freedom of Information Act
FOSS	Free and Open Software
FRN	Federal Republic of Nigeria
FRSC	Federal Road Safety Commission
FTTP	Fiber To The Premise
FY	Fiscal Year
G-15	Group of 15
G-24	Group of 24
G-77	Group of 77
G2B	Government-to-Business
G2C	Government to Citizens
G2E	Government to Employees
G2G	Government-to-Government
G4C	Government for Consumer/Citizen
GAPP	Government Assisted PC Purchase Program
GAVI	Global Alliance for Vaccines and Immunisation
GB	Gigabyte
GBB	Galaxy Backbone
GBDC	Galaxy Backbone Data Centre
GBDe	Global Business Dialogue on Electronic Commerce
GCC	Government Contact Centres
GCFR	Grand Commander of the Order of the Federal Republic
GCP	Global Computerization Project
GCS	Government Computer service
GDA	Gross Domestic Average
GDP	Gross Domestic Product
GENCOs	Generation Companies
GHRI	Global High Risk Indicator Document
GHz	Gigahertz
GIDC	Government Integrated Data Centre
GIFMIS	Government Integrated Financial Management Information Systems
GIS	Geographic Information System
GITO Council	Government Information Technology Officers Council
GITS	Government Information Technology Services
GLO-1	Globacom-1
GNI	Gross National Income
GoAP	Goal-Oriented Action Planning
GOET Act	Government Officials Education and Training Act
GOT	Government Officials Training
GPRS	General Packet Radio Service
GPS	Global Positioning System
GR	Grade
GSA	General Services Administration
GSM	Global System for Mobile
HA	High Availability
HCI	Human Capital Index
HCS	Head of the Civil Service

Abbreviation	Full Name
HDI	Human Development Index
HIV/AIDS	Human immunodeficiency virus infection/acquired immunodeficiency syndrome
HMIS	Health Management Information System
HMO	Health Management Organizations
HRD	Human Resources Development
HRMIS	Human Resource Management Information System
HS	Harmonized System
HSPA	High Speed packet Access
HW	Hardware
IADIC	International Advanced Diploma in Computing
IAEA	International Atomic Energy Agency
IATT	Inter-Agency Task Team
IBRD	International Bank for Reconstruction and Development (World Bank)
ICAO	International Civil Aviation Organization
ICC	Information Culture Centre
ICDL	International Computer Driving License
ICFC	International Conference on Financial Criminology
ICPC	Independent Corrupt Practices Commission
ICT	Information and Communication Technology
ICT4D	Information and Communications Technologies for Development
ID	Identification
IDA	International Development Association (World Bank)
IDABC	Interoperable Delivery of Pan-European e-Government Services to Public Administration, Businesses and Citizens
IDB	Islamic Development Bank
IDC	International Data Corporation
IDEA	Information Technology Developers Entrepreneurship Accelerator
IDIC	International Diploma in Computing
IE	Information Economics
IEE	Internal Efficiency and Effectiveness
IEEE	Institute of Electrical and Electronics Engineers
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFMIS	Implementing Financial Management Information System
ILO	International Labour Organization
IM	Instant Message
IMF	International Monetary Fund
IMSO	International Mobile Satellite Organization
INEC	Independent National Electoral Commission
INSEAD	Institut Européen d'Administration des Affaires (European Institute for Business Administration)
Interpol	International Criminal Police Organization
INVIL	Information Village
IOC	International Olympic Committee
IOT	Internet of Things
IPPIS	Integrated Payroll and Personnel Information System
IPSAS	International Public Sector Accounting Standards
IPU	Inter-Parliamentary Union
IRR	Internal Rate of Return
ISO	International Organization for Standardization

Abbreviation	Full Name
ISP	Internet Service provider
ISPON	Institute of Software Practitioners
IT	Information Technology
ITF	Industrial Training Fund
ITSO	International Telecommunications Satellite Organization
ITU	International Telecommunication Union
ITU-T	International Telecommunication Union - Telecommunication
JAMB	Joint Admissions and Matriculations Board
JCT	Joint Consulting Team
JICA	Japan International Cooperation Agency
JSS	Junior Secondary School
KAV	Knowledge Access Venues
KCC	Korea Communications Commission
KFMIS	Korean Financial Management Information System
KISA	Korea Information Security Agency
KISDI	Korea Information Society Development Institute
KOICA	Korean International Cooperation Agency
KPI	key performance indicator
KRW	Korean Won
ktoe	kilotonnes of oil equivalent
KVA	kilo-volt-amperes
LAN	Local Area Networks
LASRAB	Lagos State Records and Archives Bureau
LASRRA	Lagos State Residents Registration Agency
LASUTH	Lagos State University Teaching Hospital
LC	Large Capacity
LCD	Liquid Crystal Display
LE	Life Event
LEAD	Linkages with Experts and Academics in the Diaspora
LED	Light Emitting Diode
LG	Local Government
LGA	Local Government Authority
LGCs	Local Government Councils
LMS	Learning Management System .
LOD	Linked Open Data
LP	Labor Party
LTE	Long-Term Evolution
M&A	Mergers and Acquisitions
MAN	Metropolitan Area Network
MAS	Mobile Authentication Service
MB	Megabyte
MBO	Management by Objectives
Mbps	Megabit per Second
MDAs	Ministries, Departments, and Agencies
MDGs	Millennium Development Goals
MHz	Megahertz
MIC	Ministry of Information and Communication
MIGA	Investment Guarantee Agency
MINURSO	Mission des Nations Unies pour l'Organisation d'un Référendum au Sahara Occid ental (Mission for the Referendum in Western Sahara)

Abbreviation	Full Name
MIOB	Minimum Interoperability Standards
MISD	Microcomputer Information System Department
MISS	Minimum Information Security Standards
MIUs	Mobile Internet Units
ML	Markup Language
MNP	Mobile number portability
MOF	Ministry of Finance
MOGA	Ministry of Government Administration
MOGAHA (MGAHA)	Ministry of Government Administration and Home Affairs
MOH	Ministry of Health
MOHA	Ministry of Home Affairs
MOLO	Mobile Other Licensed Operator
MOSPA	Ministry of Security and Public Administration
MOU	Memorandum of Understanding
MOUS	Microsoft Office User
MPT	Ministry of Posts & Telecommunications
MRP	Machine-readable Passport
MS level	Member States level
MSIP	Ministry of Science, ICT and Future Planning
MVNO	Mobile Virtual Network Operators
MW	Megawatt
₦	Naira
n/a	Not available
NAFDAC	National Agency for Food and Drug Administration and Control
NAFIS	National Finance Information System
NAPEP	National Poverty Eradication Programme
NASC	National Agriculture Seeds Council
NASDRA	National Space Research and Development Agency
NBC	National Broadcasting Commission
NBS	National Bureau of Statistics
NBTE	National Board for Technical Education
NCC	Nigerian Communications Commission
NCCE	National Commission for Colleges of Education
NCCT	National Council on Communication Technology
NCIA	National Computing &. Information Agency
NCIR	National Computing & Information Resources Administration
NCNE	National Commission for Nomadic Education
NCWG	Nigerian Cyber Working Group
NDE	National Directorate of Employment
NEEDS	National Economic and Empowerment Development Strategies
NeGSt	National e-Government Strategies
NEPAD	New Partnership for Africa's Development
NERDC	Nigerian Educational Research and Development Council
NESREA	National Environmental Standards and Regulatory Authority
NFMC	National Frequency management Council
NGO	Non-Governmental Organization
NgREN	National Research and Educational Network
NIA	National Information Society Agency
NICEP	National Information, Communication and Education Program

Abbreviation	Full Name
NICTIB	National Information and Communications Technology Infrastructure Backbone
NIGCOMSAT	Nigeria Communications Satellite Ltd
NII	National Information Infrastructure
NIMC	National Identity Management Commission
NIN	National Identification Number
NIPOST	Nigerian Postal Service
NIS	Nigeria Immigration Service
NITDA	National Information Technology Development Agency
NITDF	Nigeria Information Technology Development Fund
NITEL	Nigerian Telecommunications Limited
NLIS	National Institute of Legislative Studies
NMEC	National Mass Education Commission
NNPC	Nigerian National Petroleum Corporation
NOC	Network Operating Centre
NOUN	National Open University
NPC	National Planning Commission
NPF	Nigeria Police Force
NPM	New Public Management
NPS	Nigerian Prisons Services
NPV	Net Present Value
NSCOS	Niger State Computer Ownership Scheme
NSE	Nigerian Society of Engineers
NSW	Nigeria Single Window
NTA	Nigerian Television Authority
NUC	National Universities Commission
NuNet	The Nigerian Universities Network
NV	Nigeria Vision
OAGF	Office of the Accountant General of the Federation
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OFC	Optic Fibre Connections
OFC network	Optical Fibre Cable network
OHCSF	Office of the Head of the Civil Service of the Federation
OHSCS	Office of the Head of State Civil Service
OJT	On the Job Training
OMB	Office of Management and Budget
OPEC	Organization of Petroleum Exporting Countries
OSGF	Office of the Secretary to the Government of the Federation
OSI	Online Service Index
P.L.	PUBLIC LAW
PAAR	Pre Arrival Assessment Report
PAV	Public Access Venues
PAYG	Pay-As-You-Go
PBO	Planning and Budgeting Office
PC	Personal Computer
PCA	Permanent Court of Arbitration
PDA	Personal Digital Assistant
PDP	Peoples Democratic Party
PHCN	Power Holding Company of Nigeria
PIB	Petroleum Industry Bill

Abbreviation	Full Name
PIN	Personal Identification Number
PKI	Public Key Infrastructure
PMA	President's Management Agenda
PMO	Project Management Office
PPP	Public Private Partnership
PPP USD	Purchasing Power Parity United States dollar
PPSS	Personnel Policy Support System
PRM	Performance Reference Model
PSA	Public Service Award
PSIN	Public Service Institute of Nigeria
PSSDC	Public Service Staff Development Centre
PTF	Presidential Task Force
PTN	Packet Transmission Network
PTO	Plant and terminal operations
Q&A	Questions and Answers
R&D	Research and development
RAR	Risk Assessment Report
Reltel	Reliance Telecoms
RFID	Radio Frequency Identification
RITC	Rural Information Technology Centres
ROI	Return on Investment
RoW	Right of Way
RSS	Really Simple Syndication
SA	Special Advisor
SAFE	South Africa Far East
SAT 3	South Atlantic 3
SB	Senate Bill
SCM	Supply Chain Management
SCS	Senior Civil Service
SDF	Service Development Framework
SDH network	Synchronous Digital Hierarchy network
SDLC	System Development Lifecycle
SERVICOM	Service Compact with all Nigerians
SIFMIS	State Integrated Financial Management Information Systems
SIIS	Social Insurance Information Sharing System
SITA	Societe International Telecommunication Aeronautiques
SMS	Short Message Service
SNO	Second national operator
SON	Standards Organisation of Nigeria
SPV	Special Purpose Vehicle
SQM	Square metre
SRM	Service Component Reference Model
Std	Standard
STEPS	Service, Technology, Employees, Policy and management and Social responsibilities
STM	Synchronous Transport Module
SUBEBs	State Universal Basic Education Boards
SW	Software
SWOT	Strength, Weakness, Opportunities, Threats
T & P	Technology and Policy

Abbreviation	Full Name
TBD	to be determined
Tbit	Tera bit
TCC	Tax Clearance Certificate
TCN	Transmission Company
TEN	Trans-European Network
TII	Telecommunication Infrastructure Index
TKC	Tinapa Knowledge City
TRCN	Teachers Registration Council of Nigeria
TSA	Treasury Single Account
TUGAR	Technical Unit on Governance Anti-Corruption Reform
TV	Television
TVET	Technical and Vocational Education & Training
u-Government	Ubiquitous Government
UAE	United Arab Emirates
UBE	Universal Basic Education
UBEC	Universal Basic Education Commission
UCS	Unified Communication System
UK	United Kingdom
UMTS	Universal Mobile Telecommunication System
UN	United Nations
UNAMID	United Nations Mission in Darfur
UNCTAD	United Nations Commission for Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Program
UNDPEPA	United Nations Division for Public Economics and Public Administration
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNFAO	United Nations Food and Agriculture Organization
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organisation
UNIFIL	United Nations Interim Force in Lebanon
UNISFA	United Nations Interim Security Force for Abyei
UNITAR	UN Institute for Training and Research
UNMIL	United Nations Mission in Liberia
UNMISS	United Nations Mission in the Republic of South Sudan
UNOCI	United Nations Operation in Côte d'Ivoire
UNODC	United Nations Office on Drugs and Crime
UNWTO	United Nations World Tourism Organization
UPS	Uninterruptible Power Supply
UPU	Universal Postal Union
US	United States
USAID	United States Agency for International Development
USD	United States dollar
USPF	Universal Service Provision Fund
VA	Volt-ampere
VIO	Vehicle Inspection Office
VSAT	Very Small Aperture Terminal
WACS	West Africa Cable System
WAEC	West African Examinations Council
WAN	Wide Area Network

Abbreviation	Full Name
WAP	Wireless Application Protocol
WCO	World Customs Organization
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization
WPTPSD	white papers on Transforming Public Service Delivery
WTDC	World Telecommunication Development Conference
WTO	World Trade Organisation
XML	Extensible Markup Language

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EXECUTIVE SUMMARY

1. Project Overview

1.1 Project Title and Period

- Project title: Establishment of the Nigerian Master Plan e-Government 2020
- Project period: 11 months from January to November, 2014

1.2 Project Background

Korea International Cooperation Agency (KOICA) of the Republic of Korea dispatched the project survey and design teams and its representatives from December 2012 to August 2013 for the preparation and design of the Project, "Capacity Building of e-Government in Nigeria," which was requested by Nigerian Government in 2011.

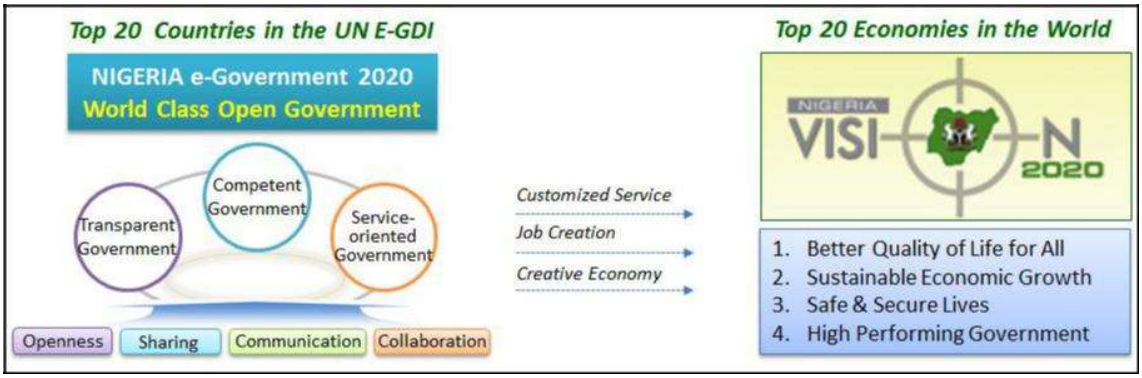
During this period, KOICA has conducted a series of discussions between the representatives of the Federal Ministry of Communication Technology, Public Service Institute of Nigeria and other authorities concerned to work out details and desirable measures to be taken by the competent agencies for the successful implementation of the Project. Based on such discussions, a Record of was produced and signed in November, 2014.

The establishment of a Master Plan for Nigeria e-Government at the national level is included in the main Project, "Capacity Building of e-Government in Nigeria."

1.3 Project Objectives

The Nigerian Vision 20:2020 aims at improving the living standards of her citizens and placing the country among the Top 20 economies in the world.

The overall purpose and rationale of the Master Plan for Nigeria e-Government 2020 is to strengthen the transparency, the efficiency and the quality of public administration service in line with Nigeria's Vision 20:2020.



1.4 Scope of the Assignment

The master plan assignment includes areas such as the legal system, organizational framework, G2G/G2B/G2C services, HRD/awareness and infrastructure.

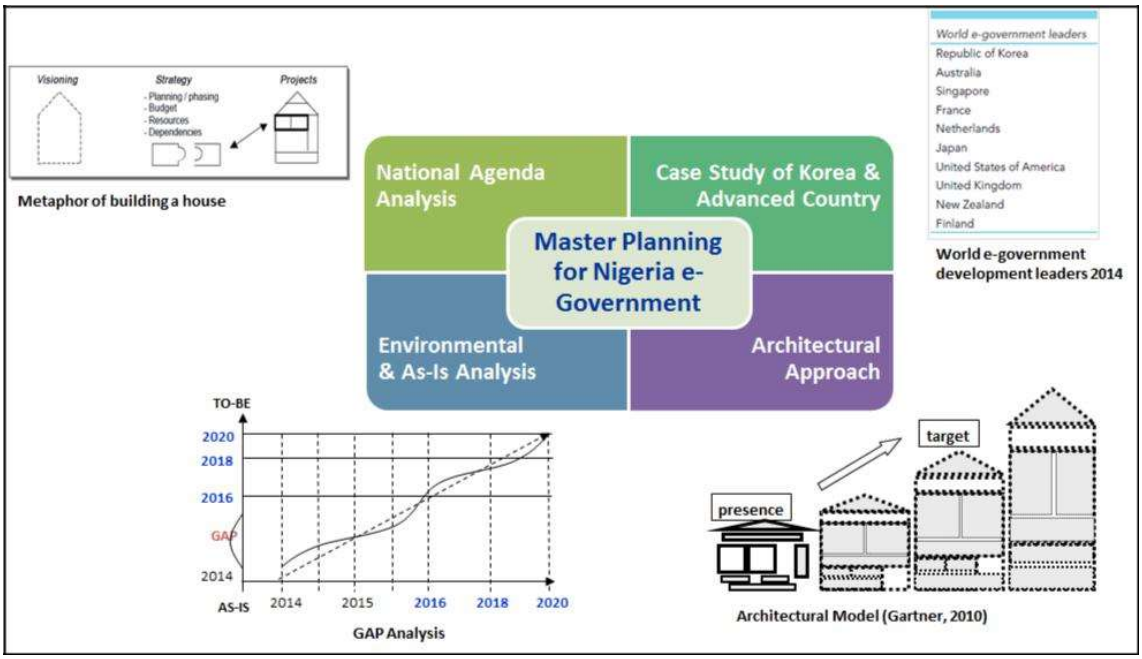
2. Approach to the Study

The master plan for e-Government in Nigeria has been developed based on the following three phases: pre-implementation, implementation and post-implementation.

In the pre-implementation phase, political leaders should drive the e-Government initiative, and there should be a few champions carrying out activities to increase social awareness. Secondly, the social governance including the establishment of a core agency to implement e-Government needs to be built up. Thirdly, the environmental analysis and the benchmarking need to be conducted.

In the implementation phase, the vision and strategic goals of e-Government need to be set based on the review of the environment and constraints. Secondly, the roadmap and milestones corresponding to the strategic goals need to be set up. Thirdly, strategic priorities should be decided by reviewing the degree of government innovation, aspects of demand and supply, bottom-up and top-down approach, sourcing, and the result of the stakeholder analysis. Fourthly, based on the As-Is analysis, a To-Be model to be achieved with present resources, which are key success factors, should be proposed. Finally, the action plan and a roadmap for system development should be presented

At the post-implementation phase, 3 tasks should be done; firstly, the performance of the project should be evaluated by monitoring whether it has been implemented according to the plan without deviation. Secondly the operation and maintenance of the project should be considered along with management of information resources. Thirdly, the promotion of e-Government services to people and getting feedback about the project should be carried out to make the services fully utilized and to develop the second round project for upgrading of e-Government, respectively.



3. National Agenda Analysis

3.1 Nigeria Vision 20:2020

Vision 20:2020 is an articulation of the long-term intent to lead Nigeria onto a path of sustained social and economic progress and to accelerate the emergence of a truly prosperous and united Nigeria. Recognising the enormous human and natural endowments of the nation, the blueprint is an expression of Nigeria's intent to improve the living standards of her citizens and place the country among the Top 20 economies in the world with a minimum GDP of USD 900 billion and a per capita income of no less than USD 4000 per annum.

3.2 e-Government Vision & Strategies

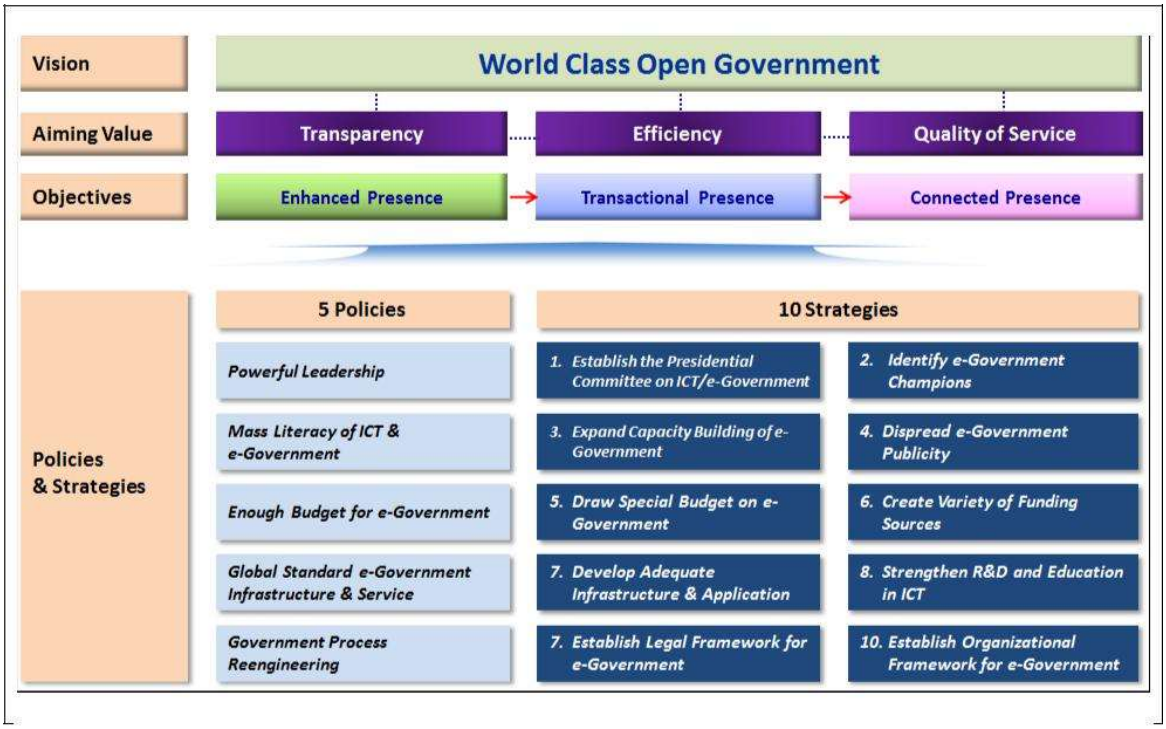
In many countries, the e-Government vision includes the enhancement of national competitiveness, facilitation of market economy, promotion of participatory democracy, and improvement of quality of citizens' lives by reducing governmental failures, and mitigating the limitation of the representative democracy. Such vision can be realized by accomplishing specific objectives such as the efficiency of public administration, responsiveness of civil services, transparency in policy processes, and people's participation.

The e-Government 2020 Master Plan will open a new chapter in Nigeria's e-Government journey. The vision of a collaborative government that co-creates and connects with people will bring Nigeria to the next frontier of e-Government.

The strategy workshop was conducted to grasp the strategic intention of top government officials and get support from them for the establishment of the Master Plan. Thus, the objective of the strategy workshop is to derive the vision, objectives, and operational strategies for the future of Nigeria's e-Government. The analysis of its results was also useful to derive specific tasks to be performed and to prepare the action plan. The following table shows the result of the SWOT analysis derived from the strategy workshop.

<table>
<tr><th rowspan="2">SWOT Analysis</th><th>Opportunities</th><th>Threats</th></tr>
<tr><td>• International partnership
• Fast growing economy
• Nigeria's Strategic importance and influence in Africa
• People's demand for change
• Growth of foreign investment</td><td>• Corruption
• Insecurity
• Resistance to change
• Political instability
• Lack of policy continuity</td></tr>
<tr><td>Strengths
• Human Resource
• Natural Resource
• Capital Resource
• Climate
• Large population & Market size</td><td>SO
• Expand Capacity Building of e-Government
• Create Variety of Funding Sources</td><td>ST
• Establish the Presidential Committee on e-Government
• Identify e-Government Champion
• Draw Special Budget on e-Government</td></tr>
<tr><td>Weaknesses
• Bad governance
• Weak in policy implementation & execution
• Poor leadership
• Poor Infrastructure
• Disunity</td><td>WO
• Develop Adequate Infrastructure & Application
• Strengthen R&D and Education in ICT</td><td>WT
• Establish Legal Framework for e-Government
• Establish Organizational Framework
• Dispread e-Government Publicity</td></tr>
</table>

The following figure depicts the conceptual view of the Nigeria's e-Government Vision 2020 that contains vision, objectives, policies and strategies.



3.3 Document review and Stakeholder engagement

There have been various stakeholder engagements and input to update and further enrich the document:

- Stakeholder Engagement Workshop (December 2015)- attended by representatives from various MDAs, ICT Sector professional bodies and private sector representatives;

- Presentation to the Body of Permanent Secretaries' meeting (February 2016) to sensitize them and obtain their buy-in, for a successful implementation of the plan;

- Circulation of copies of the e-Government Masterplan document to all Ministries and various other Agencies of Government, for their information and further input into the document. These includes the Office of the Secretary to the Government of the Federation; Ministry of Power, Works and Housing; Ministry of Science and Technology; Ministry of Women Affairs; Office of the Head of Service of the Federation; National Identity Management Commission etc. Several useful contributions were also received and has since been incorporated into the document.

4. Status Analysis

4.1 Nigeria e-Government Evaluation – UN EGDI 2014

The key challenges for the e-Government development of Africa include the widespread lack of infrastructure and functional literacy. Despite recent expansion in mobile telephony, most countries in Africa remain at the end of the digital divide. These challenges have been translated into a lower than world average e-Government development for all sub-regions.

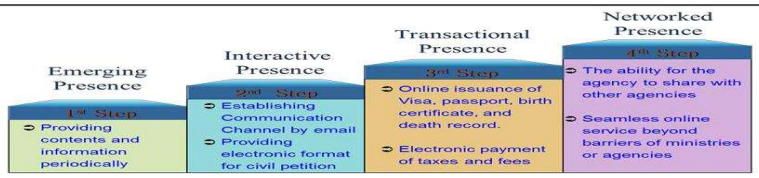
However, Nigeria has much improved in its World e-Government development ranking from 162nd in 2012 to 141st in 2014. Also its e-Government development score increased from 0.2676 in 2012 to 0.2929 in 2014. The rankings and scores of Components on e-Government development index 2014 are shown in the following table.

Country	e-Gov. Development Ranking		e-Gov. Development Index	
	2014	2012	2014	2012
Nigeria	141	162	0.2929	0.2676
Austria	20	21	0.7912	0.7840
Republic of Korea	1	1	0.9462	0.9283
Africa			0.2661	0.2780
World			0.4712	0.4882

Country	Online Service Component	Telecomm. Infrastructure Component	Human Capital Component
Nigeria	0.3071	0.1905	0.3811
Austria	0.7480	0.7597	0.8660
Republic of Korea	0.9764	0.9350	0.9273
Africa	0.2011	01478	0.4492
World	0.3919	0.3650	0.6566

Four stages of e-Government and UN EGDI & OSI

The single window portal of e-Government services (http://services.gov.ng) provides all the information on all government to citizens, government to business and government to foreign national services in Nigeria. Nigeria has made the significant progress for online services. However, the country has not fully reached the transactional and network stage.



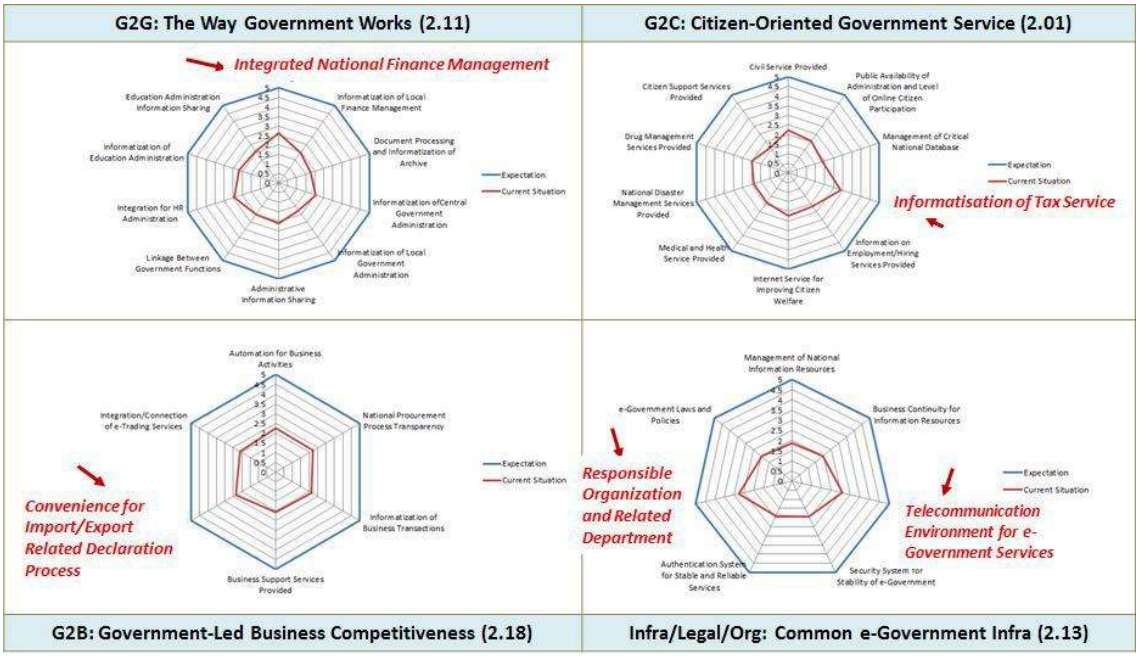
Country	EGDI Ranking	Online Service Index: UN Survey 2014(2012)			
		Stage I (7%)	Stage II (24%)	Stage III (30%)	Stage IV (39%)
Korea	1 (1)	100(100)%	82(79)%	77(92)%	88(87)%
Austria	20 (21)	100(100)%	75(71)%	51(67)%	44(54)%
Columbia	50 (43)	88(100)%	75(76)%	56(65)%	65(74)%
Tunisia	75 (103)	91(92)%	61(45)%	33(29)%	53(41)%
South Africa	93 (101)	75(100)%	43(60)%	12(17)%	24(35)%
Nigeria	**141 (162)**	**56(58)%**	**36(12)%**	**14(10)%**	**30(25)%**

4.2 Site Visit, Interview and Questionnaire Survey

Visits to more than 30 organizations including MDAs, State Governments and the related institutions have been made during the project period for interviews and questionnaire surveys to analyse the current status of e-Government in Nigeria.

Questionnaire survey was conducted to evaluate the level of e-Government maturity focusing on improvement themes on four critical service areas; G2G, G2B, G4C and infrastructure. Each service area had three or four improvement themes, for a total of 14 improvement themes. Each of the improvement themes had one to four indicators for a total of 33 indicators. The following survey result shows the level of e-Government perception.

e-Gov. Area	Expectation	Current Situation
G2G: The Way Government Works	5.00	2.11
G2C: Citizen-Oriented Government Services	5.00	2.01
G2B: Government-Led Business Competitiveness	5.00	2.18
Infrastructure/Legal/Organizational Framework	5.00	2.13

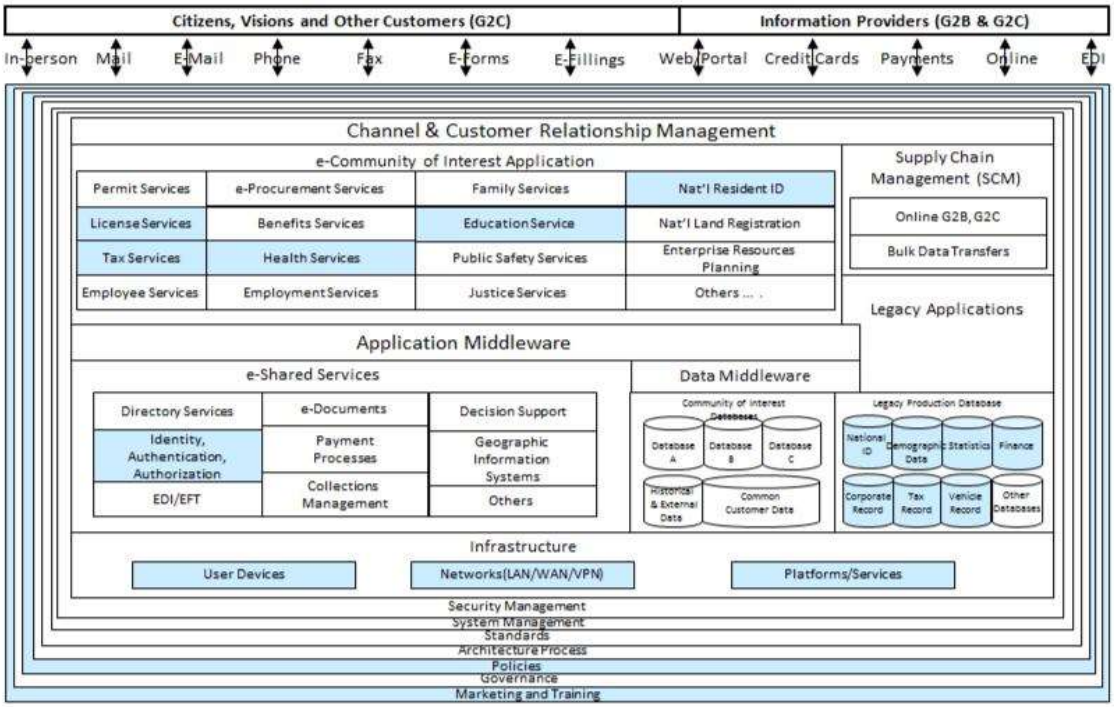


4.3 Current Status of e-Government on Architectural Model in Nigeria

Shaded blocks in blue show those components where Nigeria has acquired some substantial achievements. This figure is drawn based on the documents analysis, interviews and surveys.

Nigeria has built some part in each block, but they are not organically integrated to function as a whole.

Blocks for application services, application middleware, infrastructure and governance are all weak and immature in Nigeria.



5. Benchmarking

Benchmarking is not limited only to success cases. It is more important to gain lessons by thoroughly studying failed cases. In addition, the context, along with facts, should be carefully looked at in order to overcome the errors in benchmarking. A lot of cases show that the obstacles for successful e-Government are found at a variety of levels; the condition circumstance and culture of the times at the macro level, laws and leaderships at the meso level and project management at the micro level. Therefore, it is crucial to study failure factors examined in multiple levels.

Our cases include Korea, Kenya, South Africa and other advanced countries such as U.S.A., Finland, Sweden and Canada. Through those case studies the valuable lessons have been attained:

- ❑ Leadership

The most crucial success factor of the e-Government project is the solid vision and continuous support of political leaders. A lot of e-Government projects tend to fail because the political leaders do not have precise understanding of e-Government they do not maintain continued support from the beginning to the end of the project. Political leadership is also interrelated to his/her term of office. Therefore, it is crucial to set relevant laws and regulations to institutionalize his/her strong will and interest early in his/her term so that resources appropriate for the project can be allocated in a proper and timely way during implementation, preventing outside influences. Presidential efforts to make the national assembly, media and people understand the intangible and long-term advantages of e-Government are important.

Various forms of committees can be organized or utilized to help a political leader make a final decision by providing coordination among a variety of opinions and interests. Yet, the terms of reference for the committees need to be carefully defined; how the chair or members

will be organized, whether they simply provide advices or are bestowed with power to review and coordinate will change the result of their performance.

❑ Core Institution Building

Lead Agency: e-Government can be implemented only when the presidential will and social consensus become tangible by setting up key agencies for the project. The kinds of lead agencies adopted by countries can be largely classified into 4 models; the president (prime minister), the ministry of budgeting and planning, the ministry of science, information and telecommunication, and the ministry of public services. The models can also be differentiated according to the political and administrative system, economic situation, and historical background of each country.

Technical Support Agency: The e-Government project requires technical expertise, being a process of linking governmental tasks with technologies. This creates a need for a public agency supporting the project with a variety of technical activities such as outsourcing and purchasing equipment. In general, the management system of the public sector is operated following government-wide human resource management such as payment and promotion Hierarchical and inflexible management system, characterized as low salary and difficult promotion, tend to create an environment where technical professionals with special expertise are reluctant to join in the public service. When hired, they may deskill themselves to fit in the inflexible public sector for survival. Therefore public agency should be set up to fully utilize technical experts.

Common Features: Firstly, the e-Government project tend to have strong linkage with government innovation, as the cases shown by the Office of Management and Budget (OMB) in USA, the e-Government Unit (or E-envoy) of the Cab net Office in UK, and the Special Committee for e-Government in the Republic of Korea. Secondly, the performance management of the e-Government project tends to be reinforced, as the amount of national budgetary resources input to the project continues to expand. In many cases, performance evaluation is conducted by the ministry of budget planning or finance

❑ e-Readiness and Social Awareness

e-Readiness: Firstly, people's literacy and access to the system should be considered. Access to information system requires general literacy of citizens as well as computing skills of users. Secondly, all levels of schools from elementary to university provide students with Internet-based learning services.

Awareness: Making e-Government a social agenda requires the leadership from not only a political leader but also the policy initiator group who can draw social interest with their expertise and anticipation for the future. The policy initiator group includes university professors, media and civil societies who show high interest in e-Government. It can be effectively utilized to improve social awareness by establishing a policy network. The widespread dissemination of the Internet in the Republic of Korea is a result of, not only the government promotion policy since 1980s, but also the social campaigns led by such policy networks. One major press in 1994 began to trumpet the social campaign "Let's lead the world in information society, although we were late in industrialization." That caused a strong social response. A lot of universities and NGOs led the social campaigns to improve national awareness by holding diverse competitions to promote the informatization mindset of people. A strong demand for informatization from both economic and social side can leverage the expansion of awareness for e-Government.

❑ Financial Resources

While some agenda on government innovation can be achieved only by reforming legal framework without financial implication, e-Government requires a huge amount of financial input for each stage. Yet, e-Government won't be able to secure the necessary budget or be implemented, when it is not considered as a core agenda. Because there is uncertainty in government innovation and information technologies, because it takes a long time to recover the investment, and because its outcomes are intangible, e-Government may be viewed by tax-payers as a project difficult to accept. In addition, it is not easy to evaluate each ministry for its success on e-Government as many projects are implemented across multiple ministries. Therefore, it is crucial to devise some other way to secure the budget for e-Government, different from the way to raise funds for general government projects.

6. Implementation

6.1 Procedure of Selecting Project Initiatives

The following sequential steps were sought to map out "Nigeria e-Government 2020 Master Plan":

- There are inputs from various stakeholders comprising (a) high level officials, (b) ministries and agencies, (c) industries, and (d) academy;
- These various ideas and inputs are screened and identified as eligible initiatives, programmes, and projects;
- Initiatives, programmes, and projects are selected by the criteria including (a) urgency (b) strategic importance, (c) technical feasibility, and (d) political feasibility
- Initiatives, programmes and projects are categorized in terms of area, scale, maturity, and technology enabler for effective management:
- Shared/common services are identified as high priorities, and
- Through discussions with the FMoC and other stakeholders, individual projects and action plan are confirmed.

6.2 Selected Initiatives and Action Plan

A total of 25 e-Government project initiatives were identified to achieve the strategies for arriving at the Nigerian e-Government Vision 2020. They were selected through the procedures described above.

e-Government can be seen as a socio-technical system consisting of technical subsystem (electronics) and social subsystem (government) which are interwoven with each other. The 25 e-Government project initiatives can be mapped into the subsystems.

The major contents of action plan of each initiative were organized in the order of As-Is analysis (current status and problems), major issues and To-Be model, detailed implementation plan, and expected effects. The detailed implementation plan includes objectives, directions and strategies, implementation framework, the service contents and improvements time schedule, annual budget planning (tentative), progress review and performance evaluation.

As the result of series of discussions including a strategy workshop and two technical workshops, top 6 priority initiatives were derived from the 25 initiatives.

5 Policies, 10 Strategies and 25 Initiatives

5 Policies	10 Strategies	25 Initiatives
1. Powerful Leadership	1. Establish the Presidential Committee on ICT/e-Government	▪ Establish Presidential Committee on ICT/e-Government
	2. Identify e-Government Champions	▪ Develop a talent pool of e-Government champions
2. Mass Literacy of ICT & e-Government	3. Expand Capacity Building of e-Government	▪ Develop capacity building program
	4. Dispread e-Government Publicity	▪ Conduct publicity campaign for e-Government ▪ Develop Information Access Centre
3. Enough Budget for e-Government	5. Draw Special Budgeting on e-Government	▪ Create and utilize e-Government promotion fund
	6. Create Variety of Funding Sources	▪ Funding through long-term financing instruments
4. Global Standard e-Government Infrastructure & Service	7. Develop Adequate Infrastructure & Application	▪ Improve Government Integrated Data Centre (GIDC) ▪ Develop e-Signature/Authentication ▪ Establish Standard Software Framework for e-Government
		▪ e-Finance (GIFMIS/SIFMIS), e-Procurement, e-Taxation e-Customs, e-Education, e-Health, e-Agriculture, e-Immigration, e-Voting, Clean Civil Servant, Public Information Sharing System
	8. Strengthen R&D and Education in ICT	▪ Expand education in ICT and enhance quality of ICT education
5. Government Process Reengineering	9. Establish Legal Framework for e-Government	▪ Laws necessary for e-Government ▪ General laws for the information society
	10. Establish Organizational Framework for e-Government	▪ Build the dedicated organization structure for e-Government implementation

Subsystems	Components	Initiatives	
Social Subsystem	Governance	1. Establish Presidential Committee on ICT/e-Government	
		2. Develop a talent pool of e-Government Champions	
		3. Develop capacity building program	
		4. Conduct publicity campaign for e-Government	
		5. Develop Information Access Centre	
		6. Create and utilize e-Government promotion fund	
		7. Funding through long-term financing instruments	
		8. Expand education in ICT and enhance quality of ICT education	
	Legal and Regulatory Arrangement	9. Laws necessary for e-Government	
		10. General laws for the information society	
	Organizational Structure	11. Build the dedicated organization structure for e-Government implementation	
Technical Subsystem	Infrastructure & Technology	12. Improve Government Integrated Data Centre	
		13. Develop e-Signature/Authentication	
		14. Establish Standard Software Framework for e-Government	
	Service Application	15. e-Finance (GIFMIS/SIFMIS)	24. Clean Civil Servant 25. Public Information Sharing System
		16. e-Procurement	
		17. e-Taxation	
		18. e-Custom	
		19. e-Education	
		20. e-Health	
		21. e-Agriculture	
		22. e-Immigration	
		23. e-Voting	

Top 6 Priority Initiatives in e-Government of Nigeria

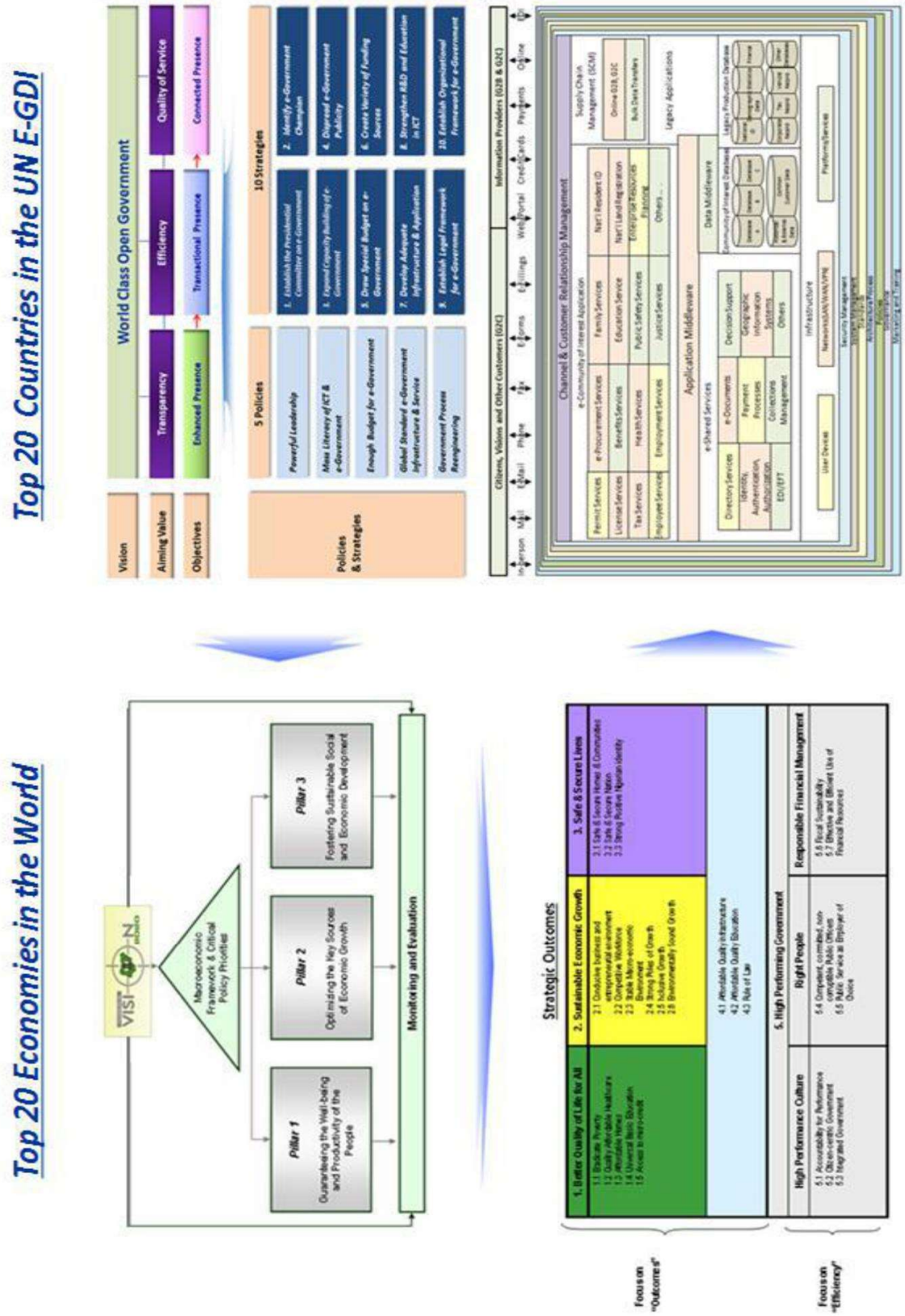
No.	Initiatives
1	Establish Presidential Committee on ICT/e-Government
2	Develop capacity building program
3	Create and utilize e-Government promotion fund
4	Laws necessary for e-Government
5	Establish Standard Software Framework for e-Government
6	e-Procurement

6.3 Nigeria e-Government 2020 Roadmap

The roadmap of Nigeria e-Government 2020 could be developed by the combined arrangement of the 25 initiatives' action plan.

Phases	Steps	Initiatives/Activities	Main Ministry	~ 2014	2015	2016	2017	2018	2019	2020
Pre-Implementation	Leadership & Awareness	2: Develop a Talent Pool of e-Government Champions	FMCT	Redefine ICT Head Council	Relevant Laws & Regulations	Capacity Building	Capacity Building	Capacity Building	Capacity Building	Capacity Building
		4: Conduct Publicity Campaign for e-Government	FMCT NITDA/NCCT FME/State Gov.	Develop Campaign Program	Mass Media Road Show Annual Award	Mass Media Road Show Annual Award	Mass Media Road Show Annual Award	Mass Media Road Show Annual Award	Mass Media Road Show Annual Award	Mass Media Road Show Annual Award
	Institution Building	1: Establish Presidential Committee on ICT/e-Government	FMCT	Task Force Set up	Set up & in Operation	Presidential Committee	Presidential Committee	Presidential Committee	Presidential Committee	Presidential Committee
		11: Build the Dedicated Organization Structure for e-Government Implementation	FMCT	Task Force Set up	Partnership Building: Presidential Committee e-Government Special Committee & Information Promotion Committee					
	Analyze Environment	3: Develop Capacity Building Program	FMCT OHCSF State Gov. FME	Prepare CDP	Phase I-1	Phase I-2	Phase I-3	Phase II-1	Phase II-2	Phase II-3
				Federal/State Cyber Training & CDP for Citizen	9,480/22,000 Establish Center Develop Program	9,480/48,400 Training	9,480/79,200 Training	9,480/79,200 Training	9,480/79,200 Training	9,480/79,200 Training
		8: Expand Education in ICT and Enhance Quality of ICT Education	FMCT, FMITI FME, UBEC NMEC, NCNE	Develop ICT Education Enhance Program	Government Industry/Citizen	Government Industry/Citizen	Government Industry/Citizen	Gov/Citizen Industry	Gov/Citizen Industry	Gov/Citizen Industry
		5: Develop Information Access Center	FMCT (NITDA)	Task Force Set up Blueprint Preparation	Harmonizing Authority Setup 500+α	Expand 700+α	F/S & 30 Pilot Smart Info Center	400+α Smart Info Ctr	700+α Smart Info Ctr	1000+α Smart Info Ctr
	Benchmarking	Past Cases, Foreign Countries	NITDA	Case Study of Korea	Other Countries	Continued	Continued	Continued	Continued	Continued
Implementation	Vision & Goals	Vision & Strategic Goals	FMCT	Redefine	Evaluate	Evaluate	Evaluate/Update	Evaluate	Evaluate	Evaluate
	Develop Roadmap	Prioritization of projects	FMCT & Related MDAs	Prioritization & Description	Revision	Revision	Revision	Revision	Revision	Revision
	Reform	Business process reengineering for e-Government	FCSC,OHCSF,OHSCS	Task Force Set up	Special Committee on Gov. Innovation	Special Committee on Gov. Innovation	Special Committee on Gov. Innovation	Gov. Innovation	Gov. Innovation	Gov. Innovation
	Manage Critical Factors	6: Create and utilize e-Government promotion fund	FMF, NPC	Information Promotion Fund	Separate e-Government Budget	e-Government Budget	e-Government Budget	e-Government Budget	e-Government Budget	e-Government Budget
		7: Funding through long-term financing instruments	FMF, NPC	Working Group	Special Bond, Economic Development Cooperation Fund, ODA from ADB, World Bank, etc.					
		12: Improve Government Integrated Data Center	FMCT (GBB)	Plan: MOU with NDA	ISP for Tier 4 GIDC					
				2nd Center Development	Under Construction	Cloud by eGovFrame	Scale-up to Tier4	Scale-up	Scale-up	Scale-up
				CDP Concept Paper	Capacity Building	Capacity Building	Capacity Building	Capa. Building	Capa. Building	Capa. Building
		13: Develop e-Signature/Authentication	FMCT (NITDA)	CA: Blueprint, TF MOU with KISA	CA Establishment					
				Concept Paper for PKI	F/S, ISP, Kick-off	Development	Complete Develop	Scale-up	Scale-up	Scale-up
				Education & Training	Course & Material	100 Experts	200 Experts	2000 developer	2000 developer	2000 developer
		14: Establish Standard Software Framework for e-Government	FMCT (NITDA)	TF, MOU with NIA	Center Establish	Coop w/ other country				
				ISP for Portal	Portal Development	Scale-up	Scale-up	Scale-up	Scale-up	Scale-up
				Capacity Building	Course & Material	100 Experts	200 Experts	2000 developer	2000 developer	2000 developer
		9: Laws necessary for e-Government	FMCT (NITDA)	Working Group	e-Gov. Act, Cybersecurity & Cybercrime Act		Special Laws Supporting e-Services			
		10: General laws for the information society	FMCT (NITDA)	Working Group	ICT Promotion Act, e-Transaction Act					
	Application Development	15-23: e-Finance, e-Procurement, e-Taxation, e-Customs, e-Education, e-Health, e-Agriculture, e-Immigration, e-Voting	FMCT & Related MDAs	BPR	FS/BPR/ISP, Sys Dev	Complete System	Upgrade	Upgrade	Upgrade	Upgrade
		24: Clean Civil Servant Government System	FMCT, OHCSF	BPR	FS/BPR/ISP, Sys Dev	Complete System	Upgrade	Upgrade	Upgrade	Upgrade
		25: Public Information Sharing System	FMCT	BPR	FS/BPR/ISP, Sys Dev	Complete System	Upgrade	Upgrade	Upgrade	Upgrade
Post-Implementation	Evaluation	Develop monitoring check list & evaluation criteria	FMCT	Control Body	Periodical Monitoring and Ad-hoc, Interim, Post-project Evaluation					
	Operation	Planning & budgeting operation & maintenance	FMCT	Control Body	Comprehensive Plan for Operation & Maintenance, Appropriate Budget Allocation, Information Resources Management					
	Utilization Mgt	Promote the system utilization of the users	FMCT	Control Body	Publicity Activities, Training to Facilitate the Systems, Feedback					

7. Nigeria e-Government 2020 Framework



8. Recommendation for Success

8.1 Seven Critical Success Factors

In order to successfully implement the e-Government in Nigeria, it is strongly recommended to take into consideration the following seven success factors that underlie the notable achievement in e-Government of advanced countries.

CSF-1. Adoption of the Master Plan of Nigeria e-Government as a National Agenda CSF-2. Sustained Investment in e-Government

The sustained investment is required for transforming the nation by ICT/e-Government.

- 1% of the national budget shall be invested into e-Government implementation every year
- It is highly recommended to create and utilize the Information and Telecommunication Promotion Fund to build e-Government projects

CSF-3. Appropriate Institution for Each Phase of e-Government Implementation

In order to sustain e-Government implementation, appropriate laws need to be enacted during each phase ensuring a positive enabling environment for e-Government.

- The establishment of legal systems and the empowerment from the President to the project steering organization will keep Nigeria e-Government policies and strategies consistent.

CSF-4. Dedicated Organization Structure for e-Government Implementation

It is critical to form a dedicated organization structure for e-Government implementation.

- A supervisory committee shall be established directly under the President or Prime Minister
- CIOs shall be designated for central and regional e-Governments, thus creating streamlined support structure.
- Specialized e-Government technical support agencies including NITDA and GBB shall be utilized for field works required for the projects.

CSF-5. Balance between Demand for and Supply of e-Government Services

Nigerian government needs to develop policies for balanced development of information-oriented society on demand side and IT industry on supply-side, so that both sides together can maintain virtuous cycle where one side enforces the other.

- Efficient role division with the government taking care of e-Government policy making, IT companies providing technology and skills, and citizens actively participating were key factors in e-Government implementation and utilization

CSF-6. Change Management of Public Officers in Emerging ICT Environment

What is more important than anything else is to create a positive environment from the potential users like government officials and the general public.

- A scheme for change management in emerging environment needs to be developed to overcome resistance from the users which primarily is caused by the fear of workforce reduction and the avoidance of using information systems.

CSF-7. Capacity Development Program for Civil Servants and Citizens

Capacity development program can be used as a catalyst for government reform.

- A dedicated training organization for e-Government has to be established.
- Optimized e-Government training courses for Nigeria have to be developed.

8.2 Ten Principles

It is also recommended to adhere to the following principles when implementing the e-Government.

Principle 1. More Attention to Organizational Changes

The primary goal of e-Transformation lies in government transformation and social change rather than IT Initiatives. More attention has to be paid to organizational changes than application developments obsessed with technical fantasy.

Principle 2. Consistent Policy

Information Systems is not made all at once but grows over time. Remarkable achievement of e-Transformation is not made in a day or two, but it is the results from strenuous efforts and consistent policy line all through the implementation period.

Principle 3. Inclusion of the Users

The success of e-Transformation projects is not determined by the IS outputs but the outcomes perceived by the users. Inclusion of the users in all sectors of e-Government system as a feedback mechanism is critical to the success

Principle 4. Sharing a Vision

The purpose of formulating a vision of e-Transformation is not to show up but to share among the parties concerned. Vision is tomorrow's reality but not yet realized today. Sharing a vision is the source of leadership to propel the project and the energy for the positive climate creation.

Principle 5. Focus on the Citizens

The focus of e-Transformation should be on the citizens not on the government. IS at the core of e-Transformation is nothing but a vehicle of value to the users. Therefore we need to think hard what the citizens really want from the services by the government.

Principle 6. Establishing Data Reference Model (DRM)

Global databases has to be designed first of all else to cover entire government functions. Securing the data as shared resource common to all business units is the key to successful improvement of responsiveness of entire organization and the source to develop a variety of services. Therefore, establishing data reference model (DRM) to cover the entire government functions has to be done above all else.

Principle 7. New Practices of Managing Data by Attributes

Data management practices have to be changed to accommodate new breeds of data. Data management by forms should be shifted to the new practices of managing data by attributes, so that not only predefined alphanumeric business data but also new types of data like stream social data circulating though social media and the data sensed from all artifacts in real world.

Principle 8. Plan for Tomorrow

e-Transformation plan has to be set up not for today but for tomorrow. True ICT revolution is yet to come. We need to be attentive to the new opportunities provided by the Internet of Things (IOT) via ubiquitous-IT and the socialization of the Internet via social media.

Principle 9. Adaptive Officials and the Public

A way to enlighten government officials and the public has to be found to make them adaptive to emerging information environment. We need a new breed of people who are capable of interpreting and utilizing multi-dimensional information (not only alphanumeric data processing but sensed data-based context processing as well).

Principle 10. Laws Adaptive to Environmental Changes

Laws adaptive to environmental changes should be prepared in advance. Management of growth simply means management of timing. We should be aware of the bust to come soon after rapid growth, which will in turn require tremendous social costs.

I. INTRODUCTION

II. LITERATURE REVIEW

2.1 Concepts

2.1.1 Various Concepts

A lot of people benefiting from a variety of information technologies often do not have precise understanding on what e-Government is. Therefore, the first task to carry out e-Government project is to make stakeholders understand the concept, objectives, needs, scope and contents of e-Government.

Many questions regarding e-Government have been made focusing on its relationship with IT, information society, computerization, informatization, e-business, e-democracy, ubiquitous computing and the innovation of government. The meanings of these concepts are similar and often misused. Yet, the major common feature of these concepts can be said that their meanings change corresponding to the development of IT and the intensity of governmental innovation.

Before presenting an overall definition of e-Governance, the relation between governance, e-democracy and e-Government is explained. E-democracy refers to the processes and structures that encompass all forms of electronic interaction between the Government (elected) and the citizen (electorate). E-Government is a form of e-business in governance and refers to the processes and structures needed to deliver electronic services to the public (citizens and businesses), collaborate with business partners and to conduct electronic transactions within an organisational entity (Backus, 2001)

e-Government is defined as the use of ICTs such as the Internet and the web as a tool to achieve better government by enabling better policy outcomes, higher quality services, and greater engagement with citizens (OECD,2004) This definition is not far from those of not only international institutions (2002:1), but also academic scholars (Snellen, 2005, Holmes, 200, Peristeras et al., 2002). Simply, e-Government means utilizing a variety of the Internet-based IT to achieve administrative objectives. The Internet is crucial, enabling one-to-many interaction between the government and people.

u-Government(ubiquitous government) is based on the mobility in telecommunication and embeddedness in computing ubiquitous services will become available thanks to mobile phones, DMB (digital multimedia broadcasting), BcN (Broadband Convergence Network) which allows convergence of wireless and wired networks, and Pv6 which enables provision of infinite Internet addresses. Radio Frequency Identification (RFID) makes any service to any one at any time in any place possible by embedding electronic chips into moving objects including humans as well as fixed environments. In short, the ubiquitous environment has features like disappearing networks, invisible computers and pervasive services.

2.1.2 Evolution of e-Government Concepts

e-Government is considered as carrying out governmental activities by using the Internet. The information society policy, dealing with the information society problem which is

symmetrical to the industrial society can be seen as the concept that includes all of such evolutionary scopes. The concept of e-Government has been continuously evolving toward a new direction, according to the adoption of new IT or the degree of governmental innovation. c-Government (conventional government), e-Government and u-Government are different in their operational principles, service time, space and methods. For example, u-Government can serve people the best through ubiquitous computing.

Table 12 Evolution of Government

Item	c-Government	e-Government	u-Government
Principles	Bureaucratic process (phone, fax)	Process reengineering using IT (PC, Internet)	Seamless integration and linkage (RFID)
Service time	8 hours a day 5 days a week	24 hours a day 7 days a week	24 hours a day 365 days non-stop
Service space	In-person visit Fax, phone	Customer's home and office using Internet	Customer's location and physical place
Service form	Several visits to offices	Multi-clicks to web portals	One time access to needed service

2.1.3 System Concept

e-Government can be framed by the concept of 'a system', defined as a set of interrelated parts.

Firstly, the whole system consists of parts (subsystems) in vertical and hierarchical order. e-Government, which is one component of e-Governance, along with e-Commerce and e-Democracy, is made of a lot of subordinate parts.

Secondly, resources flow between the parts of the system, both vertically and horizontally as input, throughput, output and feedback. The resources moving in the system include not only physical resources such as people and information, but also intangible ones like demand, support, and expectations of people.

Thirdly, the system is open to the environment outside and actively interacts with it. Interacting flexibly with the outside environment, the system can improve its ability of adaptation.

With three features of the system being considered, e-Government can be seen as a socio-technical system consisting of technical subsystem (electronics) and social subsystem (government) which are interwoven with each other.

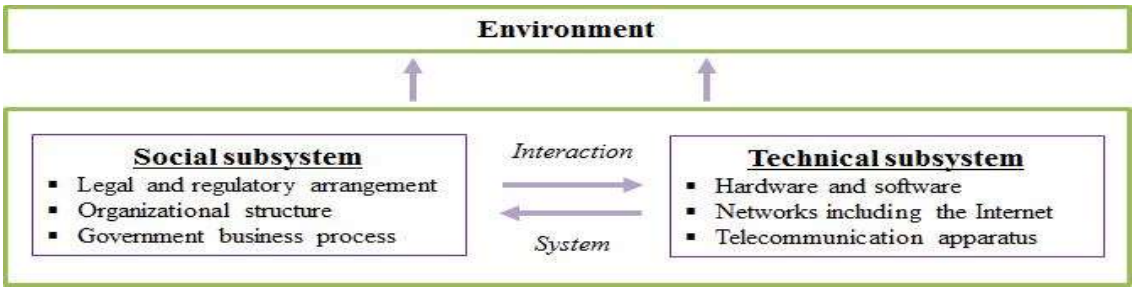


Figure 4 e-Government as a Socio-technical System
Source: UNESCO, "e-Government in Developing Countries," 2006

2.2 Several Definition of e-Government

The following definitions come from a number of global sources, including the World Bank, United Nations, Global Business Dialogue on Electronic Commerce (GBDe) and OECD.

2.2.1 World Bank

e-Government refers to the use of information technologies by government agencies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with businesses and industries, citizen empowerment through access of information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.

e-Government can be seen simply as moving citizen services online, but in its broadest sense it refers to the technology-enabled transformation of government - governments' best hope to reduce costs, whilst promoting economic development, increasing transparency in government, improving service delivery and public administration, and facilitating the advancement of an information society.

Reducing Costs: Putting services on-line substantially decreases the processing costs of many activities compared with the manual way of handling operations. Efficiency is also attained by streamlining internal processes and by enabling faster and more informed decision making.

Promoting Economic development - Technology enables governments to create positive business climates by simplifying relationships with businesses and reducing the administrative steps needed to comply with regulatory obligations. There is a direct impact on the economy, as in the case of e-procurement, which creates wider competition and more participants in the public sector marketplace.

Enhancing Transparency and Accountability: e-Government helps to increase the transparency of decision-making processes by making information accessible - publishing government debates and minutes, budgets and expenditure statements, outcomes and rationales for key decisions, and in some cases, allowing the on-line tracking of applications on the web by the public and press.

Improving Service Delivery: government service delivery, in the traditional process, is time consuming, lacks transparency, and leads to citizen and business dissatisfaction. By putting government services online, e-Government reduces bureaucracy and enhances the quality of services in terms of time, content and accessibility.

Improving Public Administration- e-Government administrative components, such as a computerized treasury, integrated financial management information systems, and human resource management systems, lead to greater efficiency in public administration. Features include the integration of expenditure and receipt data, control of expenditure, human resources management, intelligent audit through data analysis and the publishing of financial data.

Facilitating an e-Society: One of the main benefits of an e-Government initiative consists of the promotion of ICT use in other sectors. The technological and management capacities required for e-Government administration encourage, in turn, the development of new

training courses and modules in schools and universities trying to supply the required skills and capabilities to the market.

2.2.2 United Nations

e-Government is defined as utilizing the Internet and the world-wide-web for delivering government information and services to citizens.

Virtually all government services can be classified under one of three fundamental categories: informational, interactive and transactional. The first, informational, is by far the most significant. Information is at the heart of every policy decision, response, activity, initiative, interaction and transaction between government and citizens, government and businesses and among governments themselves. How information is collected, processed, analyzed, packaged and disseminated is in itself a specialized industry. Successful citizen-centric e-Government programs emphasize the indispensable nature of information while balancing its often limited shelf-life and considerable inflationary component. In the information and knowledge age, there is no institution that produces raw data and new information with more regularity than government. Since services are the public face of government, the primary objective of all e-Government initiatives is to provide the citizen user with an efficient alternative medium for interacting with public sector service providers. This is generally accomplished by improving the flow of information both externally and internally. Information is government's most fundamental output and consequently, transforming ministries, departments, agencies, units and staff to make them "e"-ready is an intense and challenging process.

2.2.3 European Union

e-Government is defined by the European Commission as use of information and communication technologies in public administrations combined with organisational change and new skills in order to improve public services and democratic processes and strengthen support to public policies."

At a time of highly constrained public resources, ICT can help the public sector develop innovative ways of delivering its services to citizens while unleashing efficiencies and driving down costs. The availability of innovative technologies such as social networks has increased the expectations of citizens in terms of responsiveness when accessing all kinds of services on line. However, cross-border e-Government services are few and, even where e-Government services are offered, the majority EU citizens are reluctant to use them. There is clearly a need to move towards a more open model of design, production and delivery of online services, taking advantage of the possibility offered by collaboration between citizens, entrepreneurs and civil society. The combination of new technologies, open specifications, innovative architectures and the availability of public sector information can deliver greater value to citizens with fewer resources.

The European Commission is proposing e-Government Action Plans which aims to realise the ambitious vision. By 2015 European public administrations will be "recognised for being open, flexible and collaborative in their relations with citizens and businesses. They use e-Government to increase their efficiency and effectiveness and to constantly improve public services in a way that caters for user's different needs and maximises public value, thus supporting the transition of Europe to a leading knowledge-based economy."

2.2.4 Organization for Economic Co-operation and Development

There are many definitions of e-Government, and the term itself is not universally used. The differences are not just semantic and may reflect priorities in government strategies. The definitions fall into three groups:

- e-Government is defined as Internet (online) service delivery and other Internet-based activity such as e-consultation.
- e-Government is equated to the use of ICTs in government. While the focus is generally on the delivery of services and processing, the broadest definition encompasses all aspects of government activity.
- e-Government is defined as a capacity to transform public administration through the use of ICTs or indeed is used to describe a new form of government built around ICTs. This aspect is usually linked to Internet use.

Definitions and terms adopted by individual countries have shifted as priorities change and as progress is made towards particular objectives. This is as it should be; the area is a dynamic one and policies and definitions need to remain relevant. In the context of the OECD e-Government Project, the term "e-Government" is defined as:

> *"the use of information and communication technologies, and particularly the internet, as a tool to achieve better government."*

The Internet, building on the established base of ICT use by governments, offers new opportunities for governments to do their job better, and it is primarily for this reason that governments are focusing on it. However, e-Government is more than Internet use or online service delivery. Internet use by governments cannot, and indeed should not, be isolated from the broader digitisation of government activity as a whole; the issue is therefore one of emphasis.

2.2.5 Global Business Dialogue on Electronic Commerce (GBDe)

Electronic government (hereafter e-Government) refers to a situation in which administrative, legislative and judicial agencies (including both central and local governments) digitize their internal and external operations and utilize networked systems efficiently to realize better quality in the provision of public services.

III. RESEARCH METHODOLOGY

IV. NATIONAL AGENDA ANALYSIS

4.1 Overview of Nigeria Vision 20:2020

Vision 20:2020 is an articulation of the long-term intent to launch Nigeria onto a path of sustained social and economic progress and accelerate the emergence of a truly prosperous and united Nigeria. Recognising the enormous human and natural endowments of the nation, the blueprint is an expression of Nigeria's intent to improve the living standards of her citizens and place the country among the Top 20 economies in the world with a minimum GDP of USD 900 billion and a per capita income of no less than USD 4000 per annum.

The Vision Statement

By 2020, Nigeria will have a large, strong, diversified, sustainable and competitive economy that effectively harnesses the talents and energies of its people and responsibly exploits its natural endowments to guarantee a high standard of living and quality of life to its citizens.

Nigeria's targets for 2020 are based on a dynamic comparative analysis of the country's potential growth rate and economic structure vis-à-vis those of other Top 40 economies in the world. This implies that the Nigerian economy must grow at an average of 13.8% during the time horizon, driven by the agricultural and industrial sectors over the medium term while a transition to a service-based economy is envisaged from 2018.

Fundamental to the Vision are two broad objectives – optimizing human and natural resources to achieve rapid economic growth, and translating that growth into equitable social development for all citizens. These aspirations are defined across four dimensions:

- Social Dimension: A peaceful, equitable, harmonious and just society, where every citizen has a strong sense of national identity and citizens are supported by an educational and healthcare system that caters for all, and sustains a life expectancy of not less than 70 years
- Economic Dimension: A globally competitive economy that is resilient and diversified with a globally competitive manufacturing sector that is tightly integrated and contributes no less than 25% to Gross Domestic Product
- Institutional Dimension: A stable and functional democracy where the rights of the citizens to determine their leaders are guaranteed, and adequate infrastructure exists to support a market-friendly and globally competitive business environment
- Environmental Dimension: A level of environmental consciousness that enables and supports sustainable management of the nation's God-given natural endowments to ensure their preservation for the benefit of present and future generations.

Why Vision 20:2020?

The need for a holistic transformation of the Nigerian state has assumed an urgent and critical dimension in the course of the last two decades. Notable is the increasing relevance of Nigeria as a leading emerging market albeit with under-utilised potential. With the return to democratic rule in 1999, and the gradual re-building of civil institutions and a vibrant market

economy, the feasibility of Nigeria assuming a key position as a global economic power and a catalytic hub for development in Africa has become more profound. Using an all-inclusive consultative process involving over 1,000 of the nation's leading professionals and thinkers, Vision 20:2020 is an authentic blueprint by the Nigerian people to set for themselves a stretch target to transform the lives of the average Nigerian, and by implication the Nigerian economy.

The roadmap for Nigeria's economic transformation: How Vision 20:2020 will be realized

The economic transformation strategy for Nigeria is anchored upon three overarching thrusts:

- Creating the platform for success by urgently and immediately addressing the most debilitating constraints to Nigeria's growth and competitiveness;
- Forging ahead with diligence and focus in developing the fabric of the envisioned economy by:
  - Aggressively pursuing a structural transformation from a mono-product economy to a diversified, industrialized economy;
  - Investing to transform the Nigerian people into catalysts for growth and national renewal, and a lasting source of comparative advantage; and
  - Investing to create an environment that enables the co-existence of growth and development on an enduring and sustainable basis.
- Developing and deepening the capability of government to consistently translate national strategic intent into action and results by instituting evidence-based decision making in Nigeria's public policy space.

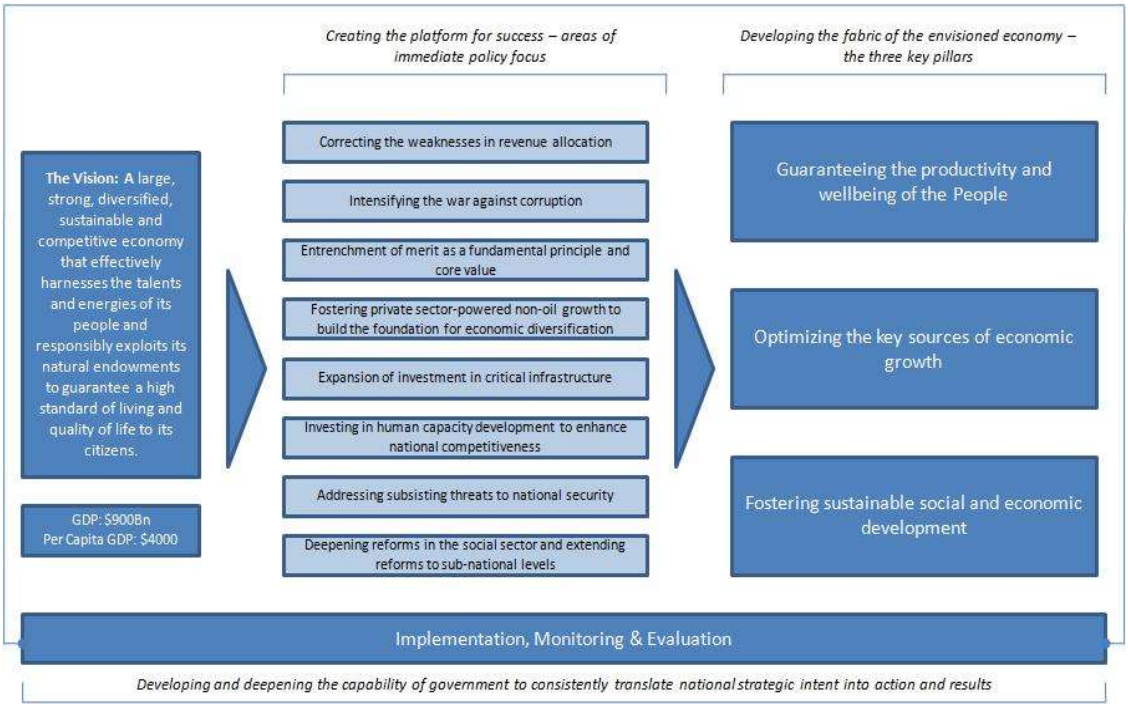


Figure 12 Economic Transformation Strategy for Nigeria

Developing the fabric of the envisioned economy – Three pillars of Vision 20:2020

The three pillars of Vision 20:2020 represent the building blocks of the future that Nigerians desire. The key strategic objectives of these pillars are outlined below:

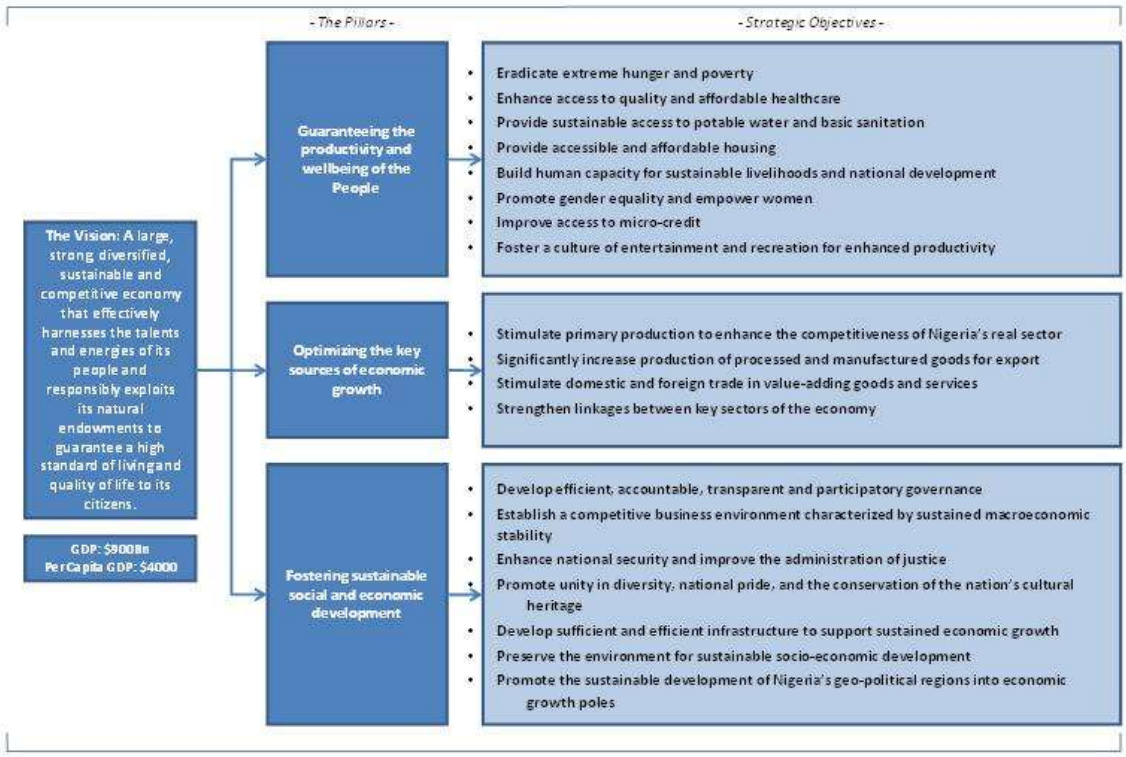


Figure 13 Strategic Objectives

4.2 e-Government Vision & Strategies

4.2.1 e-Government Vision

e-Government vision should be clearly stated so that specific objectives and strategies which can show the future in advance can be set up; it is a desirable blueprint which is feasible as well as imaginative enough to allow people to foresee a beautiful future, and a driving force which makes all members endeavor to accomplish the goals. The vision, objectives and strategies should also reflect the social need and national priorities set by a political leader within the political and economic context of a country.

In many countries, the e-Government vision includes enhancement of national competitiveness, facilitation of market economy, promotion of participatory democracy, and improvement of quality of citizen' lives by reducing governmental failures, and mitigating the limitation of the representative democracy. Such vision can be realized by accomplishing specific objectives such as the efficiency of public administration, responsiveness of civil services, transparency in policy processes, and people's participation.

The vision and objectives of e-Government should be linked with specific strategies and methods related to priority setting and resource distribution for the project.

Korean government has been implementing the project with the vision and objectives that can be realized. The visions like 'leapfrog to the global leader in 21C' and 'realization of world-

best e-Government' are viewed as an appropriate level to drive citizen's interest on the project, considering the size of economy, ICT infrastructure, and the political leader's interest. The objectives are also accomplishable and tangible For implementation strategies and methods, the bottom-up and demand-side approach, which enhance the linkage with governmental innovation, are adopted instead of the top-down and supply-side approach.

4.2.2 e-Government for National Development for Nigeria

e-Government vision of the country must be driven from the development vision and objective of the country. For true results of e-Government the development impact is the key. Any e-Government project will be mission less if there is no improvement in governance process. It will be called pointless if there is improvement in governance process but no development impact. It will be truly meaningful if it has a development impact. Further if an e-Government application is closely linked to the priority development needs of the society then it brings with it broad support and overcomes the resistance.

The various essentials for a good vision and objectives for e-Government are as follows:

- Citizen should be centre of the e-Governance vision of the country
- The Vision should be close to reality and not rhetoric
- Even though the citizen is at the centre the other stakeholders should not be forgotten.
- Citizen should have access to various delivery channels and should not be limited to being online.
- Service improvement and process efficiency are key objectives of e-Government
- The objective should be of collaboration of various organs of the Government
- The outcomes must be clearly defined and the performance should be measured against those outcomes.
- Partnerships with the private sector may also be highlighted in the objectives.
- One of the objective must also recognize citizens as customers of the Government and the customer relationship programs may be evolved further.

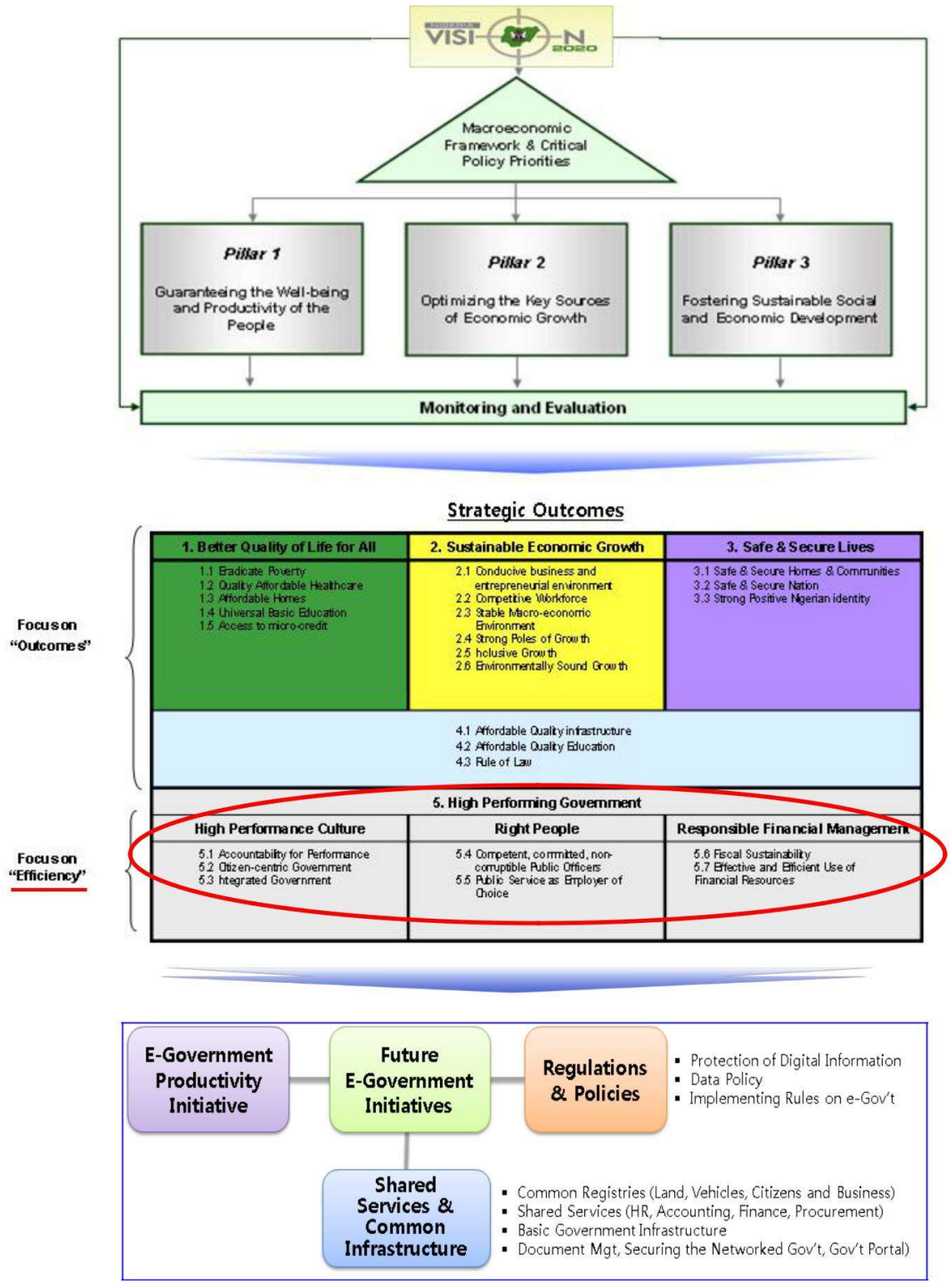


Figure 14 Linkage to Vision 2020:20

4.2.3 Redefining e-Government Vision & Strategies

The digital revolution will facilitate new partnership models with businesses, non-governmental organisations, communities and individuals at multiple levels, beyond basic service delivery and internal integration. The Government must continue to leverage and adapt to the changes in technologies and demographics to provide the best possible public service to people and customers.

The e-Government 2020 Master Plan will open a new chapter in Nigeria's e-Government journey. The vision of a collaborative government that co-creates and connects with people will bring Nigeria to the next frontier of e-Government.

The strategy workshop was the first workshop to get very top level and strategic information for supporting the establishment of the Master Plan. Thus, the objective of the strategy workshop is to derive the vision, objectives, and operational strategies for the future of Nigeria's e-Government. The analysis of its results could be used to find specific tasks to be performed and to prepare the action plan.

The strategy workshop was conducted for one day on 18 Feb, 2014 at OHCSF Conference Room, 1st floor, Block D, Federal Secretariat Complex, Abuja, Nigeria. Participants for discussion in the strategy workshop are about 60 from Federal Ministries including FMCT, NPC, NITDA, GBB (Galaxy Backbone), State Governments, private sector, universities, communities and other institutions and organizations related to the e-Government. Table 16 shows the result of the SWOT analysis derived from the strategy workshop.

Table 16 SWOT Analysis derived from Strategy Workshop

	Opportunities	**Threats**
SWOT Analysis	• International partnership • Fast growing economy • Nigeria's Strategic importance and influence in Africa • People's demand for change • Growth of foreign investment	• Corruption • Insecurity • Resistance to change • Political instability • Lack of policy continuity
Strengths • Human Resource • Natural Resource • Capital Resource • Climate • Large population & Market size	**SO** • ***Expand Capacity Building of e-Government*** • ***Create Variety of Funding Sources***	**ST** • ***Establish the Presidential Committee on e-Government*** • ***Identify e-Government Champion*** • ***Draw Special Budget on e-Government***
Weaknesses • Bad governance • Weak in policy implementation & execution • Poor leadership • Poor Infrastructure • Disunity	**WO** • ***Develop Adequate Infrastructure & Application*** • ***Strengthen R&D and Education in ICT***	**WT** • ***Establish Legal Framework for e-Government*** • ***Establish Organizational Framework*** • ***Dispread e-Government Publicity***

Figure 15 depicts the conceptual view of the Nigeria's e-Government Vision 2020 that contains vision, objectives, policies and strategies.

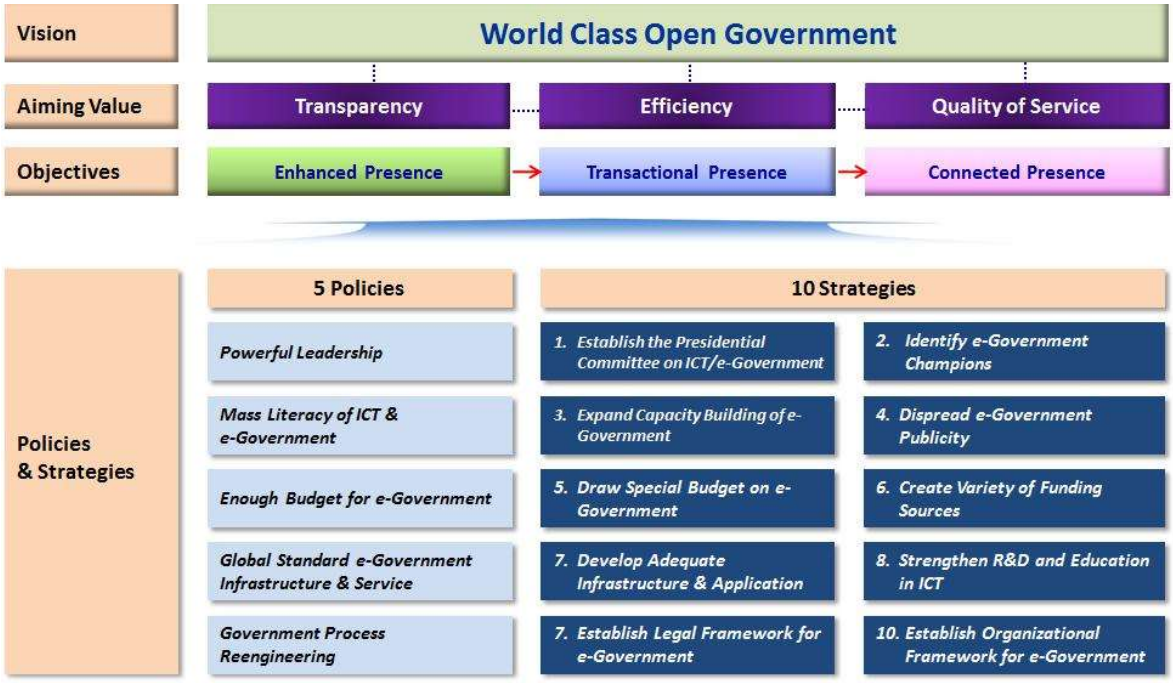


Figure 15 Redefined e-Government Vision 2020 in Nigeria

V. STATUS ANALYSIS

VI. BENCHMARKING

<http://www.guardian.co.uk/technology/2005/apr/14/Internet.egovernment>.

VII. IMPLEMENTATION

7.1 Overview

7.1.1 Hierarchical Structure

The visions and objectives of E-Government can be shaped more concretely by establishing agenda or portfolio as intermediate goals providing information on roads, rest areas, milestones that indicate the direction to the destination (visions and objectives). In this level, the front office (G2C), the back office (G2G) and infrastructure building are generally used.

The government of UK classified the types of the E-Government project into 4 categories including G2C, G2C and the management of changes while benchmarking leading countries. The government of USA uses 4 portfolios; G2C, G2B, G2G, internal efficiency and effectiveness(IEE) to classify 25 projects that have great potential for citizens, improve ministerial efficiency, require cooperation among ministries, and can show tangible achievements within 18-24 months (US OMB, 2002).

The roadmap for the 2nd phase of e-Government in Republic of Korea, which started in 2003, is composed of 4 areas and 10 agenda within which 31 unit projects are included. The number of unit projects per areas and agenda are imbalanced as there are still a lot more services to be developed for the front office service and the back office management. Innovating information resource management and restructuring legal framework are crucial foundation for e-Government into which a lot of resources are put although the number of projects is small. Therefore more attention should be paid to the amount of financial and human resources invested in the projects than the number of the projects during the implementation of the projects.

Table 53 Roadmap Structure for Nigeria's e-Government

Policy	Strategy	Project
Leadership	Establish the Presidential Committee on ICT/e-Government	
	Identify e-Government Champions	
ICT/e-Gov Literacy	Expand Capacity Building of e-Government	
	Dispread e-Government Publicity	
Financial Resources	Draw Special Budgeting on e-Government	
	Create Variety of Funding Sources	
Global Standard Infra and Service	Develop Adequate Infrastructure & Application	
	Strengthen R&D and Education in ICT	
Process Reengineering	Establish Legal Framework for e-Government	
	EstablishOrganizationalFrameworkfor e-Government	

7.1.2 Contents of Unit Project

The contents of the selected unit project needs to be organized in an order of As-Is analysis (current status and problems), major issues and To-Be model, detailed implementation plan, and expected effects. The detailed implementation plan includes objectives, directions and

strategies, implementation framework, the service contents and improvements time schedule, annual budget planning (tentative), progress review and performance evaluation. In addition, the project management plan should be able to suggest the plan for progress review or performance evaluation in advance. Yet, it is difficult in reality if the manager doesn't have a mindset for such plans, or evaluation tools have not been developed.

Table 54 Major Contents of Unit Project

No.	Contents
1	As-Is analysis
2	Major issues and To-Be model
3	Detailed implementation plan
3.1	Objectives
3.2	Directions and strategies
3.3	Implementation framework: Related MDAs
3.4	Time schedule
3.5	Annual budget planning (tentative)
3.6	Progress review and performance evaluation
4	Expected effects
4.1	Quantitative effects
4.2	Qualitative effects

7.2 Tasks Derived to Complete Each Strategy

7.2.1 Strategy 1: Establish the Presidential Committee on ICT/e-Government

- Current Issues
  - Inconsistent government policy
  - Poor implementation
  - Slow legislative process
  - Not on the priority list of government
  - Lack of advisory group at highest level
  - Lack of understanding and support from the leadership
  - Lack of synergy between MDAs and parastatals
- Countermeasures
  - Consistent & stable government policy
  - Strong implementation
  - Fast legislative process
  - Advisory group at highest level
  - Enforce collaboration amongst MDAs
- Tasks
  - Adopt e-Government as a national agenda
  - Legislate the e-Government Act

- Presidential Committee on ICT/e-Government
- Transfer the Broadband Council under the Presidential Committee on ICT/e-Government

7.2.2 Strategy 2: Identify e-Government Champions

❑ Current Issues

- Lack of leadership vision on e-Government
- Lack of understanding on the part of leaders
- Low leadership support

❑ Countermeasures

- Identify proficient and experienced individuals
- Expand leadership vision on e-Government at the cabinet level
- Change management process
- Create motivation/incentive systems

❑ Tasks

- Identify key project champions
- Build critical mass of eLeaders and eChampions
- Develop specialized training of the officers of the Federal and State Governments

7.2.3 Strategy 3: Expand Capacity Building of e-Government

❑ Current Issues

- Lack of ICT/e-Government skills
- Lack of ICT/e-Government training
- Lack of transparency
- Lack of commitment
- Inadequate knowledge

❑ Countermeasures

- Basic ICT/e-Government education
- ICT/e-Government training
- Understanding of e-Government
- Expand training facilities
- Develop targeted training programs for ICT/e-Government

❑ Tasks

- Develop capacity building at the Federal Government and the State Government
- Develop capacity building for citizens
- Develop capacity building in Public Private Partnership
- Expand training facilities

7.2.4 Strategy 4: Dispread e-Government Publicity

❑ Current Issue

- Ignorance of ICT/e-Government
  - Lack of recognition of ICT/e-Government importance
  - High rate of ICT/e-Government illiteracy
  - Citizens apathy

- Countermeasures
  - Basic ICT/e-Government education
  - ICT/e-Government training
  - Understanding of e-Government
  - Increase advocacy and sensitization
  - Adequate knowledge

- Tasks
  - Conduct publicity campaign for e-Government
  - Create national e-Government awards
  - Establish citizen-service charter
  - Promote civic engagement in policy formulation
  - Create proper awareness forum
  - Develop Information Access Centre

7.2.5 Strategy 5: Draw Special Budgeting on e-Government

- Current Issues
  - Lack of financial support on e-Government
  - Low priority in the government
  - Poor funding of e-Government projects

- Countermeasures
  - Proper budgeting
  - Adequate funding
  - Special funding on e-Government
  - E-Government importance awareness

- Tasks
  - Create and utilize e-Government promotion fund

7.2.6 Strategy 6: Create Variety of Funding Sources

- Current Issues
  - Weak funding from the government
  - Limited support from International aid institutions
  - Lack of affordability
  - Poor project planning and cost overruns

- Countermeasures
  - Find reliable, diverse, ongoing, and flexible funding approach
  - Employ alternative financial instrument

- Strengthen partnership with private sectors and international donors

❑ Tasks

- Finance e-Government projects including infrastructure development by issuing bonds, on either the domestic or international capital markets
- Develop PPP model for implementing e-projects
- Utilise outsourcing and software licensing
- Co-funding through advertising

7.2.7 Strategy 7: Strengthen R&D and Education in ICT

❑ Currents Issues

- Unstable power supply
- Low broadband penetration
- Poor Internet penetration
- Lack of Integrated national data centre
- Immature & Expensive Infrastructure
- Poor maintenance culture on the existing infrastructure
- Low web presence

❑ Countermeasures

- Improve infrastructure
- Encourage Public-Private-Partnership
- Introduce subsidiary
- Introduce waiver and tax
- Train professionals for maintenance
- Prepare sustainable plan & management
- Analyse requirements

❑ Tasks

- Develop action plan on infrastructure
- Develop action plan on service application which are key initiatives

7.2.8 Strategy 8: Develop Adequate Infrastructure & Application

❑ Current Issues

- Low ICT literacy
- Lack of requisite skills
- Lack of professionalism
- Lack of adequately trained professionals
- Inadequate or limited skilled ICT professionals in the public service
- Lack of R&D facilities

❑ Countermeasures

- Expand education in ICT
- Cultivate ICT professionals
- Retrain ICT professionals
- Improve R&D facilities

- Tasks
  - Facilitate mobility of students and staff and professional mobility of graduates
  - Promote internationalization and global competitiveness
  - Raise quality of ICT education and contribute to economic development and growth

7.2.9 Strategy 9: Establish Legal Framework for e-Government

- Current Issues
  - Lack of capacity on e-Government laws and legislations
  - Lack of understanding on the need for the legal framework
  - Slow legislative process
  - Inadequate representation of ICT professionals at legislative level
- Countermeasures
  - Strong sanctions
  - Remove conflict in policy Implementation
  - Adequate representation of ICT professionals at legislative level
  - Improve transparency
  - Remove resistance to change
- Tasks
  - Establish national legal framework

7.2.10 Strategy 10: Establish Organizational Framework for e-Government

- Current Issues
  - Ineffective operation of the steering committees
  - Inadequate institutional structure
  - Inconsistency and lack of change management
  - Unending rivalry among Government Institutions
  - Lack of information exchange and sharing
- Countermeasures
  - Empower coordinating body
  - Reorganise institutional structure
  - Increase cooperation / synergy amongst MDAs
  - Improve transparency
  - Remove resistance to change
- Tasks
  - Business process reengineering for e-Government
  - Build a dedicated organization structure for e-Government implementation

7.3 Indicators to Access Achievement of Key Initiatives and Progress of the Action Plans

7.3.1 Recent Theoretical Indicators of e-Government Providers

Delivering an adequate e-Government service (e-service) is becoming more of a necessity in today's digital world. In order to improve e-services and increase the engagement of both users' and providers' side, studies on the performance evaluation of such provided e-services are taking places. However a clear identification of the key performance indicators from the e-Government providers' side is very important. The key performance indicators from the e-Government providers' side should be explored, for the conduct of a holistic evaluation of an e-service provision from the perspective of its stakeholders in order to improve e-services as well as to increase e-services take-ups.

To develop a new evaluation model that explains and predicts the success of an e-service, the collected factors from the focused groups and literature are analysed and used to construct a new conceptual model called STEPS: Service, Technology, Employees, Policy and management and Social responsibilities analysis.

Key Performance Indicators of the STEPS Model[71]

Five main themes represent the key performance indicators necessary for evaluating e-Government services from the perspective of providers. These are: e-Government Service; Employee Readiness; Policy and Management; Technology; and Internal and External Impact. We will discuss the indicators and their categories as part of the description of each theme.

- **e-Government Service** is the first theme that refers to criteria that are directly relevant to the e-Government site. There are two indicators under this theme: Service Support and Efficiency.
  - ***Service support*** refers to the provision of up-to-date information to the users that is directly relevant to their needs. e-Government sites with good service support also redirect users to other e-Government sites they may need in order to complete their transactions. An additional feature that represents good service support is the provision of the opportunity for users to choose the most convenient method for receiving notifications about the status of their transaction, such as SMS, email etc. Additionally, allowing a user to interact with the government products by providing feedback or sending enquiries is also an important aspect of good service support.
  - ***Efficiency*** on the other hand assumes that an e-Government website to provide a good service, it needs to be more efficient than traditional means in two ways. Firstly, the e-Government site has to be easy to use so that users can smoothly navigate the site, access historical transactions, and manage personal information. Secondly, the site also needs to provide usage efficiency by making it faster for users to find relevant information while alleviating the administrative burden and number of steps they need to go through for completing their service requests.

- **Employee Readiness** is the second theme from the analysis. It refers to the internal process of the government organization. Specifically, this theme refers to the readiness of employees in moving from traditional modes of providing services to electronic means and in maintaining the provision of such services at high standards. Ability and Engagement of employees are the two indicators under this theme.

71Osman *et al*. The Elicitation of Key Performance Indicators of e-Government Providers: a Bottom-up Approach, *European, Mediterranean & Middle Eastern Conference on Information Systems* October *2013* , Windsor, United Kingdom,

- ***Ability*** refers to employees' capacity in providing electronic services. Possessing enhanced computer skills is necessary for learning specific computer software and operating programs to deal with specific challenges that may face them while delivering service requests. Since ability can be provided and developed, the organization also has some responsibility towards the employees in order to foster the needed capabilities within the organization. Therefore, providing the necessary and continuous training programs to deliver better e-services is also important for creating the ability amongst employees in providing these services efficiently and effectively.
- ***Engagement***, on the other hand, is also necessary for employees to provide quality electronic services. Engaged employees are those who are motivated enough and willing to collaborate amongst each other in order to migrate from traditional means to e-services. Having the ability to do so is necessary but not enough for successfully implementing and providing e-services.

❑ **Policy and Management** is the third theme from the analysis. Just like the previous theme, this one also refers to internal organizational matters namely, legal and contextual environment, change management, budget, and revenue.

- ***Legal and contextual environment*** refers to the existence of a legislative framework that allows smooth decisions around moving or providing e-services. It also refers to the support provided by government policy makers as well as management within a particular government organization in order to successfully implement the e-service.
- ***Change management*** was also found to be an important aspect of management that is necessary for a successful e-service implementation. This refers to the complexity of transforming and re-engineering processes from a traditional fulfillment mode to an electronic mode, as well as the speed of access to the internal information needed in order to execute such transformations. Change management also depends on the thoroughness of the planning phase and the clarity of the policies developed to support the process transformation in the future.
- ***Budget*** is another aspect that was found to be important particularly for the development, customization, and maintenance of the e-service. When the cost of development, customization and maintenance of an e-service exceed the allocated budget, problems may arise and may impact the success of the e-service in the future. Continuous investment in developing and maintaining an e-service can only be achieved when clear policies and managerial decision are in place and tailored specifically for the purpose of delivering the e-service.
- ***Revenue*** should be substantial enough for the stakeholders involved in e-services fulfilment to remain productive. This can be done by creating clear policies, contractual agreements to share cost, risk and benefit and opportunity among different engaging parties. Here technology can play a big role in improving the revenue to providers, while keeping the e-service cost to citizens either the same or possibility lower than traditional means.

❑ **Technology** is the fourth theme from the analysis. It refers to the pre-existence of technological capabilities in the country that may contribute to the success of e-Government services. Infrastructure, security, and alignment are the three indicators that illustrate this theme.

- ***Infrastructure*** refers to the availability of prerequisites such as e-signatures or e-payments. The lack of such prerequisites may hinder the utilization of e-Government services. Other capabilities, such as internet availability and speed across the different

regions in a country, may also be problematic especially when they are not sufficient enough to support fast transactions. These can have strong impact on user adoption of the e-Government service.

- ***Security*** is another related technology element. It depends on attitudes of people using e-services. On one hand, employees working on the fulfilment of e-services may have an attitude towards risk that hinder them from using external resources when needed out of fear of losing control over sensitive information. On the other hand, users in the country may have perceptions of high levels of threat to the privacy of their information, which may slow down users' adoption of e-services. Hence governments should use the appropriate means to relieve the fear on users and employees towards security issues. For instance, users fear can be removed by having security sign on the e-service website.
- ***Alignment*** refers to the interoperability between various government electronic systems. Incompatibility in data formats may be problematic for the successful development and implementation of e-Government services especially when the services are interdependent. This indicator measures the collaboration levels between the different government departments to deliver coherent and interoperable e-services.

❑ **Internal and External Impact** is the final theme that emerged from the analysis. Providers perceived that organizational, social, environmental, and economic outcomes are also important indicators of the success of e-Government services.

- ***Organizational Outcome*** is another aspect that refers to desirable end-results at the level of an organization. First, a successful e-service should lead to reduced costs when compared to traditional means. Whilst cost reduction is important, easier ways of controlling costs are also important outcomes of successful e-services. Finally, an efficient e-Government provider should also increase the efficiency of providers by increasing the productivity of government staff. This can be achieved by providing easy ways of generating customized reports (e.g. statistical, usage), recovering lost information in case of emergency, reducing processing efforts, and moving into paper-less processing for environmental concern in addition to reducing the time of delivering services.
- ***Social Outcomes*** represent the impact that e-Government services may have on the society as a whole in terms of transparency, participation, satisfaction and outreach. Successful e-services should decrease levels of corruption and increase levels of governmental transparency and accountability. They should also increase interaction with users in a way that improves relationships between the government and community; consequently increasing the engagement of stakeholders in government policy making. Social impact can also be measured through the extent to which the e-service is expanding the reach to users. Wider reach and accessibility to users can also allow better ways of disseminating public information, thus improving communication between the government and users.
- ***Environmental Outcomes*** mainly relate to the management of pollution and environmental waste. This indicator measures the degree of improvement provided by the introduction of e-services versus the traditional ones. For example it is foreseen that e-services will contribute towards the reduction of the amount of paperwork involved in fulfilling services. In addition, it will free up the time of citizens in getting access to services, which will have an overall impact on the use of time in a country. Furthermore, providers will be able to electronically transfer information instead of relying on traditional inefficient internal transportation means.

- ***Economic Outcomes*** mainly relate to having greater opportunities of creating new jobs and consequently boosting economic growth. Deploying e-services will open new opportunities for private sectors to develop new compatible applications. New service applications can be created to support the new channels of transactions. As a result, new job opportunities would be created in the countries adopting the e-Government stream, hence, achieving an indirect aim for any government.

It should be noted that the above STEPS model was developed based on a bottom-up approach involving stakeholders who are engaged in the development, management and usage of e-Government services.

7.3.2 Indicators of Major International Institutions

OECD has developed the following detailed indicators to identify (i) government benefits, (ii) user benefits, (iii) government costs, and (iv) user costs, while as the E.U. designed indicator linkage model and the U.N. developed KPIs for evaluating countries' e-Government. The consultants reviewed the above-mentioned indicators developed by the OECD, the E.U., and the UN to develop Strategic KPIs that are most suitable for Nigeria's e-Government Vision 2020.

7.3.2.1 OECD Indicators

e-Government initiatives bring benefits for both government and users by reducing cost from them.. Indicators should be developed in terms of benefits and cost. The following formula can accordingly be obtained for a simplification, which is helpful to easily understand: (government benefits + user benefits) – (government costs + user costs).

If/when (government benefits + user benefits) – (government costs + user costs) has positive value, e-Government programmers, projects, or initiatives can be justified to the government to implement as the OECD recommended:

- Indicators associated with direct cash benefits as part of government benefits are identified as (i) tax collections and revenue, (ii) reduced fraud, (iii) reduced travel costs and field force expenditure, (iv) reduced publication and distribution costs, (v) additional revenue from greater use of commercial services and data (e.g. : use of electoral roll data), (vi) additional revenue from newly available services and newly charged for services, (vii) reduced need for benefits, e.g, through faster job searches, and (viii) reduced costs through the need for reduced physical presence.
- Indicators associated with time saving as part of government benefits are identified as (i) reduced processing through common standards for data and processes, (ii) time saving of public servants, (iii) reduced error rates, re-work, complaints, (iv) reduced need for multiple collections of data from single customers, and (v) more flexible working hours.
- Indicators associated with Information benefits as part of government benefits are identified as (i) more accurate, up-to-date and cleaner data and more reliable information, and (ii) capacity for greater information sharing across government.
- Indicators associated with risk benefits as part of government benefits are identified as (i) improved risk management, and (ii) improved security and fewer security breaches.
- Indicators associated with future cost avoidance as part of government benefits are identified as (i) lower costs for future projects through shared infrastructure and valuable knowledge, (ii) reduced demand for service (through better information provision), e.g. health service, (iii) reduced need for future government capacity

expansion, and (iv) encourage of increased take-up of other services.

- Indicators associated with future resource efficiency as part of government benefits are identified as (i) reduced redundancy through integrated systems, and (ii) more effective use of existing infrastructure and reduced capacity wastage.
- Indicators associated with improved service delivery of other non-monetisable benefits as part of government benefits are identified as (i) enhanced customer service, (ii) improved service consistency and equality, (iii) improved user satisfaction, (iv) improved communication, (v) greater take-up of entitlements, (vi) improved reputations and increased user trust and confidence, and (vii) integrated view of customer.
- Indicators associated with enhancement of policy process of other non-monetisable benefits as part of government benefits are identified as (i) enhanced policy alignment and outcomes, and (ii) better information to facilitate policy making.
- Indicators associated with enhancement to democracy of other non-monetisable benefits as part of government benefits are identified as (i) increased user involvement, participation, contribution and transparency, (ii) allows more, greater and new data to be collected, and (iii) improved security.
- Indicators associated with monetary benefits as part of users benefits are identified as (i) price reduction of charged-for services, avoidance of future price increase, (ii) reduced cost of transmitting information – phone, post, paperless interactions, etc., (iii) reduced travel costs, (iv) reduced publication and distribution costs, (v) reduced associated costs (e.g. professional advice, software tools, equipment, etc., predominantly for business), and (vi) revenue generating opportunities for citizens, business and intermediaries.
- Indicators associated with time-based non-monetary as part of users benefits are identified as (i) reduced user time (time saved), (ii) reduced need for multiple submission of data for different services and events, (iii) reduced error travel time, (iv) reduced user time (time saved), (v) reduced need for future government capacity expansion, and (v) encourage of increased take-up of other services.
- Indicators associated with quick response of value-based non-monetary benefits as part of users benefits are identified as (i) reduced application processing time (elapsed time saving), (ii) improved response time to events, and (iii) improved interactive communication, particularly between government and remote communities.
- Indicators associated with improved information of value-based non-monetary benefits as part of users benefits are identified as (i) more reliable and up-to-date, (ii) faster and easier access, (iii) transparency, (iv) real time, and (v) enhanced empowerment.
- Indicators associated with improved reliability of value-based non-monetary benefits as part of user's benefits are identified as (i) reduced error rates, (ii) greater confidence and certainty of transaction, (iii) service consistency, and (iv) overall reliability.
- Indicators associated with choice and convenience of value-based non-monetary benefits as part of users benefits are identified as (i) range of access channels – increased choice and ease of access, (ii) greater user convenience (24/7 service delivery), and (iii) decrease in abandoned transactions and complaints.
- Indicators associated with premium service of value-based non-monetary benefits as part of user's benefits are identified as (i) extra tools and functionality for users, (ii) improved customer service, (iii) personalised and customised service, and (iv) service integration.

- Indicators associated with market planning and developments as part of costs to government are identified as (i) business planning and options analysis, (ii) market research, (iii) due diligence and plan audit, and (iv) tendering.
- Indicators associated with system planning and development as part of costs to government are identified as (i) hardware, (ii) software license fees, (iii) development support: (a) program management, (b) system engineering architecture design, (c) change management and risk assessment, and (d) requirement definition and data architecture, (iv) test and evaluation, (v) design studies: (a) customer interface and usability; (b) transformation of business process redesign; (c) system security; (d) user accessibility; (e) data architecture; and (f) network architecture, and (vi) other development phase costs; (a) facilities; (b) offices equipment; and (c) travel.
- Indicators associated with system acquisition and implementation as part of costs to government are identified as (i) procurement: (a) hardware; (b) software; (c) customised software; and (d) web hosting, (ii) personnel: (a) Additional program management; (b) Internal communications; (c) process redesign; (d) system integration; (e) system engineering; (f) test and evaluation; and (g) data cleaning and conversion, and IT training.
- Indicators associated with system operations and maintenance as part of costs to government are identified as (i) hardware: (a) maintenance; and (b) upgrades and replacement, (ii) software: (a) maintenance; (b) upgrades; (c) and license fees, (iii) telecoms network charges, (iv) operations and management support: (a) program management; (b) operations; (c) back-up and security; and (d) IT helpdesk, (v) on-going training, (vi) on-going monitoring and evaluations, and (vii) other operations and maintenance.
- Indicators associated with financial costs for market and process implementation as part of costs to government are identified as (i) personnel: (a) Internal communications; (b) training; (c) redeployment; (d) customer helpdesk; and (e) call centres, (ii) marketing and communications, (iii) customer inducements and rebates, and (iv) legal advice.
- Indicators associated with direct costs as part of costs to users are identified as (i) computer hardware and software, (ii) computer operations and maintenance, (iii) telecoms and web access charges, (iv) IT training and support, (v) digital signature setup, and (vi) printing forms and information.
- Indicators associated with time factor as part of costs to users are identified as (i) web search, (ii) reading time, (iii) email, and (iv) phone time.
- Indicators associated with business impact risks are identified as (i) impact on business processes (includes changed processes), (ii) impact that the project will have on the organization (during development and after implementation), (iii) impact on government services at implementation: Impact that the project will have outside the organization; for example on other agencies, the public and businesses during development and after implementation, (iv) impact on other projects and changes: degree to which the project is dependent on and connected to other projects and changes.
- Indicators associated with technological risks are identified as (i)technological dependence: dependence on new technology or new methods, (ii) degree of innovation: extent to which the project involves innovative solutions and staff experience to deal with innovation, (iii) impact and integrity with legacy systems: degree to which the project will need to develop interfaces to existing systems and data, (iv) security: robustness of physical and technological security controls, and (v)

scope of IT supply: extent of IT consultant and supplier activity; support and maintenance now and in the future.

- Indicators associated with change and uncertainty factors are identified as (i) change management uncertainty, (ii) culture change required (e.g. working practices) and inexperience in dealing with third-party suppliers, (iii) leadership direction, (iv)dependence on third-party suppliers, (v) management resistance, (vi) use of untried methods, (vii) lack of staff experience and inadequate training to accommodate change, (viii) time constraints and critical deadlines, (ix) lack of motivation and economic or market changes, (x) poor communication with appropriate staff, and (xi) lack of responsiveness to change.

7.3.2.2 EU Indicators

According to a study of European Commission,[72] the 2012 Benchmark will provide a first indication on progress areas of the Action Plan and could possibly feed into the Action Plan's mid-term evaluation. There is now a significant opportunity to maintain and make use of this momentum.

e-Government Benchmark Framework 2012-2015 produced the following 4 main groups of indicators and linked to the following policy priorities.

- User empowerment is measured through 2 main groups of indicators:
  - User centricity indicators, based on the measurement of online availability, usability, ease of use and speed of use
  - Transparency indicators, based on the measurement of the transparency of service delivery, the transparency of personal data and the openness and transparency of public administrations
- Citizen and Business Mobility, measured through the following indicators:
  - Cross-border indicators, measuring the online availability, usability, ease of use and speed of use of services from a cross-border perspective.
- IT preconditions, measured through the following indicators:
  - IT preconditions, measuring the online availability of select IT enablers

❑ User Centricity indicators:

The compound indicators are based on the usability of support services, the assessment of the ease of use and of the speed of use. Time and ease of use are two key aspects of users satisfaction. The speed of use measurement is not based on subjective impressions, but on proxies relating to the time needed to complete the service process. This will provide, for the first time, a very important benchmark of the time savings benefits of online services. These detailed indicators will be available at sub-phase, Life Event, country level, allowing administrations some insights into the strong and weak points of their service delivery processes.

The Synthetic indicators aggregate the scores of compound indicators for online availability on the one hand, and online usability on the other hand, allowing a comparison of these two critical aspects of user centricity. They will be elaborated for each Life Event (for example in 2012, Life Event are Employment/losing and finding a job; Education/studying; Economic affairs/start up and early trading activities of business) at country level and EU level (average of country scores), and for all Life Events averaged at country level and EU level.

72 European Commission, e-Government Benchmark Framework 2012-2015: Method paper, July 2012.

The Top Level Benchmark evaluates the level of User centricity of Life Events, allowing to measure the progress towards User empowerment, one of the key priorities of the e-Government Action Plan. By aggregating the measurement of online availability and usability, the Benchmark should be sufficiently balanced to provide a synthetic assessment of user centricity achievements at the EU level and at MS level.

- Transparency indicators:

With regards to transparency, the compound indicators measure, for each Life Event, the average levels of transparency of service delivery, transparency of personal data and openness/transparency of the public administration offering the service. These are both relevant aspects of the users' experience. The Synthetic indicators aggregate the scores of compound indicators for transparency of service delivery, transparency of personal data and public administrations, producing a synthetic assessment for each Life Event (at country level and at EU level) of the level of transparency. The Top Level Benchmark evaluates the level of transparency for all Life Events and all MS (Mystery Shopper[73]) at the EU level, providing a top level benchmark of the level of transparency achieved. This benchmark is used to measure User empowerment, a key priority of the e-Government Action Plan.

- Cross-border indicators:

The cross-border indicators mirror the methodology of the User centricity indicators, and measure the same indicators for the cross-border elements of the process steps in each analysed Life Event.

The compound indicators measure, for each Life Event and each process step with a cross-border element, the average levels of online availability of basic and extended services, providing a detailed view of where in the service process there may be missing steps for the end-to-end online delivery. The other compound indicators measure relevant aspects of the quality of the user experience, based on the opinion of the MS: they are based on the usability of support services, the assessment of the ease of use and of the speed of use.

The Synthetic indicators aggregate the scores of compound indicators for online availability of basic and extended services on the one hand, and on line usability on the other hand, allowing a comparison of these two critical aspects of user centricity. They will be elaborated separately for business and citizen users, for each Life Event at country level and EU level (average of country scores), and for all Life Events averaged at country level and EU level.

The Top Level Benchmark will be calculated in the same way as the user-centric top level benchmark as a weighted average of the online availability and online usability indicators of the cross border services, separately for businesses and citizens. In this way it will be possible to measure an objective measurement of Citizen and Business Mobility; if the level of availability and usability of Life Events for cross-border users is much lower than the same benchmark for domestic users, there are clearly barriers against mobility and the development of the Single Market. The segmentation of the indicator will insure also visibility of the weak and strong points of the service processes. However, it should be expected that data collection for cross-border services will be more difficult than for domestic services and therefore it will be necessary to check the reliability and quality of data.

- Preconditions Indicators:

73 Mystery Shoppers are trained and briefed to observe, experience, and measure a (public service) process against a detailed, objective evaluation checklist by acting as a prospective user.

The compound indicators measure, for the following enablers: eID, eDocuments, Single Sign On, Authentic Sources, eSafe, the average levels of online availability, for each Life Event for which they are relevant. This is based on a group of elementary questions for each enabler.

The Synthetic indicators aggregate the scores of online availability of each enabler for all Life Events measured in the country, providing a synthetic assessment of the availability of online enablers per MS. This is naturally a proxy, since the scope of implementation of IT enablers is much wider than the Life Events measured in this project. Nevertheless, the indicator will provide relevant information, because of the range and variety of Life Events measured (particularly in the 2 years cycle, when a total of 8 LE will be measured) and the systematic assessment of their availability, based on concrete questions. Other synthetic indicators will provide the scores of online availability of all enablers for each Life Event considered and will provide a synthetic view of the degree of integration of the different administrations within each Life Event.

The Top Level Benchmark provides a synthetic assessment at EU level of the availability of main key enablers, which can be used to assess the presence of the pre-conditions of the efficient and effective use of online services, a key priority of the e-Government Action Plan.

7.3.2.3 UN Indicators

Possible KPIs to be exploited by the UN DESA for deciding countries' ranking of e-Government are expected as:

- e-Government Development Index (EGDI) comprising (i) online service index, (ii) Particular Issues such as environment and openness, (iii) Telecommunication Infrastructure Index, and (iv) Human Capital Index;
- e-Participation Index including (i) e-Information, (ii) e-Consultation, and (iii) e-Decision; and
- Detailed indicators are shown in Table 55, Table 56, and Table 57. The consultancy services will recommend mock-evaluation in accordance with the developed indicators and suggest thereby particular e-services to be improved in/when necessary.

Table 55 KPIs of EGDI in the UN e-Government Survey 2014

KPIs	Classification		Components
e-Government Development Index	Online Service Index	Emerging	(i)government documents (e.g., policy, legislation), (ii)linkage with other agencies, (iii)providing news and information directory
		Enhanced	(i)interactive online services available, (ii)downloadable civil application forms, (iii)video services, (iv)multi-language services, (v)partial online applications (eg., online request, post service available)
		Transactional	(i)online applications, (ii) authentication services, (iii) e-voting, (iv)downloadable/up-loadable forms, (v) issuance of various certificates and licenses

KPIs	Classification		Components
		Connected	(i)Web2.0 available, (ii)facilitating communications with citizens, (iii)integrating multi-agencies services, (iv)tailored e-services for (v)citizen's whole life, (vi)citizen's engagement
	Particular Issues	Environment	(i)information and services available on environment issues, (ii)engaging citizens into environment issues.
		Openness	(i)open portal for public information, (ii)open data site and its related legislation and institutions, (iii)open data directory and index available
	Telecommunication Infrastructure Index		(i)PC penetration, (ii)Internet users, (iii)telephone line, (iv)mobile subscription, (v)fixed broadband, (vi)fixed internet subscription
	Human Capital Index		(i) adult literacy, (ii)school gross enrollment rate
e-Participation Index	e-Information: policy available online		(i)provide information to facilitate citizen's engagement, (ii)notice of online policy forum schedule, (iii) online policy information available
	e-Consultation: online participation in policy		(i)collect citizens' opinion and provide feedback for citizen, (ii)online survey of public opinion, (iii)online chatting, (iv)instant message, (v)blog
	e-Decision: online policy making		(i)engaging citizens in policy making, (ii)online forum, (iii)online petition, (iv) online voting.

Websites to be targeted for the 2014 UN e-Government evaluation are probably expected to be (i) the e-Government portal, (ii) welfare site, (iii) health care site, (iv) education site, (v) labour site, (vi) finance site, (environment site), and (vii) online participation site.

Table 56 Expected Detailed Indicators for Preparing the UN e-Government Evaluation

Stage	Classification	No	Indicators
Emerging Stage	News	1	
	Information providing	2	Policy information available (health, welfare, education, labour, finance, foreign affair, environment)
		3	Legislation information available (health, welfare,

Stage	Classification	No	Indicators
			education, labour, finance, foreign affair, environment)
		4	Public administration information available (health, welfare, education, labour, finance, foreign affair, environment)
		5	Archive information available (health, welfare, education, labour, finance, foreign affair, environment)
		6	Official documents and publication available (health, welfare, education, labour, finance, foreign affair, environment)
	User Guide	7	Site map provided
		8	Index information
		9	FAQ function
		10	User guideline for website usage and glossary
	Site Information	11	Organisation Introduction
		12	Organisation structure
		13	Address and map
		14	Main phone number
		15	Phone numbers of department and person in charge
	Link	16	Links between the government portal and ministries' website
		17	Links between the government portal and public e-services
		18	The number of links in the government portal
		19	Ministries websites providing links with the government portal and major portals
		20	Ministries websites providing links with other ministries and affiliates
		21	The number of links in the government portal
		22	Links with local regions and districts
Enhanced Stage	Security	23	Privacy protection policy available
		24	Security level shown in the websites
	Civil Application	25	Downloadable civil application forms
		26	Citizens request civil applications online and they can get the services by post mail
	e-Services for the Disabled	27	Minimum accessibility for the disabled
		28	Special e-services for vulnerable groups including the poor, the illiterate, the blind and visually impaired, the old, immigrants, female, and teenagers
		29	Web accessibility guidance and it's policy available
		30	Video conference
		31	Sign language video
		32	Sound services for the blind and visually impaired
		33	Changeable font, font size, font colour, background colour, its guidance

Stage	Classification	No	Indicators
		34	e-Government awareness information to reduce the digital divide
	One way communication	35	RSS services available
		36	Newsletters available
		37	Newsletters provided using SMS
	Multi-language	38	Multi-language services provided
	Search	39	Search functions
		40	Classification of search results by theme
		41	Re-query of search results
	Mobile Services available	42	WAP/GPRS Access services available
		43	Mobile SMS available
		44	Mobile civil application and registration available
		45	License fee and fine payment information using mobile phone
		46	Recruit information using mobile phone
Transactional Stage	Multi-channel service providing	47	Multi-channels Usage Information available (face, phone, post, mobile web, mobile application, and kiosk)
		48	Free public service available through free WiFi
		49	Information on free public service through free WiFi
	Participation	50	Online voting services provided
		51	Up-loadable and downloadable civil application forms
	Online financial/non-financial service	52	Online reservation, application, report, registration, permission for public services including up-loadable and downloadable form
		53	Online payment of tax and fine available
		54	Online report and reply services available
		55	Online application for Government support programmes
		56	Online receipt available
	Authentication	57	Application forms for authentication service
		58	Digital signature, online security and authentication services available
	Information on Website usage	59	Online issuance type and its number (e.g., certificates, licenses)
		60	The number of Internet subscribers and access
		61	Information on civil application period
Connected Stage	Personalised web service platform	62	Single window service including G2G, G2C, G2B, and G2E
		63	Single sign on service available
		64	User information query service available

Stage	Classification	No	Indicators
		65	Personalised web service
	Tracing service	66	Online check the progress made for public administration including online applications
		67	Online check the progress made for civil petition
	Enhance online participation	68	Sharing opinion with high level officials
		69	Engaging citizen into policy making process (eg., proposing policy agenda)
		70	Contents evaluation and its ranks by users
		71	Getting citizen feedback through chatting service and instant message (IM)
		72	Providing the gov't-reviewed results of citizens' suggestions and opinions on improving public services
		73	Providing SNS for citizens (eg., facebook, twitter, meetoway, blog)
		74	Providing tailored e-services in accordance with citizen's whole life cycle
	Interoperability including web	75	Providing information on interoperability policy including web
	Mobile e-Government	76	Registration and application available using mobile phone
		77	Financial transaction available in the mobile e-Government
		78	Additional mobile e-Government operation (eg., mobile web apps. in various level of e-Gov portal and departments)
		79	Mobile Apps. provided
		80	Particular section to carter of vulnerable citizens in the mobile e-Government
Environmental Index		81	Particular environment site that is officially designated.
		82	Providing e-services associated with strategies of environment and its protection and policy of natural resource,
		83	Issues on international collaborations of environment
		84	Information of citizen's practicable tasks and responsibilities available
		85	News on environmental available
		86	Advanced search functions available
		87	Information on agencies and person in charge of environmental policy
		88	Contact details on environment-related agencies
		89	Link with regions and districts web sites associated with environment
		90	Emergency disaster report and its alarm service

Stage	Classification	No	Indicators
		91	Policy Information available on water quality, atmospheric condition, Natural resource protection, energy, climate change
		92	Monitoring service available on water quality, atmospheric condition, Natural resource protection, energy, climate change
		93	Information service available on disaster and secure life
		94	Operating online survey, poll, chatting, and message board
		95	Environment related SNS available
	Openness of Public Information	96	Particular website for open data
		97	Policy and government's statement to facilitate open data
		98	Department or organisation in charge of open data facilitation
		99	Open data related guidance, institutions, and legislations such as Freedom of Information (FOI)
		100	Downloadable source data
		101	Providing data possible to process automatically
		102	Providing location data and service available
		103	Integrated information search on open data
		104	Providing classification of open data by themes, characteristics, source organisations, and data type for ensuring easy search
		105	Various formats of data available such as API, Source data, and linked open data (LOD)
		106	Open data-related directory and index information
		107	Multi-language service available

Table 57 Expected e-Participation Index for Preparing the UN e-Government Evaluation

Classification		Index	Remarks
e-Information: Policy available online	1	Social inclusion provided	e.g, Recruit information on senior citizens and the disabled
	2	Information on the process of citizen's engagement	e.g, how to file petition
	3	Citizens' evaluation on the Government service	
	4	Feedback from the Government to citizens	e.g, government replies email to citizens who suggested their opinions
	5	Recruit information available	e-Government portal service

Classification		Index	Remarks
e-Consultation: online participation in policy	6	Providing chances to engage citizens in the public policy through email and online forms to be filled	Online application menu put in place
	7	Online poll service available	e.g, online poll service in the policy forum and questionnaire
	8	Forms for online survey and reply, available	
	9	Chatting or Instant Message service available	e.g, it can be replaced by a real-time public hearing
	10	Web log service available	e.g., blog services such as citizen's club
	11	Providing directory services and news group available	e.g, used for civil petition
	12	Additional interaction services available	
e-Decision: online policy making	13	Online petition available	
	14	Online policy forum operation	Subscribing policy forum
	15	Providing online historic forum data	
	16	Official reply to citizen's opinions and petitions	
	17	The Government's arbitration for citizen's participation in policy making	Linked with respective ministries and agencies
	18	Providing results of citizens' participation in policy making	Notices results of reflection of citizen's input for the government policy
	19	Online petition services available	
	20	Online voting services available	Legislations allowing for online voting

7.4 Relationship between Indicators and Strategies

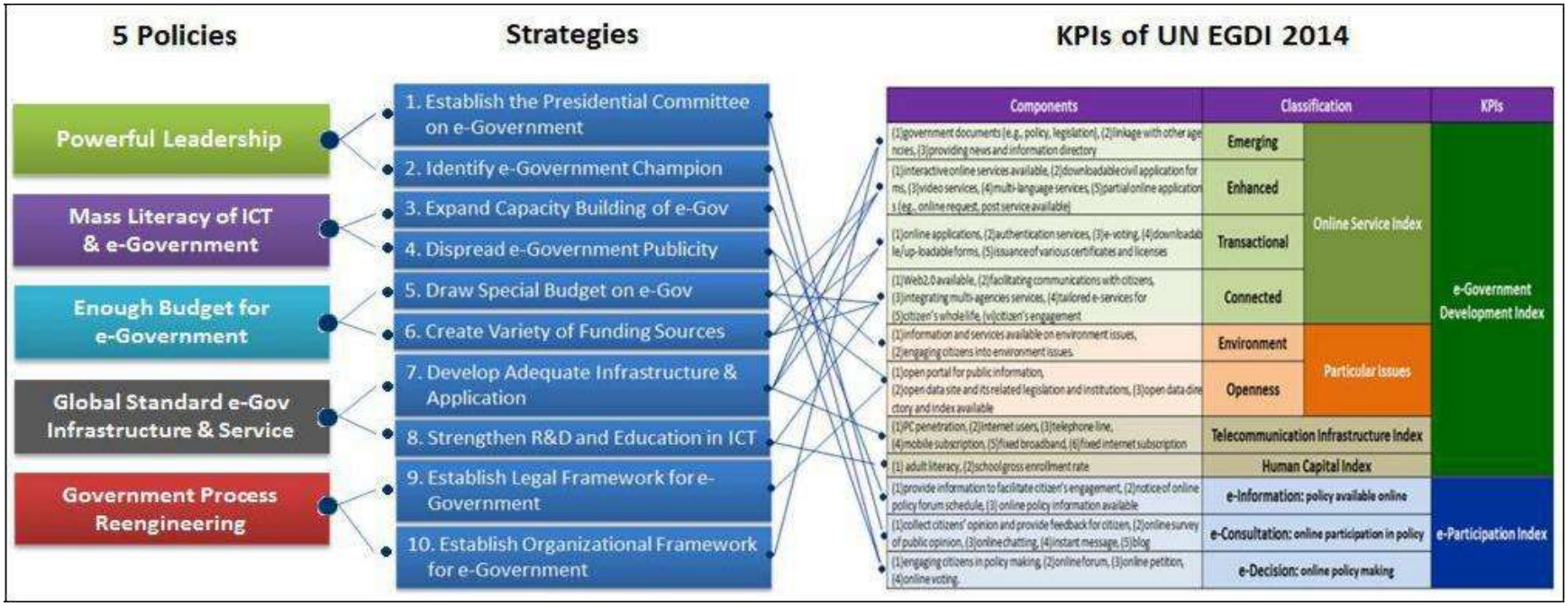


Figure 38 **Linkage of Strategies with KPIs of UN EGDI**

7.5 Project Priority Evaluation

7.5.1 Review Informatization Level of the Government

The types of governmental work can be classified by 2x2 matrixes from a standpoint of the linkage to citizens (back office management vs. front office service) and interagency linkage. Pattern I is informatization of internal business, appearing at the early stage, and can be easily initiated, while pattern IV, considered as the most difficult level, is cross-agency e-service to citizen and requires coordination and cooperation among agencies. Pattern II and III are intermediate stages; the former is agency-specific e-service to citizen and the latter is cross-agency business. In general, informatization can be completed by going through I - II - III - IV stage. At the first stage,the focus is given to informatization of internal business, without which civil services cannot be provided, or can offer only simple information through the website or Q&A service. At the last stage, pattern IV, cross-agency e-service becomes available.

In many countries, ICT has been utilized to increase efficiency of internal administration at the early stage, than to improve the quality of civil services at the last stage. In the beginning of the e-Government, ICT applications predominantly played a role in the enhancement of the internal efficiency and effectiveness of the executive functions of public administration especially in the sphere of policy implementation, while only later on the improvement of the quality of public services to the citizens, as customers, clients, citizens, and subjects; to businesses and social organizations; and to other branches of the public service itself came into focus (Snellen, 2005:399). Therefore, the characteristics of work and the informatization level of the government (ministries) should be reviewed to select an appropriate unit project.

Table 58 Governmental Linkage to Citizens and Interagency Linkage

		Linkage to Citizens	
		Back office management	Front office service
Inter-agency linkage	None	I. Internal business	II. Agency-specific e-service to citizen
	Much	III. Cross agency business	IV. Cross-agency e-service to citizen

7.5.2 e-Government Eligibility

The Project Initiatives are justified as eligible e-Government projects by fulfilling the following qualifications:

- Pursuant to knowledge based economy, the programmes, initiatives, and projects help to push ahead with the reform agenda including change management, business process reengineering, organization restructuring, institution capability, and add-on legislation.
- The programmes, initiatives, and projects should promote economic policy objectives to better suit national development plan, with particular emphasis on economy diversification.
- The programmes, initiatives, and projects should improve transparency of public sector and eradicate corruption.

- The programmes, initiatives, and projects help improve efficiency of government through back office integration and common services facilitation.
- The programmes, initiatives, and projects should achieve more effective outcomes in key policy areas, which respective ministries identify as the considerable commitments (e.g., Health, Education, Welfare, Labour, Finance, and etc).
- The programs, initiatives, and projects should enhance quality of services to the citizen by promoting citizen' engagement in integrated front-office, allowing for multi-channel access.
- The programs, initiatives, and projects help build human capacity and institutional capacity.
- The programs, initiatives, and projects can reduce digital divide in terms of awareness, accessibility, and affordability.
- The programs, initiatives, and projects enhance nation-wide security to cope with cyber-attack, cyber-terror and potential vulnerability, ranging from system security, network security, and desktop security to application security.
- The programs, initiatives and projects can establish and improve network infrastructure to meet the requirement of broadband access.

7.5.3 Selecting Initiatives

Not only the vision, objectives, and operational strategies were derived but also various inputs and ideas to be considered for e-Government in Nigeria were provided from a comprehensive strategy workshop which was conducted on February 18, 2014. Various potential e-Government initiatives were also suggested by more than 60 officials from different MDAs including FMoC, NPC, NITDA, GBB (Galaxy Backbone), State Governments, private sector, universities, communities and other institutions and organizations related to the e-Government.

The consulting service sought the following sequential steps to map out "Nigeria e-Government 2020 Master Plan":

- There are inputs from various stakeholders comprising (a) high level requirements, (b) ministries and agencies, (c) industries, and (d) academy;
- These various ideas and inputs are screened and identified as eligible initiatives, programmes, and projects;
- Possible initiatives, programmes, and projects are selected by the criteria including (a) urgency (b) strategic importance, (c) technical feasibility, and (d) political feasibility
- Possible initiatives, programmes and projects are categorized in terms of area, scale, maturity, and technology enabler for effective management:
- Shared/common services are identified for central implementation, and
- After projects are reviewed by FMoC, including stakeholders, and individual projects and action plan are confirmed.

The following figure shows the procedures to determine initiatives, programmes and projects in the e-Government 2020 master Plan.

7.5.4 AHP Workshop Program to Determine the Priorities of Project Initiatives

The analytic hierarchy process (AHP) is a structured technique for organizing and analysing complex decisions. It has particular application in group decision making and is used around the world in a wide variety of decision situations, in fields such as government, business, industry, healthcare, and education.

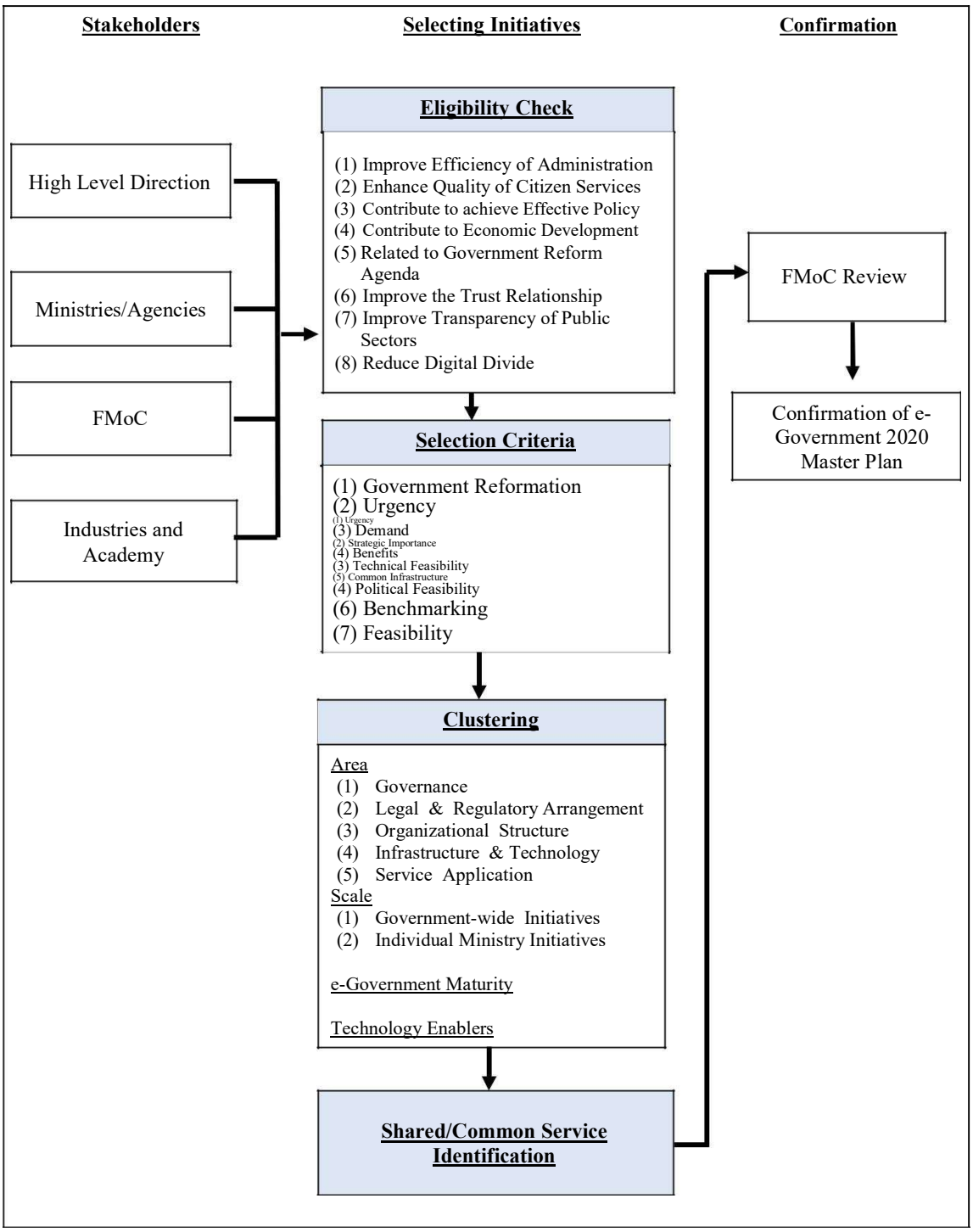


Figure 39 Procedures to Determine Initiatives

Rather than prescribing a "correct" decision, the AHP helps decision makers find one that best suits their goal and their understanding of the problem. It provides a comprehensive and rational framework for structuring a decision problem, for representing and quantifying its elements, for relating those elements to overall goals, and for evaluating alternative solutions.

Series of AHP workshops were conducted to determine the priorities of initiatives for e-Government 2020 scientifically and systematically as summarized as follows:

- The participants were key officials from different stakeholders who are in charge of determining the priority of e-Government initiatives;
- The total number of officials participated in the AHP workshop is 39;
- It took approximately 20 minutes per person and 780 minutes in total; and
- Expert Choice 11.5 was used for an automatic data analysis and decision making procedure.

7.5.5 Priority Evaluation

7.5.5.1 Evaluation of Target Project

Basically, two key parameters are used to set the priority of the tasks, including the degree of importance and feasibility. Each parameter has two secondary indicators shown in Table 59.

The followings are the description of each parameter, and parameters were evaluated by key stakeholders using Expert Choice that is AHP software.

Table 59 Evaluation Indicators and Criteria of Target Project

Indicators		Criteria	High	Medium	Low
General	Secondary				
Importance	Urgency	Consideration on urgency to be implemented	Immediate	Short-Term	Long-Term
	Strategic Importance	Consideration on strategic importance such as effect/impact	All citizens and ministries are affected by the realization of the project	Many citizens and ministries are affected by the realization of the project	A few citizens and ministries are affected by the realization of the project
Feasibility	Technological Feasibility	Consideration on the technological level and capacity to implement the project	Fully possible to implement project	A little difficult to implement project	Very difficult to implement project
	Political Feasibility	Consideration on the law and regulation to implement the project	Fully possible to implement immediately	Amendment or enactment of law/regulation is needed	Amendment and enactment of law/regulation are needed

Source: Chul-Geun and Sung-Chul Suh, "A Study on Efficient Implementation of the e-Government in the Developing Countries," Journal of the Korea Academia-Industrial Cooperation Society, Vol.12, No. 9 pp.4169-4182, 2011

7.5.5.2 AHP Model for Prioritization

The Evaluation model has been developed as shown in the Figure 41.

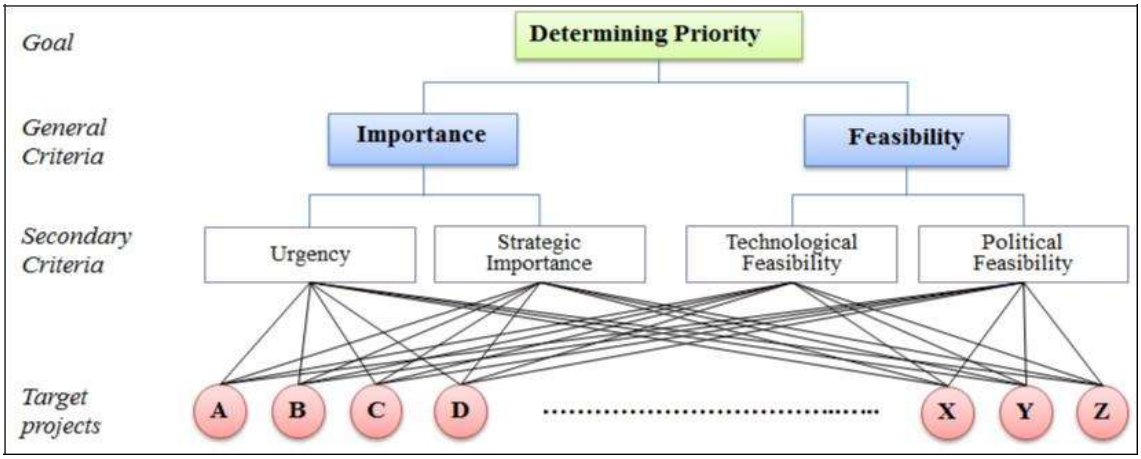


Figure 40 AHP Model Developed for Determining Project Priority

7.5.5.3 AHP Statistics

A. Criteria Evaluation

The following statistics shows a result of criteria evaluation for AHP analysis

Table 60 Criteria Evaluation for AHP Analysis

No.	Criteria	Value
1	Urgency	0.220
2	Strategic Importance	0.237
3	Technological Feasibility	0.218
4	Political Feasibility	0.325
Inconsistency = 0.02 with 0 missing judgment		

B. Service Application Evaluation

The following statistics shows a result of application evaluation per criteria

Table 61 Service Application Evaluation for AHP Analysis

Criteria	Service Application	Value
Urgency	e-Residence	0.184
	e-Vehicle	0.130
	e-Land	0.155
	e-Building	0.137
	e-Document	0.173
	e-Taxation	0.221
	Inconsistency = 0.00725 with 0 missing judgment	
Strategic Importance	e-Residence	0.170
	e-Vehicle	0.127
	e-Land	0.169

Criteria	Service Application	Value
	e-Building	0.143
	e-Document	0.178
	e-Taxation	0.213
	Participants: 9, Inconsistency = 0.00438 with 0 missing judgment	
Technological Feasibility	e-Residence	0.183
	e-Vehicle	0.161
	e-Land	0.159
	e-Building	0.138
	e-Document	0.187
	e-Taxation	0.171
	Inconsistency = 0.00363 with 0 missing judgment	
Political Feasibility	e-Residence	0.154
	e-Vehicle	0.164
	e-Land	0.183
	e-Building	0.157
	e-Document	0.156
	e-Taxation	0.185
	Inconsistency = 0.00312 with 0 missing judgment	

C. Final Results

The following table shows a final evaluation result for the priority

Table 62 Final Results of AHP Analysis

Priority	Service Application	Value
1	e-Taxation	0.197
2	e-Document	0.172
3	e-Residence	0.171
4	e-Land	0.168
5	e-Vehicle	0.147
6	e-Building	0.145

The results of the AHP analysis can be also graphically displayed as shown in Figure 42.

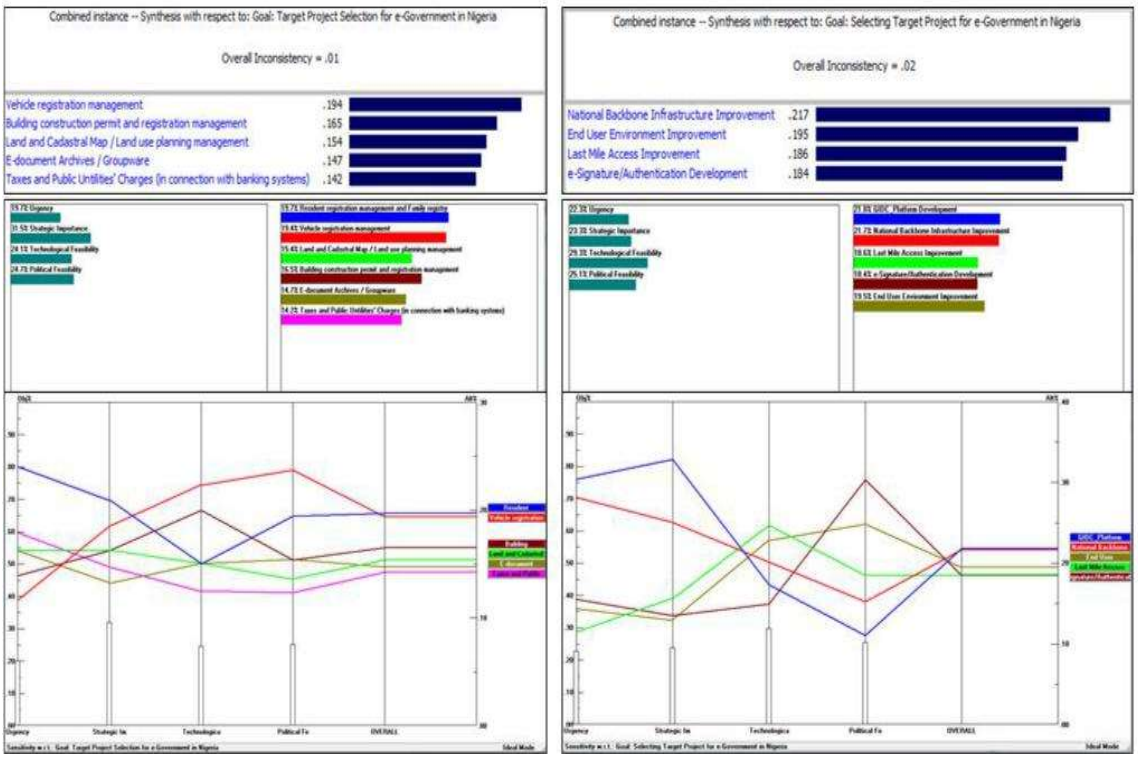


Figure 41 Results of the AHP Analysis

7.5.5.4 Evaluation Results

The AHP analysis results can be mapped into the following 2x2 matrix.

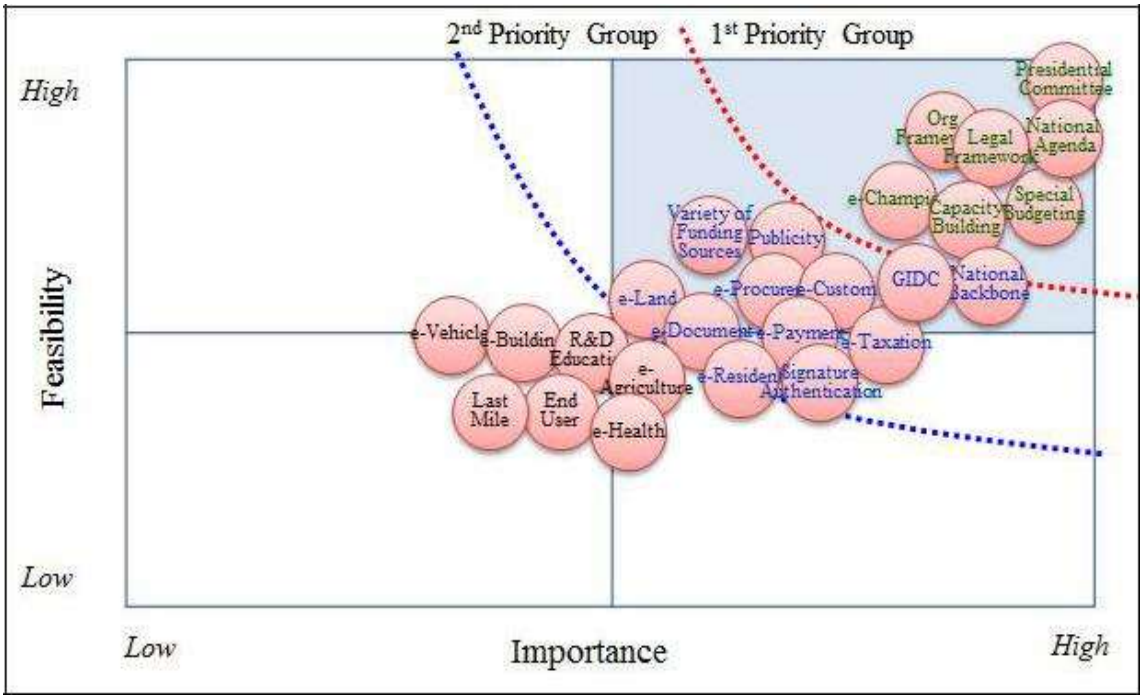


Figure 42 Mapping Priority Evaluation Results

7.6 Selected Project Initiatives

The following table shows e-Government project initiatives to achieve the strategies for arriving at the Nigerian e-Government Vision 2020. They were selected through the procedures described in the previous section.

Table 63 25 Initiatives Selected to Achieve 10 Strategies

5 Policies	10 Strategies	25 Initiatives
1. Powerful Leadership	1. Establish the Presidential Committee on ICT/e-Government	▪ Establish Presidential Committee on ICT/e-Government
	2. Identify e-Government Champions	▪ Develop a talent pool of e-Government Champions
2. Mass Literacy of ICT & e-Government	3. Expand Capacity Building of e-Government	▪ Develop capacity building program
	4. Dispread e-Government Publicity	▪ Conduct publicity campaign for e-Government ▪ Develop Information Access Centre
3. Enough Budget for e-Government	5. Draw Special Budgeting on e-Government	▪ Create and utilize e-Government promotion fund
	6. Create Variety of Funding Sources	▪ Funding through a variety of financing instruments
4. Global Standard e-Government Infrastructure & Service	7. Develop Adequate Infrastructure & Application	▪ Improve Government Integrated Data Centre (GIDC) ▪ Develop e-Signature/Authentication ▪ Establish Standard Software Framework for e-Government
		▪ e-Finance (GIFMIS/SIFMIS) ▪ e-Procurement ▪ e-Taxation ▪ e-Customs ▪ e-Education ▪ e-Health ▪ e-Agriculture ▪ e-Immigration ▪ e-Voting ▪ Clean Civil Servant ▪ Public Information Sharing System
	8. Strengthen R&D and Education in ICT	▪ Expand education in ICT and enhance quality of ICT education
5. Government Process Reengineering	9. Establish Legal Framework for e-Government	▪ Laws necessary for e-Government ▪ General laws for the information society
	10. Establish Organizational Framework for e-Government	▪ Build the dedicated organization structure for e-Government implementation

As depicted in the Figure 44, e-Government can be seen as a socio-technical system consisting of technical subsystem (electronics) and social subsystem (government) which are interwoven with each other.

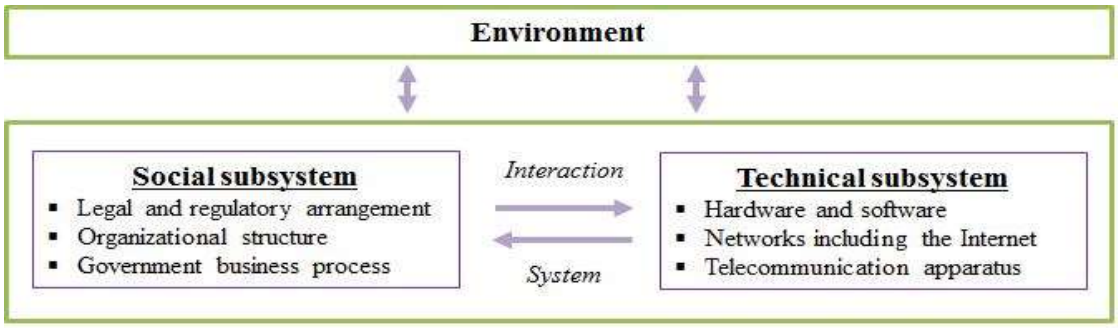


Figure 43 e-Government as a Social-Technical System

Table 64 shows that 25 initiatives can be mapped into the subsystems depicted in Figure 44.

Table 64 25 Initiatives Mapped into the Social & Technical Subsystems

Subsystems	Components	Initiatives	
Social Subsystem	Governance	1. Establish Presidential Committee on ICT/e-Government	
		2. Develop a talent pool of e-Government Champions	
		3. Develop capacity building program	
		4. Conduct publicity campaign for e-Government	
		5. Develop Information Access Centre	
		6. Expand education in ICT and enhance quality of ICT education	
	Financial Resources	7. Create and utilize e-Government promotion fund	
		8. Funding through variety of financing instruments	
	Legal and Regulatory Arrangement	9. Laws necessary for e-Government	
		10. General laws for the information society	
	Organizational Structure	11. Build the dedicated organization structure for e-Government implementation	
Technical Subsystem	Infrastructure & Technology	12. Improve Government Integrated Data Centre	
		13. Develop e-Signature/Authentication	
		14. Establish Standard Software Framework for e-Government	
	Service Application	15. e-Finance	24. Clean Civil Servant 25. Public Information Sharing System
		16. e-Procurement	
		17. e-Taxation	
		18. e-Custom	
		19. e-Education	
		20. e-Health	
		21. e-Agriculture	
		22. e-Immigration	
		23. e-Voting	

As the result of series of discussions including a strategy workshop and two technical workshops, top 6 priority initiatives were derived from the 25 initiatives as listed in Table 65.

Table 65 Top 6 Priority Initiatives in e-Government of Nigeria

No.	Initiatives
1	Establish Presidential Committee on ICT/e-Government
2	Develop capacity building program
3	Create and utilize e-Government promotion fund
4	Laws necessary for e-Government
5	Establish Standard Software Framework for e-Government
6	e-Procurement

7.7 Action Plan of Each Project Initiative

Based on the As-Is analyses and examination of the major issues that Nigeria faces, To-Be models and detailed implementation plans for the selected 25 initiatives are suggested in this section. Methods and indicators for monitoring and performance evaluation are also suggested for most of the initiatives but not for some initiatives for which it does not seem to be a meaningful job at this point.

7.7.1 Improving Social Subsystem

7.7.1.1 Governance

Initiative #1: Establish Presidential Committee on ICT/e-Government

(1) As-Is Analysis

Currently in Nigeria, there is no Presidential Committee on ICT or e-Government. What existed was a Ministerial (Adhoc) Committee on ICT Policy which was set up by the Honourable Minister of Communications Technology, Mrs. Omobola Johnson, on 25th August 2011, to harmonize all the various policies for the different sectors in the ICT industry (Telecommunications, Broadcasting, Information Technology and Postal Services) into a Single Information and Communications Technology Policy. The Committee members were drawn from various sectors and are as shown below:

Table 66 Ministerial Committee on ICT/e-Government

Sector	Position
Digital Bridge Institute (DBI)	Chairman
MCT	Member
NBC	Member
NCC	Member
NITDA	Member
NIPOST	Member
SA (Telcoms)	Member
SA (T& P)	Member
SA (IT)	Member

This Adhoc Committee has given way to the Presidential Committee on Broadband Strategy and Road Map for Nigeria which will ensure that Nigeria has ubiquitous internet capacity and a national backbone. On the 16th July 2013, Mrs. Omobola Johnson inaugurated the Broadband Council chaired by the Honourable Minister. These members work on implementation modalities for the newly developed and approved Nigerian National Broadband plan for the period 2013 - 2018.

This Broadband council is representing an important and significant milestone in the implementation roadmap of the National Broadband Plan. The Terms of reference of the Broadband Council includes providing periodic reports on the progress of the plan, facilitating the coordination and collaboration of the various stakeholders during plan implementation, ensuring that relevant agencies, institutions, and the general public are actively engaged.

The Broadband Council chaired by the Honorable Minister has institutional, governmental and individual representation. Members include:

- Chairman Open media Group,
- Chairman of Visafone,
- Executive Vice Chairman, Nigerian Communications Commission,
- Chief Executive Officer, Main One Cable Company
- Managing Consultant, Telecom Answers Associates
- Chairman, Association of Licensed Telecommunications
- President, Nigeria Computer Society
- President, Nigeria Internet Group
- President, Association of Telecommunication Companies in Nigeria
- Secretary, Universal Service Provision Fund
- Country Manager, Google Global Services Nigeria Limited
- Director, Etisalat
- Chief Executive Officer, Internet Exchange Point of Nigeria
- Managing Partner, Ayoola Babatunde Oke & Co
- Director, Ministry of Communication Technology
- Microsoft
- Principal consultant-Business Unusual Ltd

(2) Major Issues

Some pre assumed challenges for the committee are:

- Management of the team for efficient synergy
- Coordination of team meetings
- Ensuring the entire team works towards set target dates and goals
- Ensuring discipline among team members
- Funds allocation for the implementation of e-Government projects

(3) To-Be Model

The prospective Presidential Committee on ICT/e-Government is expected to play a significant role in the implementation of the five years e-Government Master Plan in Nigeria; it should consist of stakeholders from the government and private sectors-cutting across all MDA's, ministries and agencies. The ordinary citizen, legal experts, IT experts, and industry leaders are not an exemption. The committee will also see to the following:

- It would oversee the planning and implementation of the five years e-Government

Master Plan in Nigeria.

- The committee should also establish a legal and organizational framework and policies to drive the implementation of e-Government projects in the country.
- Work with the government to facilitate the passing of an e-Government bill into law as soon as possible.
- Help achieve the objective of the e-Government project; that is 'helping to positively affect development by strengthening the efficiency and transparency of the public administration services, promoting the ICT industry and reducing the transaction cost and allocating the resources efficiently and increasing the productivity in line with Nigeria's Vision 20:2020.'
- Among others help in providing periodic reports on the progress of the Master Plan, facilitate the coordination and collaboration of the various stakeholders during implementation; ensuring that relevant agencies, institutions, and the general public are actively engaged.

The following figure depicts the relationship between Presidential Committee on ICT/e-Government and key government organization.

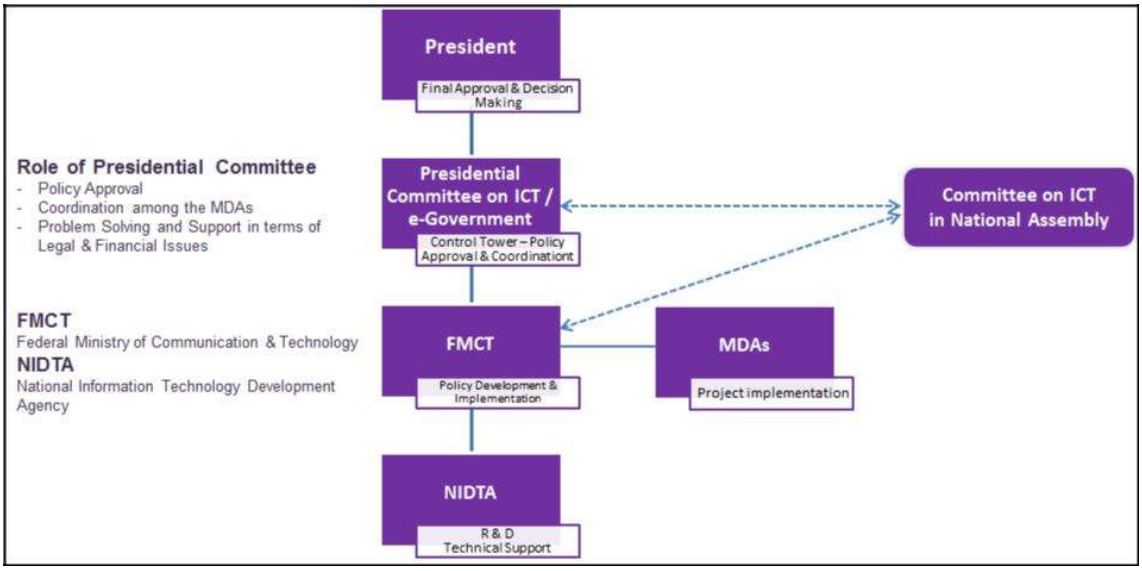


Figure 44 Presidential Committee and Key Government Organizations

Initiative #2: Develop a Talent Pool of e-Government Champions

(1) As-Is Analysis

In Nigeria, there is an ongoing arrangements for the establishment of an e-Government Training Institute at the Public Service Institute of Nigeria (PSIN) in Kubwa with all the requisite facilities and the development of relevant curriculum and courses for future training of civil servants in terms of e-Government facilities.

(2) Major Issues

Some prospective challenges may include:

- Skill mismatch
- Managerial challenges and inhibition
- Inadequate investment in IT Education (Funding)

- Complexity of technology
- Indifference towards change

(3) To-Be Model

Federal Government e-Government training centre at Public Service Training Institute of Nigeria should be developed with world class rating programs and general activities.

However, in order to develop a successful program that can result in a talent pool of e-Government Champions, training programs must be arranged based on the different job roles or functions as analyzed below.

Training programs for different job roles:

- E-Government Champions Program: Programmed for politicians and administrative Heads of Departments, who may not be concerned with project details, but who can provide leadership and an enabling environment.
- Chief Information Officers: These categories of individuals must be equipped with comprehensive skills which will enable them to effectively implement e-Government project from conceptualization to complete rollout.
- Chief Technology Officers (CTO): Provide the CTO's with knowledge on advanced topics like Security, IT Architecture, Standardizations etc. to supplement their skill set appropriately.
- Users of IT Systems in Government Departments: Will get trained specifically on Application Package as part of the project implementation process. A large number to be trained per project.
- External Users: These may include Company Secretaries and Chartered Accountants acting on behalf of companies.
- General IT Awareness and Training for Nigerian citizens.

Initiative #3: Develop Capacity Building Program[74] **(1) As-Is Analysis**

ICT Skills of the general populace is still very low in Nigeria. This situation translates to a huge skills gap which in turn signposts untapped benefits that ICT could potentially deliver to Nigeria's socio economic development. Current problems are summarized as follows:

- Lack of e-Government understanding
- Lack of transparency
- Lack of commitment
- Inadequate representation of ICT professionals at legislative level
- Lack of requisite skills
- Low level of ICT literacy
- Lack of ICT/e-Government training
- Poor capacity building

The countermeasure of the above problems can be suggested as follows:

- Development of targeted training programs for ICT
- Development of targeted training programs for e-Government
- Expansion of training facilities

74 For details, see Appendix 1.

(2) Major Issues

❑ Who Must Be Trained

For successful e-Government in Nigeria, capabilities must be built at all levels from the top leadership to the user of e-Government services. It is equally important to foster an attitude and mindset that is receptive to ICT based administration and delivery of services.

Public administration personnel must be divided into groups according to a specific taxonomy so as to schedule the most adequate training for the most suitable actors.

- Legislators
- Politicians.
- Top Management Civil Servants
- Staff-Level Civil Servants
- ICT-Related Civil Servants

❑ What Must Be the Content of the Training Each Specific Group

- Process Management
- Customer Relationship Management
- Information and Communication
- Change Management
- Knowledge Management
- Organizational Design
- Project Management
- Context Analysis
- Legal Issues

(3) Detailed Implementation Plan

❑ Objectives

The main purpose of ICT capacity building program in Nigeria is to promote development of ICT skilled personnel and to support training and capacity building among public sector employees in the development and use of ICT tools and applications to improve the delivery of government services in line with the Nigerian Vision 20:2020.

The objectives of the Capacity Building Program are as follows:

- To make public servants understand e-Government not only as a technology but also a tool for government innovation and for efficient service delivery to the people
- To secure friendly forces for implementing the master plan of the e-Government, and to foster an environment for smooth coordination in terms of reducing possible conflicts of interests among MDAs in the implementation process of e-Government system
- To enhance the capabilities and willingness of public servants involved in the implementation process of e-Government, thus to promote an environment to minimize MDAs' resistance to the e-Government systems
- To develop ICT related capacity building program for citizens
- To build capacity in public private partnerships for e-Government implementation for commercially viable projects.

❑ Directions

The directions of the Capacity building Programs are to develop and implement ICT training programs for public sector employees, in connection with introduction of e-Government and other digital functions within government offices

❑ Strategies

For Civil Servants:

- Set priorities on the training programs for top leaders and higher officials.
- Develop special training programs for IT/e-Government experts who provide the policy makers and implementation teams with full time support.
- Set up independent training institutions for e-Government under the FMoC, which should be able to work out a self-sustaining business and financial model.
- Maximize the utilization of existing training institutions by improving their programs and facilities.
- Recognize and reward skilled personnel by developing proper assessment and certification.

For Citizen:

- Target to train every single Nigerian.
- Mobilize all relevant tools for capacity building amongst citizens.
- Develop Public Private Partnership (PPP) models for ICT/e-Government training programs.

❑ Implementation framework

CDP for Civil Servants

- CDP by Federal Government Institutions to be developed for e-Government
  - FMoC OHCSF shall provide the following programs on e-Government aiming at strengthening institutional capacities of Nigerian government as given below.

Table 67 CDP by Federal Government Institutions to be developed for e-Government

Program	Duration	Target number of Participants, Frequency			Main Ministry/ Department of Implementation
		Yearly	2015~ 2017	2018~ 2020	
E-Executive Program	2 days	80 persons/ course - 2 classes (80 times/year) Total 6,400 persons	19,200 persons (240 times)	19,200 persons (240 times)	FMoC/OHCSF
Mid/Advanced course	5~10 days	30 persons per course (20 times/ year) Total 600 persons	1,800 persons (60 times)	1,800 persons (60 times)	FMoC/OHCSF
Project management Course	5 ~10 days	30 persons per course (20 times/year) Total 600 persons	1,800 persons (60 times)	1,800 persons (60 times)	FMoC/OHCSF
Security Course	5 ~10 days	25 persons /course (20 times year) Total 500 persons	1,500 persons (60 times)	1,500 persons (60 times)	FMoC/OHCSF
The ICT Essential Program	5~10 days	30 persons/course (20 times/year) Total 600 persons	1,800 persons (60 times)	1,800 persons (60 times)	FMoC/OHCSF
Technology End-User Program	2 weeks	30 persons/ course (20 times/year) Total 600 persons	1,800 persons (60 times)	1,800 persons (60 times)	FMoC/OHCSF

Program	Duration	Target number of Participants, Frequency			Main Ministry/ Department of Implementation
		Yearly	2015~ 2017	2018~ 2020	
Professional e-Gov. instructor development program	3 months	30 persons per course (4 times/year) Total 120	360 persons (12 times)	360 persons (12 times)	FMoC/OHCSF
E-Technical Officer Program:	3-6 months	30 persons per course (2 times /year) Total 60	180 persons (12 times)	180 persons (12 times)	FMoC/OHCSF
Total		9,480	28,440	28,440	

- CDP by Existing Federal Government Training Institutions
  - The Federal Government Training Institutions should innovate to include CDP for ICT and e-Government.
- CDP by State Government
  - Each State can provide the following programs on e-Government aiming at strengthening institutional capacities of State as given below.
- Through e-Executive program
  - All high and senior public officials should be trained by the end of 2017;
  - All Governors of 36 states, Chairmen of 774 local government Councils, executives of public enterprises should be trained by the end of 2017;
  - All public officials of management level, officers and technical workers should be trained with ICT and e-Government training programs by the end of 2020.
  - All public officials of operatives (cleaners, securities, etc.) should be trained with ICT and e-Government training programs by the end of 2022.

Table 68 CDP by State Government

Program	Dura-tion	Target number of participants					Implementation
		1 state	2015 (10 States)	2016 (22 States)	2017 (36 States)	2018~2020 (36 States)	
The ICT Essential Program	5~10 days	30 persons per course (10 times/year) Total 300 persons	3,000	6,600	10,800	32,400	Each State
School Teacher* Program	2 days	80 persons per course (20 times/ year)	16,000	35,200	57,600	172,800	FME/State
Technology End-User Program	2 weeks	30 persons per course (10 times/year) Total 300 persons	3,000	6,600	10,800	32,400	Each State
Total			22,000	48,400	79,200	237,600	

* Number of school teacher in Nigeria (2010, World Bank): Primary school-574,078, Secondary school-273,781

- CDP through Commissioned Education: FMoC/OHCSF can provide the following programs on e-Government through qualified institutions such as ASCON and Federal Universities of technology.

Table 69 CDP through Commissioned Education Institutions

Program	Duration	Target number of participants, Frequency			Main Ministry and Department of Implementation
		Yearly	2015~ 2017	2018~ 2020	
Professional e-Gov. instructor development program	3 months	30 persons per course (20 institutes) Total 600	1,800 persons	1,800 persons	FMoC/OHCSF
E-Technical Officer Program:	3-6 months	30 persons per course (20 institutes) Total 600	1,800 persons	1,800 persons	FMoC/OHCSF
Total		1,200	3,600	3,600	

* Mid/Long period Schedule of Federal Government Officials' CDP

- CDP through Cyber-Training: In order to utilize IT technology for CDP for public officials, the Federal government can establish the Cyber Training Center while there is currently no cyber training program for civil servants, of which implementation body will be FMoC.

Capacity Building for Citizens

- CDP through Education Institutions
  - Mandatory training and appropriate courses in ICT at all tiers of public education should be introduced. One of the success factors for this is collaboration between FME, NUC, NBTE, and NCCE to develop an e-curriculum for tertiary education in Nigeria (Main MDAs: FMoC and FME)
- CDP through Information Access Centres (PAVs and KAVs)
  - Capacity building for citizens in rural areas, especially for farmers, can be done through information access centres such as PAVs (former RITCs and CCCs) and KAVs (former Information Centres in schools).
  - See Initiative #5 for the details.
- CDP through Media
  - Capacity building for citizens could be maximized through mobilization of all relevant tools like Internet, cable TV, radio and the vernacular press combining them with appropriate content and proper connectivity. (Main MDA: FMCT)

Develop capacity building in Public Private Partnerships (PPP)

-
- PPP model may be applied to set up training institutions for e-Government..
- Important considerations for successful PPP models for training institutions are:
  - political leadership;
  - public sector involvement;
  - carefully developed plan;
  - private partners' commitment;
  - communications between stakeholders; and
  - selecting the right partners.

❑ Tentative Schedule

Item		2015	2016	2017	2018	2019	2020
Federal Government	E-Executive Program*						
	The other Programs						

Item	2015	2016	2017	2018	2019	2020
State Government	10 state	22 state	36 state			
CDP by commissioned Education						
Cyber training						
Develop capacity building in PPP						

Figure 45 Tentative Schedule: Develop Capacity Building Program

*Refer to Appendix 1 for details.

❑ Tentative Budget

Table 70 Tentative Budget: Develop Capacity Building Program

(USD million)

Item	2015	2016	2017	2018	2019	2020
Federal Government	11.8	11.8	11.8	11.8	11.8	11.8
State Government	25.1	55.2	55.9	90.3	90.3	90.3
CDP by commissioned Education	9.7	9.7	9.7	9.7	9.7	9.7
Cyber training						
Develop capacity building in PPP						

*Estimated budgets are based on PSIN and ASCON fee.

❑ Monitoring and performance evaluation

- Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
- Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

(4) Expected Effects

❑ Quantitative Effects

- Improve the Online Service Index of UNEGDI

❑ Qualitative Effects

- Improvements in a number of indicators including Human Capital Index
- Human resource development for ICT sector, especially for e-Government
- Resolution on the digital divide

Initiative #4: Conduct Publicity Campaign for e-Government **(1) As-Is Analysis**

The current issues of conducting fruitful publicity campaign for e-Government in Nigeria are as follows:

- Ignorance of ICT/e-Government
- Lack of recognition of ICT/e-Government importance
- High rate of ICT/e-Government illiteracy
- Citizens apathy

(2) Major Issues

- Awareness is a critical factor to the success of e-Government. E-government calls for new roles and skills for both public servants and the public.
- Awareness is the starting point for the behavioural change that is called for by both citizens and public servants, creating the foundation for understanding and ultimately support for the new environment created by e-Government.
- Awareness comes from communications and marketing by the government to its citizens and employees, more fundamentally, awareness comes from the accumulated experience of citizens interacting with government and of public servants interacting with their organizations.
- Awareness is perception-based and self-reinforcing, and it can be positive or negative in nature, creating either a virtuous or a vicious circle of perception as individuals and organizations deal with government.
- Awareness can be promoted, and in that sense it is an important part of the e-Government management agenda, the tools are available, beginning with citizen-oriented use of communications and marketing by the government, but including web-based tools.
- A double-edged dimension of awareness is that internal and external awareness are linked – the awareness and experience of public service staff will have a considerable influence on how they in turn deal with the public. And, as with learning, the effort to promote awareness is continuous.

(3) Countermeasures of Current Issues

- Expand basic ICT/e-Government education
- Improve ICT/e-Government training
- Spread understanding of e-Government
- Increase advocacy and sensitization
- Expand adequate knowledge

(4) Detailed Implementation Plan

❑ Objectives

- Change the impression of the general public due to the low awareness of potential benefits and the wrong perception of e-Government as being technology-based rather than service-oriented.
- Remove negative cultural attributes within the public service that were the lack of a productivity culture, bureaucratic secrecy, and a focus on internal administrative procedures rather than on providing services to the citizens.
- Solve some apprehensions within the public service about the introduction of ICTs, both on how to use the new equipment and on reasons for possible loss of jobs.

❑ Directions

Achieving "Service Awareness"

Adequate Service Awareness requires that its sub-concepts of Awareness of "Service Existence", Awareness of "Service Usefulness", Awareness of "Servicing Outcome", and Awareness of "Servicing Limitations" are all adequately achieved.

❑ Strategies

- ICT aware top leadership

- Publicity campaigns supported by the political leaders
- Promotion/advertising of the government initiatives
- Reduce digital divide

❑ Implementation Framework: Related MDAs

How to do

- Conduct research to ensure that online services respond to actual needs and that the implementation suits the target audience
- Articulate a timeline for implementation in a step by-step manner so the reforms will not seem overwhelming to the bureaucracy
- Hold regular meetings between e-Government policy leaders and the affected workforce so employees are active participants in the process.
- Create incentives by rewarding individuals and agencies that apply the reforms rapidly.

(Main Ministry: FMoC (NITDA), NCCT)

Reduce Digital Divide

What to Do and by Whom

- Provide communal access through Community Resource Centre (CRC), Rural Information Technology Centre (RITC) and IT Centres, and establish at least 100 new Centres (CRC or RITC) per year until 2020: Possible challenges of this project are infrastructural constraint and epileptic power supply. However, they can be overcome if there is a political will. Training of trainers should be provided and community members should be trained for free to encourage massive participation. (Main Ministry: FMoC (NCC and NITDA), NCCT)
- Combine access with training through CRC, RITC and school based IT Centres (Main Ministry: FMoC (NCC and NITDA), FME)
- Provide incentives to the private sector (e.g.: local entrepreneurs, investors) to donate equipment and training (Main Ministry: FMoC)
- Emphasize local language and content tailored to different use for-profit entrepreneurs to build and sustain access points in small communities (Main Ministry: FMoC (NITDA))

Improve e-literacy

What to Do and by Whom

- Ensure that contents are in local languages and that interfaces are easy to use (Main Ministry: FMoC (NITDA))
- Develop applications that use speech or pictures in addition to, or instead of written text (Main Ministry: FMoC (NITDA))
- Include an educational component in e-Government projects (Main Ministry: FMoC (NITDA))
- Provide aides at access points who can train citizens in basic computer skills (Main Ministry: FMoC (NCC))
- Create programs that include traditional media, like radio programs or newspaper columns, where citizens can learn about e-Government, for example radio and TV programs (Jingles, adverts, special interviews and documentary on projects and programs) (Main Ministry: FMoC (NITDA))

- Special attention should be given to groups difficult to integrate (women, elderly, immigrants) (see Initiative #4 3.3.6 Case of Korea)

e-Government Publicity/Campaign

What to Do and by Whom

- The Federal Government should be made responsible for developing publicity and training campaigns that will engage the public about e-Government initiatives. (Main Ministry: FMoC (NITDA), NCCT)
- e-Government Publicity/Campaign Programs that include traditional media, like radio programs or newspaper columns, where citizens can learn about e-Government should be created. (Main Ministry: FMoC (NITDA), NCCT)
- Publicity should be carried out in all local languages especially the widely spoken languages. All social media should be involved in the e-Government campaign especially TV and Radio to penetrate the rural areas. Posters, placard, banner, and handbills in local languages and English should be considered. (Main Ministry and Department of Implementation: FMoC and each State Government)
- Conduct research to ensure that online services respond to actual needs and that the implementation suits the target audience. (Main Ministry: FMoC (NITDA))
- e-Government road shows in the geo-political zones should be held as an awareness event. (Main Ministry: FMoC (NITDA))
- Institute an e-Government best practices annual award. (Main Ministry: FMoC (NITDA))

❑ Tentative Schedule

Program	2015		2016		2017		2018		2019		2020	
	1	2	1	2	1	2	1	2	1	2	1	2
1. Reduce digital divide (%)	10	20	30	40	50	60	65	70	75	80	80	80
(1) Provide communal access through CRC, RITC, IT Centre, and establish 100 new Centres (CRC or RITC) per year												
(2) Provide incentives to the private sector to donate equipment and training												
2. Improve e-literacy (%)	10	20	30	40	50	60	65	70	75	80	80	80
(1) Ensure that contents are in local languages												
(2) Develop applications that use speech or pictures												
(3) Include an educational component in e-Government projects												

Program	2015		2016		2017		2018		2019		2020	
	1	2	1	2	1	2	1	2	1	2	1	2
(4) Provide aides to citizens who train in basic computer skills at access points												
3. e-Government Publicity/Campaign												
(1) Create publicity campaign programs with English and widely spoken local languages for mass media												
(2) e-Government road shows in the geo-political zones												
(3)Annual award												

Figure 46 Tentative Schedule: Conduct Publicity Campaign for e-Government

❑ Tentative Budget Planning

Table 71 Tentative Budget: Conduct Publicity Campaign for e-Government

(USD million)

Program	2015	2016	2017	2018	2019	2020
Reduce digital divide (Establish 100 new Centres per year)	23.1*	23.1	23.1	23.1	23.1	9.2**
Improve e-literacy & e-Government Publicity/Campaign	0.1***	0.2	0.2	0.3	0.3	0,4
Total	23.2	23.3	23.3	23.4	23.4	9.6

* Estimated cost of building construction, equipment setting, and annual operation expenditure of 1 Centre : USD 231,000 (based on NCC expert's estimation)
** In case of 2020, assumed to establish 40 new Centres
*** About 5% of NITDA recurrent budget in 2014

❑ Progress Review and Performance Evaluation

Progress review and performance evaluation for each e-Government Application can be conducted based on the service awareness indicators shown in Table 72.

Table 72 Sub-concepts of Service Awareness

Sub-concepts	Conceptual Properties (Indicators)
Awareness of *Service Existence*	(1) Service Visibility (2) Stakeholder Awareness (3) Degree of Awareness (4) Continuity of Awareness
Awareness of *Service Usefulness*	(5) Convenience of Service Use (6) Responsiveness (7) User Utilisation Capacity (8) Benefit Production Capacity

Sub-concepts	Conceptual Properties (Indicators)
Awareness of *Servicing Outcome*	(9) Degree of Service Usage (10) Benefit Expectations (11) Extent of Achieved Benefits
Awareness of *Servicing Limitations*	(12) Sustaining User Expectations (13) Technology-related Limitations (14) Organisation-related Limitations

(5) Expected Effects

- Creating public awareness has the potential to provide a precursor for community buy-in;
- Creating public awareness has the potential to create "champions" at national governmental, local or civil society levels, as well as among the Youth, Business Community, and other Beneficiary Communities;
- Creating public awareness has the potential to endow e-Government in a jurisdiction with a life and identity of its own which will continue beyond the seed-funding phase
- Qualitative effects:
  - Spread understanding of e-Government
  - Increase advocacy and sensitization
- Expand adequate knowledge

Initiative #5: Develop Information Access Centre

(1) As-Is Analysis

The Federal government through the Nigerian Communications Commission (NCC) is setting up Community Contact Centres (CCC) across the country using the Universal Service Provision Fund (USPF). Between the period of 2007-2011, 224 CCCs have been established across the six geo-political zones meeting 77% out of the set target of 291 CCCs across the nation. These CCCs provide shared access to telephone and internet services in the rural areas.

The government through NITDA has provided Rural Information Technology Centres (RITC) and IT Centres across Nigeria. Currently, it has 400 RITC Centres with 372 centres yet to be constructed. All RITC Centres are located within communities while IT Centres are located in Schools-primary, secondary and tertiary. CCC is not NITDA's project. They fall under NCC. There have been no relationship between NITDA projects (RITC & IT) and NCC Projects (CCC).

Under the National Council on Communication Technology (NCCT) Nigeria, all information technology centres i.e.(RITC and CCC) have recently been labeled as Public Access Venues (PAV) while IT Centres are now been referred to as Knowledge Access Venues (KAV).

The NCCT is the highest consultative and policy advisory body to the government on matters pertaining to ICT in Nigeria. Consequently, The Nigerian Postal Service (NIPOST) has been urged to leverage on existing Public Access Venues (PAV) infrastructure around the country to deploy its services; NIPOST offices are now also being used to deploy ICT services across the country. All projects related to PAV infrastructure in Nigeria are now being brought to NIPOST venues and managed by NIPOST personnel.

Financing of these projects are done by NITDA and NCC for the first year after which all written documents will be held by the Ministry of Communications Technology (who serves as the harmonizer) and ownership assumed by state and local government. Across Nigeria there are about 622 NIPOST Centres.

(2) Major Issues

Major challenges encountered are:

- State and local governments not wanting to assume ownership of PAVs after the first year management by the Federal Government and a serious financial burden to the Federal Government if the Local Governments do not take the ownership of PAVs;
- Unstable power supply issue due to the inability of Local Governments to replace solar panel batteries; and
- Finding qualified personnel.

(3) To-Be Model

❑ To-Be Model of PAV: Information Village (INVIL) Centre

PAV as an information access centre should be capable of rendering technology-enabled multichannel assistance and services to the citizens on government services and new information technology in general. Services to be rendered in PAVs will include:

- Access to the Government Contact Centres (GCC) through telephone, web & live chat, SMS, email, etc.;
- Basic help desk for the e-Government services;
- e-Commerce and online job searching; and
- Other managed services and capacity building programs.

One of the key success factors of PAV will be sustainability as the Korean government experienced from the Regional Informatization project as a means to develop rural communities as information era was coming in full scale. Information Village (INVIL) initiative, which successfully substitutes Regional Information Centre in Korea, needs to be considered as a To-Be Model for PAV with sustainability. INVIL is to establish self-sustainable village communities that are capable of continued growth by creating information network environments and improving the income of residents through e-commerce in agricultural, fishing, and mountain regions usually excluded from information networks. Main areas of the project are as follows:

- Establish the IT infrastructure
- Secure the space or building for the Village Information Centre
- Distribute free PCs to households
- IT training for residents
- Develop Information Contents
- Establish an Operation Organization
- Business Model development and Marketing

It is highly recommended to consider utilizing INVIL-like centres as e-Commerce bases which will contribute to realizing the economic self-reliance. It should also be able to perform at least three functions before it can be used as an e-commerce base as follows:

- Computer Learning Centre
- Community Information Centre

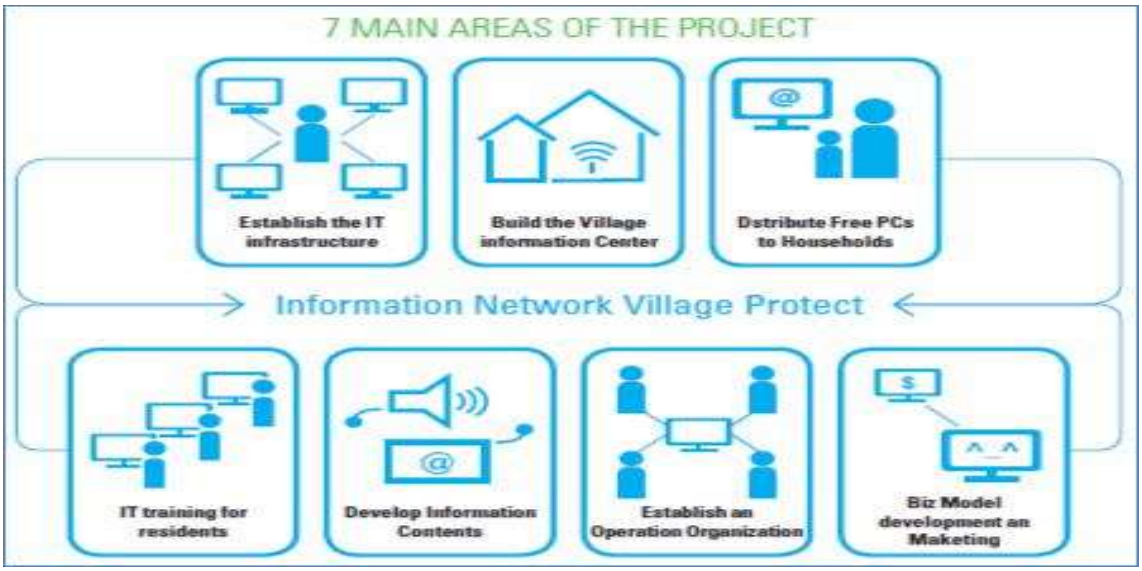


Figure 47 Main Areas of the INVIL initiative

❑ To-Be Model of KAV: Smart Class

KAVs can be sophisticated and empowered by relevant technologies and qualified technicians for the next generation of education and training system with an interactive learning environment. We suggest that KAVs be sophisticated and equipped with smart class solutions as follows:

- LCD- or LED-based Interactive Whiteboard system
- Interactive Education Support Solution
- Tablet PCs

Figure 48 Smart Class: To-Be Model of Knowledge Access Venue

(4) Detailed Implementation Plan

❑ Objectives

The objectives are:

- to improve self-sustainability of PAVs as local community centres that are capable of continued growth by creating INVILs and improving the income of residents through e-commerce; and
- to improve interactivity of KAVs using smart class solutions.

❑ Directions

Phased approach for INVIL initiative shall be taken as follows:

- Phase 1: Reduce the digital divide.
- Phase 2: Provide a basis for economic self-reliance.
- Phase 3: Establish a participatory management system.
- Phase 4: Support social integration for different languages and tribes.
- Phase 5: Spread INVIL throughout the continent. (Be the IT champion of Africa.)

Phased approach for Smart Class initiative shall be taken as follows:

- Phase 1: Implement interactive learning environment with Smart Class solutions.
- Phase 2: Provide users with e-learning environment including e-textbook and learning management system (LMS).
- Phase 3: Provide students with online after school services.
- Phase 4: Support social integration for a neglected class of students.

❑ Strategies

- Utilize INVIL for enlightenment for social change.
- Create shared value to include people in the project.
- Initiate a dual strategy – online and offline together.
- Design the operating model in detail.
- Introduce the principle of competition.
- Build websites for publicity and marketing.
- Organize for the sustainable growth.
- Establish a participatory governance system nation-wide.
- Select people, educate them, and use them as change agents.
- Participatory leadership determines all.
- Minimize the cost and maximize the usage.

❑ Implementation framework

- Related MDAs to INVIL: FMoC, NIPOST, NITDA, NCC, NCCT
- Related MDAs to Smart Class: FMoC, NITDA, FME
- Harmonizing authority and implementing body should be determined

❑ Tentative schedule

Items	2014	2015		2016		2017		2018		2019		2020
Harmonizing authority & Implementation body												

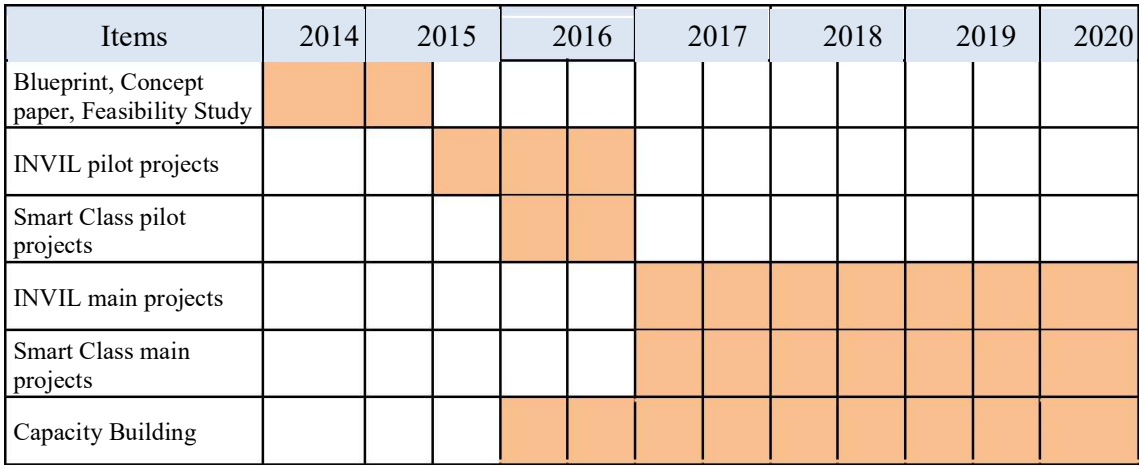


Figure 49 Tentative Schedule: Information Access Centre

❑ Tentative Budgeting

Table 73 Tentative Budget: Information Access Centre

Items	Activities	Amount (USD)
Blueprint, Concept paper, Feasibility Study	As-Is/To-Be, Action Plan, Feasibility Studies	600,000
INVIL pilot projects	5 INVIL Centres (500,000 / Unit x 5)	2,500,000
Smart Class pilot projects	10 Smart Class (100,000 / Unit x 10)	1,000,000
INVIL main projects	800 INVIL Centres (300,000 / Unit x 800)	240,000,000
Smart Class main projects	200 Smart Classes (100,000 / Unit x 2000)	200,000,000
Capacity Building	ICT Training, Business Consulting, Literacy Programs, etc. (1,000,000 x 4 years)	4,000,000
Total		448,100,000

❑ Monitoring and performance evaluation

- Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
- Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected Effects

- Improvements in a number of indicators including tele-density, active subscription, number of internet users, and internet penetration
- Acceleration of development in local contents
- New jobs creation in ICT sector
- Resolution on the digital divide

Initiative #6: Expand Education in ICT and Enhance Quality of ICT Education

(1) As-Is Analysis

- Shortage of human resources with required competencies in ICT
- Absence of institutionalized training and learning framework for e-Government
- Wide e-readiness gap between the capacities needed for successful e-Government and what actually exists: Low ICT literacy and lack of requisite skills
- Lack of professionalism and adequately trained professionals in the ICT sector
- Inadequate or limited skilled ICT professionals in the public service
- Lack of proper appreciation for e-Government both by citizens and government workers
- No identified KPIs for the impact of e-Government adoption on the citizens
- No framework for private sector involvement

(2) Major Issues

Building ICT Literate Human Capacity and e-Government

There are three distinct aspects when it comes to capacity building.

- The IT skills and capacities within the government and its constituents
- The IT Skills in the Industry
- The IT literacy levels and capacities of the common citizens of the country

The key capacities which need to be built and strengthened within the government may include:

- Develop, operate and maintain information systems;
- Procurement of ICT infrastructure & services;
- Service delivery, maintenance and operations;
- e-Government program/project management;
- Change management; and
- Citizen relations management.

As for the common citizens, the capacities required to be developed may pertain to:

- ICT education as a part of the academic curriculum at school level;
- Raising basic literacy level in the country; and
- Opening up government/private facilities to educate the citizens about the usage of computers/Internet etc., thus making them e-literate.

(3) Requisite Human Skills & Capacity

The different kinds of human skills & capacities needed to be built up in a country aiming for e-Government include the followings.

- ICT professionals within the government to design and develop e-Government solutions
- ICT Professionals in the government to evaluate, procure and manage technology solutions
- ICT aware government officers and staff to cooperate and participate in the process of e-Government implementation
- ICT sensitized and equipped businesses and corporate sector
- ICT literate citizens to eventually leverage on the e-Government solutions to make their lives comfortable and build a renewed relationship with the government.

To embark on above mission, as a first step, government should assess the quality & quantity of the existing human resource pool available in the country.

(4) Detailed Implementation Plan

- Objectives
  - Train ICT skilled manpower in government/industry
  - Expand ICT literacy in government
  - Train e-literate citizens
  - Increase ICT training facilities (basic & professional)
  - Enhance ICT education in schools and colleges
  - Raising basic literacy levels in the country

- Directions
  - ICT creates a new accountability model that challenges the conventions of the new public management, they are both centralizing and decentralizing in nature and require a redefinition of empowerment - human resources management is based on competencies and skills more than on formal qualifications
  - The key skills of e-Government include information finding and use and relationship management - the technical expertise that is needed exceeds the capacities of government, giving new emphasis to creating and managing partnerships between the public and private sectors.
  - The essence of human resources development in e-Government is continuous learning.
  - Professional networks and associations become increasingly important in this environment, as do web-based learning tools.
  - HRD in this daunting environment requires an integrated toolkit.

- Strategies
  - Improve ICT awareness among top leaders.
  - Develop Capacity Building Programs for civil servants:
    - To introduce training programs to develop ICT experts;
    - To conduct ICT training on public servant according to their level of ICT literacy;
    - To expand the provision of e-learning; and
    - To develop Training ICT Program in the Federal Government Training Institutions (see To-Be Model and Action Plan for Initiative #4).
  - Develop and train ICT professionals within the Government:
    - To introduce an internationally certified ICT Certificate; and
    - To establish nodal agencies.
  - Facilitate promotion & proliferation of ICT industry:
    - To introduce an internationally certified ICT Certificate;
    - To introduce training programs to develop ICT experts; and
    - To establish ICT-related departments at universities and provide assistants.
  - Sensitize enough to the use of ICT in business operations.
  - Educate citizens to become e-literate**:**
    - To introduce programs for the elderly, housewives and disabled people; and
    - To expand the Community Communications Centre for improving ICT literacy

- Implementation Framework: Related MDAs

ICT Aware Top Leadership

For establishing fruitful e-Government implementation, the initiative and thrust has to come from the top which acts as a motivating factor for the rest of the personnel. Thus it is imperative for the top leadership to be ICT aware. Such a sensitization could be carried out through seminars, conference, & consultations. ICT awareness & sensitization programme may also be conducted for the policy makers & senior executives in the government (including members of the Senate and the House of Representatives, and public officials of judicial agencies) so that they can assume a leading role in the initiatives. (In charge of Presidential Committee on ICT/e-Government, FMoC)

Building Capacity within the Government

- e-Government and ICT ought to be made a part of the training programme held for the new batches of public servants. Many more programmes (seminars, workshops, training) covering different aspects of e-Government can be introduced for in-service government officers.
  - The personnel employed in the departments responsible for procuring ICT products & services ought to be given intensive training on evaluation, procurement and management of technologies as nature of these procurement is different from conventional purchases in the government.
  - Adequate training in the usage of ICT applications may be provided to the administrative and functional staff in different departments of the government
  - There should be training on customer relations skills for the public officials as the direct interaction between the citizens and the government rises significantly through e-Government.
- Some strategies for expanding ICT education and e-Government training are as follows:
  - To introduce training programs to develop ICT experts (Main Ministry: FMoC(NITDA))
  - To conduct ICT training on public servant according to their level of ICT literacy (Main Ministry: FMoC/ OHCSF and relevant Ministry)
  - To expand the provision of e-learning (Main Ministry: FMoC)
  - To develop Training ICT Program in the Federal Government Training Institutions (Main Ministry: FMoC, relevant Ministry and each Training Institutions)
- Change Management: Attitude and adaptability to change, especially in public administration, is an important prerequisite for the e-Government implementation & transformation to take place in a country. Considering this, Professional Change Management skills are required to guide government institutions through this process of transformation. A government may even consider hiring Change Management consultants who would be responsible for instilling confidence into the staff that e-Government is being ushered in to assist and help in carrying out their duties more efficiently and is not a threat to their jobs or authority besides helping them to adapt new paradigm of delivery of government services. (Main Ministry and Department: FMoC, relevant Ministry and Department)
- Job of ICT professionals within the Government (Main Ministry and Department: FMoC, relevant Ministry and Department):
  - Develop and train the existing ICT professionals within the government in

architecture, development and evaluation of e-Government solutions.

- Conduct extensive training programmes for the existing ICT aware staff in the government so that they could update their knowledge and be well acquainted with the new generation technologies.
- Besides harnessing the existing pool of human resources available with the government, it is suggested that new recruitment programmes could be initiated for intake of ICT literate personnel. Rules for existing posts in the government could also be amended to make basic ICT literacy a prerequisite.
- A specialised field like e-Government would require human resources skilled in a number of disciplines apart from just computer programming. The recruitment initiatives should also target other specialised skills such as e-Government solution architects, System Managers, Network Managers, Database Administrators, Customer Relations Managers, legal experts etc.

- Nodal Agency: If the government departments to recruit the large number of ICT professionals on its payroll is not feasible. Further retaining them and providing enough professional avenues will be even more challenging due to tremendous growth of the ICT sector. Therefore, rather than making several different departments deal with this issue, a nodal ICT agency could be identified and accorded responsibility to co-ordinate & extend necessary ICT support to the departments in their e-Government initiatives. The nodal ICT agency in the government which provides wide range of ICT support to the government departments across all sectors of development. ICT support could range from consultancy, preparation of long term IT plan, architect a solution, development of software, designing databases, ICT procurement, setting up ICT infrastructure, communication & collaboration services to even taking projects on turnkey basis. The government should emphasis on strengthening such an agency to cope with the growing demands of e-Government. (Main Ministry and Department: FMoC, relevant Ministry and Department)

<u>Enhance ICT Education for ICT Industry</u>

- Government should introduce schemes to facilitate promotion & proliferation of ICT industry within the country through initiatives like Technology Parks, Tax Benefits. (Main Ministry: FMF, FMoC)
- Government can take initiatives to introduce more and more courses in professional studies in various universities, technology institutions offering degree and diploma courses. Vocational training institutes can also play a significant role in building skilled human resource needed for e-Government implementation at a large scale, throughout the state, region or nation. (Main Ministry: FME, FMoC)
- Private Training institutions should also be encouraged to offer more and more courses in ICT technologies & Applications. Initiatives should be taken to introducer new courses as well as increase the seats in existing courses. (Main Ministry: FME, FMoC)
- The Business sector in a country and the organisations in the corporate sector have to deal with the government on a large number of issues related to licensing, taxation etc. The purpose of deploying e-Government initiatives from the government's side cannot be successful if the businesses are not sensitized enough to the use of ICT in their operations. Hence, the overall e-environment of the country ought to be strengthened and personnel employed in various businesses need to be made ICT

aware and literate. This could be further promoted or motivated through recognition of their efforts. (Main Ministry: FMITI, FMoC)

Educate Citizens to become e-Literate

The common citizen in the country has to be made computer literate and aware about the benefits of e-Government. Considering the fact that the overall literacy rates in developing countries are anyway abysmally low, it can be a daunting task and shall take some time to achieve. Phased approach would be suggested particularly if the country is larger or literacy level is too low.

As suggested, this mammoth task can be met by making a long-term/short-term plan and setting up strategies to make its citizens e-literate.

Some of the initiatives which could be taken in this direction are listed below:

- ICT training to be made a compulsory part of curriculum at the school and college level. (Main Ministry: FME, FMoC)
- Community programmes could be initiated and encouraged to make the adult population in all segments of the society ICT literate and technology friendly. (Main Ministry: Universal Basic Education Commission (UBEC, National Mass Education Commission (NMEC), National Commission for Nomadic Education (NCNE), FME)

❑ Progress Review and Performance Evaluation

The performance can be evaluated by following governance impact indicators:

- Better co-ordination among government departments
- Greater accountability in public administration
- Better partnership between the government and the private sector
- Improved accessibility by citizens and businesses
- Improved government-citizen relationship
- Enhanced public participation in the process of governance
- Amendments in legislative and policy framework with respect to use of ICT
- Improved international relations.

Using the above performance indicators, the process of evaluation could be worked out which could involve any one or more of the various methodologies such as

- Formal/informal interaction with all the stakeholders
- Web based surveys
- Structured/sponsored survey by professional agencies
- A third party survey carried out independent of the government influence

(5) Expected Effects

The benefits of ICT education activities would be expected to:

- Improve the computer literacy
- Increase the need of computer utilization
- Foster the ICT industry
- Improve the abilities of operation
- Standardization of operating equipment
- Bridging digital divide through e-learning and improvement of the Internet Access
- Increase ICT-related human resource
- Improve quality of ICT curricula

7.7.1.2 Financial Resources

While many agenda on government innovation can be achieved only by reforming legal framework, without financial implication, e-Government requires a huge amount of financial input for each stage. Yet, e-Government won't be able to secure the necessary budget or be implemented, becoming not core but peripheral agenda. Because there is uncertainty in government innovation and information technologies, because it takes long time to recover the investment on it, and because its outcomes are intangible, e-Government may be viewed by citizens paying taxes as a project difficult to accept. In addition, it is difficult to evaluate each ministry for its success on e-Government, as the project is implemented across linked ministries. Therefore, it is crucial to devise some other way to secure the budget for e-Government, different from the way to get the budget for general government projects.

(1) As-Is Analysis

Presently most e-Government projects are directly funded by the Federal and Local Governments with a mix of Public Private Partnership (PPP).

(2) Major Issues

- Interest rates and conditions of financing e-Government projects constitutes an issue
  *Interest rates of Nigeria

Item	2011	2013	AUG. 2014
Discount Rate, Percent per Annum	12.00	12.00	12.00
Lending Rate, Percent per Annum	16.79	16.72	16.60
Deposit Rate, Percent per Annum	8.41	7.95	8.54
Treasury Bills, Percent per Annum	13.64	10.85	9.95

Source: http://elibrary-data.imf.org/DataReport.aspx?c=1449311&d=33060&e=161975

- Operators of some e-Government projects lack the necessary financial weight and organizational structure to sustain the these projects
- Ignorance of available foreign donor agencies and grants/fund for e-Government
- e-Government projects are overpriced
- Government bureaucracy impinge on project performance and lead to poor service delivery
- Corrupt practices creates problems for sustainability of e-Government projects/programmes
- Lack of a national framework for financing e-Government
- Lack of knowledgeable e-Leaders in Government and experts/advisers in e-Government financing

(3) Counter Measure

- Detailed and standard conceptualization, design and resource allocation for e-Government Projects should be employed
- Performance budgeting should form an integral part of fund allocation and management
- Research and involvement of foreign donor agencies, Grants and funding organizations should be introduced

- Governments need to evaluate potential e-Government projects by:
  - undertaking a traditional cost benefit analysis and discounting to present value;
  - focusing on the underlying cost effectiveness of the project in terms of the ability to produce outputs more effectively than existing arrangements;
  - evaluate whether the project constitutes a fundamental building block for long term development;.
  - focus on how important the need for the project is in terms of ensuring access for all;
  - look at projects not only in financial terms, but also in terms of social outcomes and social benefits, which include more professional development opportunities obtained through using online forums and sharing information and bulletin boards with professional and trade groups;
  - increased community skills and knowledge;
  - and new business and work opportunities.

(4) To-Be Model

- Federal e-Government Budget Request: 1% of the national budget shall be invested into e-Government
- A new way to secure the budget is the Informatization Promotion Fund which would be created in order to invest in the research and development of ICT industry and promote its applications to society. The Fund consists of the several major sources
- Moreover, the budget for e-Government can be separated from the Informatization Promotion Fund, which makes focused investment on development of next generation information technologies and can become a part of regular government budget. Appropriate ministry should be so designated as a major implementation agency which is responsible for integrating and implementing the lump sum budget for e-Government which will be separately allocated to each ministry as a part of regular budget in order to enhance cross-agency integration and linkage.

(5) Detailed Implementation Plan

Initiative #7: Create and utilize e-Government promotion fund

❑ Objectives

The objectives for creating and utilizing promotion funds for e-Government is to ensure that lack of funds does not become an encumbrance in achieving e-Government vision.

❑ Directions and strategies

Direct Government Intervention:

- Government can resolve to allocate more funds to e-Government related projects
- Develop fiscal policy that ensures a percentage of Government and private sector income is contributed to e-Government development
- Evaluating e-government endeavors under a cost-benefit lens in order to justify the fund that is allocated to such programs.
  - Cost-benefit analysis would unveil the amount of value that is being created for citizens and the government by some of the e-government services. If the analysis determined that the public value is not enough to justify the costs of the program, then they could take steps to increase public awareness in order to improve the

cost-benefit proportion.

- The analysis would allow the government to understand what services are producing the highest benefit and compare them to those with lower benefits. This would raise questions about why some services are more favorable in the eyes of the public, and encourage the government to reevaluate programs that are not as beneficial as others. By the same token, these questions could become decision-making tools for the government in deciding which services should receive more allocated funding.
- The cost-benefit analysis would show a greater degree of accountability and transparency to citizens. An analysis that considers not only the government but also citizens would demonstrate an appreciation and concern for how citizens are using services and how those services can be better improved to meet the needs of users. A joint-civilian committee, similar to those employed in South Korea, would be a good way to assess the costs and benefits of e-government while also building citizen engagement and participation.

Initiative #8: Funding through a Variety of Financing Instruments

- Objectives
  - Government shall treat e-Government projects as capital expenditures
  - Funding through long-term financing instruments, such as bonds or leasing arrangements that guarantee long-term funding and smooth expenditures for large investments by spreading expenses over several periods
- Directions and strategies

Issuing Bonds(domestic or international capital markets):

Governments can finance e-Government projects by issuing bonds, on either the domestic or international capital markets. This mechanism of financing allows them to obtain all the funds they need up-front.

- Benefits of issuing bonds:
  - Bond financing is cheaper than bank loans. (This mechanism of financing allows them to obtain all the funds they need up-front through the bond offering and are not subject to partial repayments, as in the case of bank loans, and which repayments are based on a bank's monitoring of their project construction progress. In addition, credit ratings, which are crucial in determining the issuer's borrowing costs, are determined by independent agencies, rather than the banks)
  - Issuing bonds also allows for longer maturity debt than bank loans.
  - Longer maturity debt helps to minimize the budget risk and contributes to the financial stability of issuing the Federal government or the Local governments.
- Menu of bond (Issuing the Federal government or the Local governments has a menu of choices from the bond market)
  - They can issue General Obligation Bonds, whose repayment is guaranteed by the "full faith and credit" of the issuing government. This implies that the full taxing authority of the issuer is pledged to pay back the bonds. The local governments who have the capacity and willingness to raise taxes as needed feel secure in issuing and repaying such bonds.
  - Governments can also issue Project Revenue Bonds, which are not backed by the

full faith and credit of the issuer, but are secured only by the expected stream of revenue from the project being financed.

- Governments can also issue Dedicated Revenue Bonds, which are becoming increasingly popular. With these bonds, bond repayments are guaranteed by a particular revenue stream, which is unrelated to the project being financed. A local government, for instance, may issue such a bond and back it by the pledge of funds from expected intergovernmental transfers, or by specific tax revenues such as sales, liquor or gas taxes.
- Governments can also issue GDP-linked bonds to fund e-government strategies, whose repayment value or the coupon (annual interest payments) would be linked to nominal or real GDP growth.

Public Private Partnership:

Various methods have been tried in the effort to involve the private sector and engender a balanced approach to risk taking in the public sector. Policies, such as privatization, private finance initiatives (PFIs), and contracting out have been tried.

Private Finance Initiatives, which as the name implies are exclusively funded by private capital, are now the most successful version of public-private partnerships. A typical PFI project is a tightly drafted contract between a government and a private consortium running for 25 to 30 years. The contract lays down standards of provision of a specific service, in return for guaranteed payments over the life of the contract. One of the crucial issues regarding these contracts is that they are lengthy, and therefore they have not been seriously tested by variations to the contracts, changes of personnel on both sides, and changes in government priorities which over that time scale are inevitable. Therefore, it will take years before a final judgment can be made on how well they work.

There are several key ingredients to having a smooth and well-running partnership between the government and the private sector. One is openness and communication between the vendor and the public sector client combined with transparent measurement and evaluation.

Private Finance Initiatives nevertheless, do offer the prospect of refinancing these projects in the capital markets. Refinancing projects makes full sense both for the government and the private shareholders. It is a win-win situation. Once a project is up and running, it can be refinanced at a much lower interest rate in the bond market, reducing the interest rate that the government may be paying to banks, while pushing up the return on capital for shareholders. And bond markets have become a popular route for refinancing PFI projects, as well as for raising new capital.

Government can adopt this funding strategy for reasons other than just funds. The private sector can:

- Bring skills and know-how;
- Enhance the efficiency of service delivery;
- Insulate upcoming operations from political intervention;
- Make the project more responsive to the public's needs and preferences; and
- Provide a more balanced approach to risk-taking.

Other forms of funding for e-Government:

- Outsourcing: companies do also offer to install and pay for new systems and also make a monthly charge for their use
- Software leasing: Companies can choose to finance the use of software over an agreed

period of time and then having the option of buying the software license (or licenses) at a predetermined price at the end of that period.

Public-private partnerships, outsourcing, software leasing and other financing mechanisms which shift the financial burden to vendors by letting them share in the revenue generated through new IT systems, are characterized by a certain degree of dependency on the private sector. Governments wishing to be independent of such a relationship with the private sector can opt to approach investors directly in their efforts to fund e-government strategies by issuing bonds.

Long-run cost recovery of e-government projects

The-government funding strategies presented here are not mutually exclusive. Irrespective of the mix of public and private management of e-government projects, long-run cost recovery rests on three main options.

- User charges: Economic efficiency considerations, as well as political equity considerations suggest to price services with public good features at marginal costs. User charges might be kept low where online service delivery is cheaper than offline and scale economies prevail.
- General budget: Services that provide benefits only to small groups of business users can be used to partly cross-subsidize other services and be made available at above-cost premium rates. Where cross-subsidization is only partly feasible, services with significant social benefits are recommended to be funded through the general budget. Interdepartmental e-government projects should be equipped with their own budget line, since a reliance on shared budget responsibilities by the participating departments induces a free-rider situation that runs the risk of leaving projects under-funded.
- Co-funding through advertising: A consulting firm points at the issue of considerable advertising potential of government portals, consistently ranking among the most popular and most frequented websites.

7.7.1.3 Legal and Regulatory Arrangement

(1) As-Is Analysis

As described in detail in the section 5.2 the National IT policy in Nigeria was developed and approved by the first democratic government in March 2001. NITDA was established to actualize this policy goal. The assembly had been supposed to enact IT law including agency, cyber-crime and e-transaction. However, only the NITDA Act was passed to provide a legal background for the activities of NITDA in 2007. The other two bills, however, have not shown any progress yet.

- NITDA Act 2007

Section 6 (c) NITDA shall develop guidelines for electronic governance and monitor the use of electronic data interchange and other forms of electronic communication transactions as an alternative to paper-based methods in government, commerce, education, the private and public sectors, labour, and other fields, where the use of electronic communication may improve the exchange of data and information

Section 6 (l) NITDA shall advice the Government on ways of promoting the development of Information Technology in Nigeria including introducing appropriate Information Technology Legislation, to enhance national security and vibrancy of the industry

- ICT Policy 2012

The policy objectives and strategy includes the review of existing legislation and facilitating the enactment of new laws where necessary to fill the gaps and further support the development of the ICT sector.

(2) Major Issues

Nigeria is facing a number of legal challenges in the introduction of e-Government. These include poor organizational skills, inadequate infrastructural support and poor or limited human capital resources. Advocacy and awareness building are required in order to evoke changes in political mind-set and culture. A major challenge is creating and retaining government capacity to manage the changes associated with the shift from traditional to digital systems. According to Olufemi (2012) another challenge is to overcome uncoordinated activities within the federal, state and local governments and within agencies of the same ministry or within ministries that have similar functions or responsibilities. The lack of legal framework in the field of e-Government is closely related with these challenges.

The legal framework of e-Government must consider the goal and roadmap of e-Government policies. The framework should support enabling legislation that will remove statutory and regulatory barriers undermining the rapid adoption of e-Government. Another reason for legal arrangement is that government officials can only change their way of doing business through legislation. And also their resistance to adopt the new technology can be alleviated. NITDA(2011) insists that Nigeria need to enact an 'e-Government Law' that will solve all barriers and resistance towards efficiently promoting e-Government.

(3) To Be Improved

The following is what to be improved for the legal framework for e-Government in Nigeria:

- *Organizational Structure*: An organizational structure exists however some of the roles and responsibilities are not clearly defined and even where they are clearly defined the Agencies are not adequately discharging their responsibilities
- *Recognition of Electronic Documents*: The Evidence Act 2011 recognizes Electronic Documents
- *Authentication and e-Signature*: There are no authentication or e-signature laws. NIMC is currently working on Identity Management which would contribute to an authentication system but there is still a need for an e-signature law.
- *Security and Trust*: There are no laws on cybercrime and cyber security thus the trust system is almost non existent
- *Electronic Information Management*: There are no rules or directives on how electronic information should be managed according to the public service rules
- *Interoperability Framework*: There is an interoperability framework but it is unclear if the various government departments actually have the infrastructure to interoperate
- *Privacy and Personal Data security*: There are no laws or any other instruments that safeguard personal data and ensure the privacy of citizens
- *Funding for e-Government research and Development*: There is no funding structure for research and development in the area of e-Government and this should be addressed

(4) To-Be Model

Appropriate legal infrastructure is a prerequisite to a smooth and timely implementation of e-Government. Most successful e-Government programs have introduced new enabling legislations. Thus, it is suggested that the legal framework for the e-Government for Nigeria consists of three major parts. They are laws necessary for e-Government, general laws for the information society and specific laws supporting e-Service in each MDA as shown in Figure 51.

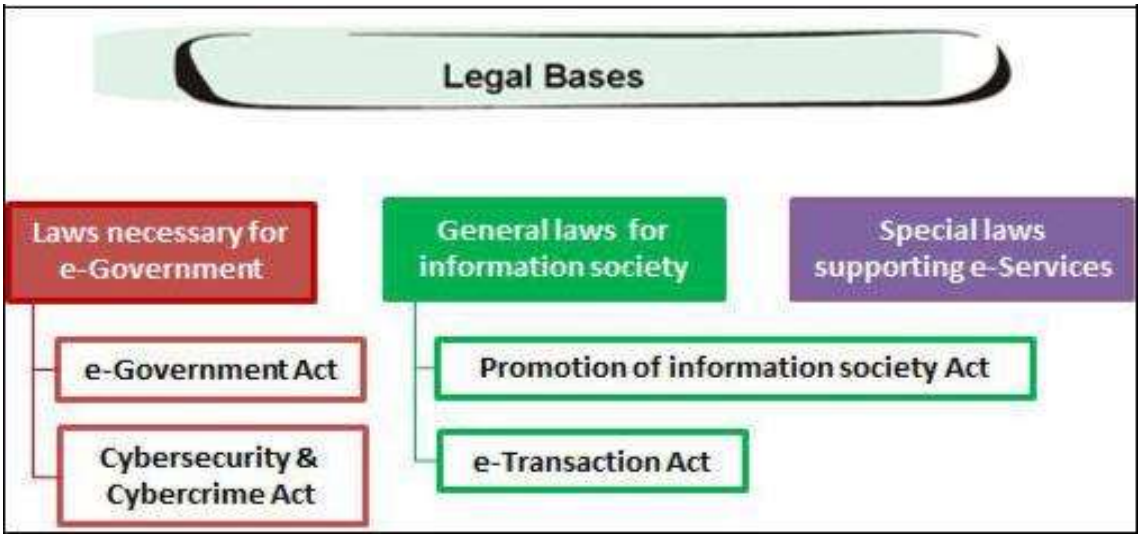


Figure 50 Legal Bases for e-Government in Nigeria

In order to establish a proper legislative framework, some of the current laws related to information management and government services should be revised to be consistent with the legal bases for e-Government which is described in Figure 51.

Initiative #9: Laws Necessary for e-Government

(1) e-Government Act

There are two distinct approaches to building legal framework of e-Government in other countries. The first is to enact a single e-Government law separately from other component laws. The second is to make a cluster of component laws regarding e-Government such as laws on general administration, public information, electronic signature, and data protection, etc. The U.S.A, Korea, Austria and Germany belong to the first group, while most of the other countries are in the second group. Existing laws have limitations because they are designed to govern the off-line world, which is static, defined and incremental, whereas e-Government represents new form of governance, which is dynamic, and exponential. e-Government law is a technology intensive law to control and safeguard electronic transactions in the electronic medium. As for developing countries as Nigeria, a separate and strong e-Government law is more efficient and effective to overcome various barriers from unidentified opponents as well as to implement e-Government with a concerted effort and resource. The following items should be included in the e-Government Act of Nigeria:

- Definition of e-Government
- Objectives and principles
- Governance structure
- Roles, functions and duties of MDAs, states, local governments

- Online provision of government information and services
- Funding mechanism
- e-Government Resource Management
- Information security and data protection
- e-Signature and authentication, identification, payment gateway, registration
- e-Government master-plan and action plan
- Division of roles between federal vs. local governments

(2) Cybersecurity and Cybercrime Act

As Nigerian government becomes more dependent on computers, they become increasingly vulnerable to a range of risks from interruption of operations to loss of confidential data. Government agencies at all levels (national, provincial, and local) must protect the computer and communication systems that they own and operate. Information security requires a combination of business, management, and technical measures in an ongoing process. Legal items as listed below should be included in the Cybersecurity and cybercrime act. This master plan puts a special emphasis on the 'national cyber-security strategy because it is an effective tool for assessing how severe Nigeria's cyber-security vulnerabilities are, and what policies and legal reforms need to be adopted additionally. This strategy is also helpful to strengthen organizational cooperation and governance structure on cyber-securities and cybercrimes. Similar to e-Government that needs a whole-of-government approach, information security also poses leadership and organizational challenges. Some countries have placed responsibility for information security in existing ministries responsible for national security, law enforcement or CIO. In order to react systematically as well as fast, the presidential committee on e-Government could be a good organization for this leadership:

- Objectives and principles
- Protection of critical national information infrastructure
- Offences and penalties(punishment)
- Duties of service providers
- Administration and enforcement
- Search, arrest and prosecution
- Jurisdiction and international cooperation

Initiative #10: General Laws for the Information Society

(1) ICT Promotion Act

Most of the challenges and issues in e-Government arise from the deficiency of comprehensive ICT policies and regulatory framework to facilitate effective deployment of networks, devices and services for the businesses as well as citizens. This is the reason why Nigeria needs another act to enhance the overall level of information society as a whole. Informatisation is the process in which information can be generated, distributed, or utilized to enable society to function more effectively and efficiently. Three pillars should be included in the National ICT Plan, that are broadband network, support for the informatisation of key economic and social areas such as financial institutions, agriculture, manufacturing firms, etc. e-Government alone cannot reach the needs of the citizens and businesses.

This act aims to promote the building of ICT infrastructure such as network and devices, the usage of the ICT services in diverse areas, and the growth of ICT industry. This act should be enacted and put into effect in close relationship with e-Government Act. The provisions related to the informatisation of the society in NITDA Act that is enacted in 2007 should be

reshuffled into this Act. The following items should be included in the ICT Promotion Act of Nigeria:

- Definition of ICT promotion
- Role of government for ICT promotion of Nigeria
- Broadband Network Deployment
- ICT for knowledge economy in key economic and social areas
- Promotion of ICT industry
- Digital divide and awareness raising
- ICT Agencies & research institutes

(2) e-Transaction Act

For legally valid e-transactions, not only authentication of electronic records is necessary, signatures of the parties to the online transactions are also required. Offering e-transaction services online can present important legal questions about the validity of electronic documents versus paper ones. Separate and complex issues also arise concerning identification and authentication of individuals and businesses wishing to transact electronically. Such issues are privacy, security, and data protection. The Model Law on Electronic Commerce developed in 1996 by the UN Commission on International Trade Law(UNCITRAL) could be a good reference together with its sister law on electronic signature(2001). The first law recommends legislative language to make it clear that a document cannot be denied legal effect as a copy or as an original solely because it is in electronic form. The following legal items as follows should be contained in the draft e-commerce act:

- Objectives
- Electronic documents and records
- Electronic signature
- Personal data protection (private as well as public institutions)
- Electronic contracts
- Consumer protection
- Service providers and vendors

7.7.1.4 Organizational Structure

Initiative #11: Build the Dedicated Organization Structure for e-Government Implementation

(1) As-Is Analysis

As described in detail in the section 5.3 “Organizational Framework” under the Chapter V “Status Analysis,” the Federal Ministry of Communication and Technology (FMCT) was established in 2011 as an ICT coordinating organization responsible for developing e-Government policies and systems for better public service. It becomes a turning point to transform the ICT and e-Government policy into a national agenda in Nigeria. More importantly, the department for e-Government within FMCT was newly established in 2013, which means the construction of substantial structure of coordinating e-Government policies in the federal level. Other organizations such as NPC, OSGF, HCS and FCSC have been involved in the e-Government policy making. However, there have been many issues and challenges in the organizational framework.

(2) Challenges

- Less developed cooperative relationships between FMoC and other e-Government agencies

Coordination between e-Government functions is not effective because functions are defined unclear among relevant agencies. In particular, FMoC and NITDA, NITDA and NeGST, and NCC and NITDA, functionally connected closely, are effectively cooperated. Functional responsibilities are unclear and overlapped among relevant agencies, for example, between FMoC and NITDA, NCC and NITDA, and NITDA and NEGST. etc. It is pointed out that e-Government services receive increased criticisms by other agencies and citizens.

- Not effective operation of the steering committees

Even though the steering committee for ICT development is already established, no coordination mechanism among federal ministries exist. In other words, there is no national level steering committee to coordinate among relevant ministries with regard to e-Government policies. The steering committee for ICT development is already established, it is not effectively working regarding e-Government issues. Consensus building meeting among stakeholders does not work very well.

- Lack of close coordination among MDAs

Lack of coordination among MDAs is one of the most difficult challenges in the process of policy implementation on e-Government. Lack of coordination is also found among MDAs (so-called "stand alone organizations) in creating and developing new e-Government systems within government. FMCT is not fully assigned to conduct coordination among MDAs regarding e-Government. Absence of focal point for a third option of ICTs by government and for governance resulted in: Inability to capitalize on economies of scale increased IT expenditure on hardware and services

- Mismatches between e-Government strategies and structure

Strategic approach is relatively low in the national level. Individualized e-Government practices and systems are developed without strategy. It is very important to plan a framework with coherent strategy. e-government practices and systems are individually developed without strategy. e-government policies, which are tools for government reform, are still technology-oriented. Public sector reform to increase efficiency and transparency is not enough considered by such organizations of e-Government policy making and implementation process of e-Government as FCSC, NPC, PSRB, and so on. Most goals of projects are less integrated and consistent.

- Insufficient communication channels among institutions

Thirdly, communications among e-Government institutions are needed. Communications issues between federal ministries and FMoC are very important. Communications among e-Government responsible bodies like regular meetings or conference is very limited in terms of frequency and quality, particularly between FMoC and NITDA.

- Functional duplications and overlaps on e-Government development

The total amount of budget on e-Government invested from MDAs should be properly and collectively managed by e-Government ministries like FMoC (Olusoyi, 2013). Project duplications does still exist.

- Lack of information exchange and sharing

Accessibility of information by other agencies, including information sharing is the most ranked risk for e-Government implementation in Nigeria. Such risks are often found as misuse of e-Government services and increased criticism by other agencies and citizens. NCC responsible for telecommunication regulations, NITDA working for regulations on ICT-related information telecommunication, and FMoC as umbrella ministry are not functioning very well. Direct implementation of e-Government policies by FMoC sometimes G2G implemented by FMoC directly.

- Other factors promoting structural malfunctions

An Assistant Director at FELIS in Abuja also identified a risk factor based on his experience of implementing e-Governments systems in land administration in Nigeria. Thus he mentioned that unstable power supply poses risk to e-Government implementation since Nigeria does not have regular supply of electricity across the country, despite being one of the petroleum exporting countries and belongs to the Organisation of Petroleum Exporting Countries (OPEC). (Olusoyi, 2013) Also, stronger involvement of political leadership is needed for the sustainability of e-Government policies. It is needed to standardize technology used by government for higher numbers of legacy proprietary and interoperable systems

(3) Directions and Recommendation

- Strengthening the collaborative structure of e-Government

Digital revolution leads to the useful construction of e-Government. The structure of e-Government is horizontal with partnership and also information and technology based. All stakeholders involved in e-Government projects participate in the process of decision making which is collaborative. Through collective decision making, public problems can be solved by IT-based partnership.

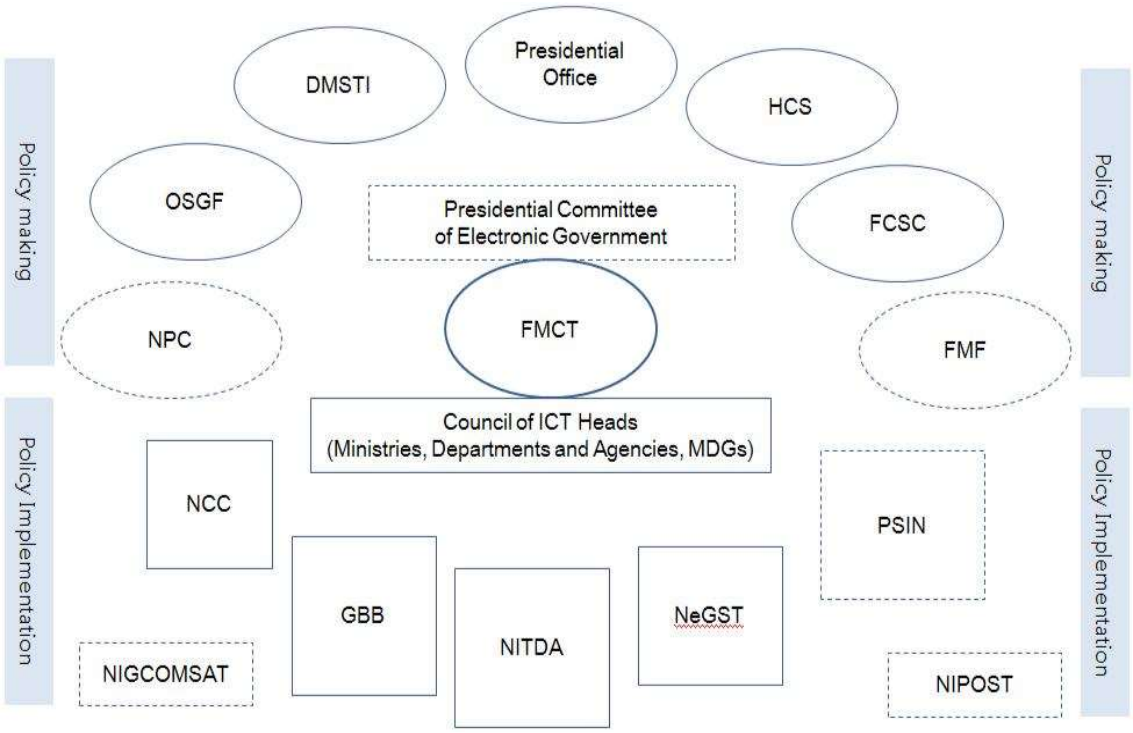


Figure 51 Conceptual To-Be Model of Organizational Framework for e-Government

- Composing a national e-Government steering committee

In order to make e-Government policy a strong initiative for national transformation, it would be a first task to strengthen the institutional framework. A National E-Government Steering Committee with the President as the Chairman should be established as a priority of institutional framework. A National Working Group Chaired by the Ministry of Communications and Technology and made up of other Ministries and State Heads of ICT. Inter-agency Working Groups chaired by the DG of e-Government may coordinate key cross-governmental e-Government policies and initiatives. Regular reporting mechanism to Nigeria's political leadership (presidency) may be arranged.

- Reactivating the stakeholder consensus building meeting

The currently inactive Stakeholders Consensus Building Meeting/Workshop should be reorganized and held regularly. Organized by FMoC, the meeting consists of administrators and experts from FMoC, NeGST, NITDA, Galaxy, local governments and even solution providers in the private sector. Through the meeting, participants have a great opportunity of sharing knowledge and experience on the e-Government policy implementation. E-Government strategy office should work closely with other organizations.

- Reinforcing communication channels between FMoC and MDAs

In order to provide better response to citizens'demands, improve service delivery, and make administration more efficient, it is necessary to strengthen communications between FMoC and MDAs. It enables government to achieve a more comprehensive and integrated use of information and communications technology (ICT). It is also necessary for FMoC to organize and coordinate seminars, workshops, conferences including training and development program on e-Government and ICT infrastructures (Olusoyi, 2013).

- Utilizing the Council of ICT Heads

Standardized e-Government units within each MDA where there are no fully fledged IT departments should keep reporting and accounting relationships with FMoC as in the IT departments. In addition, departments of IT in each MDA where the heads of such departments are deployed by, and reported to FMoC professionally should be accountable for reporting day to day to the CEO of the MDAs. President may delegate to FMoC such responsibilities as applications of project proposals and oversight of project value to remove duplications of projects.

- Close connections between e-Government institutions and public sector reform agencies

ICT is utilized to improve the transparency, efficiency and productivity in governance. Also, it improves citizen engagement. The Permanent Secretary of the Ministry, Dr. Henry Akpan emphasized that the Heads of ICT in MDAs will play a significant role in achieving the mandate of the Ministry which is centred on deploying Information and communication Technology to drive transparency in governance and improve the quality and cost effectiveness of public service delivery in the country. He added that the Ministry was created to facilitate ICT as a key tool in the transformation agenda of President Goodluck Ebele Jonathan in the areas of youth employment, wealth creation, economic growth, efficiency and transparency of government. The Bureau of Public Service Reform (BPSR) in the Office of Secretary of Government and Federation (SGF) should make close collaboration

with e-Government bodies like FMoC and NITDA. e-Government initiatives should be in collaboration with Head of Civil Service.

- ❑ e-Government Infrastructure to be established

In order for e-Government institutions to operate effectively, a full range of positions are designated as an IT cadre in the scheme of service. Training programs implemented by FMoC also matches and exchanges closely with those in Public Service Institute in Nigeria (PSIN).

7.7.2 Improving Technical Subsystem

7.7.2.1 Infrastructure and Technology

Initiative #12: Improve Government Integrated Data Centre

(1) As-Is Analysis

Although much of the telecommunications industry has been privatized in Nigeria, the Government still provides ICT services through its national carriers which are Galaxy Backbone Plc and NIGCOMSAT Ltd. Both companies hold telecommunications services operating licenses from NCC and supply voice, internet, video bandwidth and other satellite services. Galaxy Backbone Plc was established primarily to provide a common platform for the provision of network connectivity and other transversal services to the public sector.

In 2008, Galaxy Backbone limited, a public enterprise of the federal government of Nigeria built a 300TB storage capacity facility with the help of Huawei Nigeria. The Galaxy backbone Data Centre (GBDC) offers ICT solutions such as server/application hosting, collocation services, business continuity and data administration services to the government and other customers.

The data centre integrates all existing networks into a single IP- based national network and connects all major government buildings using fibre optic rings. With the fibre optic cables, GBB is able to provide a backbone nodal network that is tapped by state capitals in the country. Galaxy Backbone provides network and internet connectivity to locations in Abuja and VSAT connectivity to over 3,800 locations nationwide.

Galaxy Backbone's data centre is located in Abuja. The premises are secured by a combination of human security guards, Security Rated Access Doors, Electronic Access Control System, and premises-wide and internal surveillance cameras fitted with motion detectors and night vision. Constant power supply is enabled by two sets of 250KVA generators , two sets of precision UPS and a set of battery banks in case of power failure. Climate control is guaranteed by a set of high power precision air conditioners and air ventilators while an FM-200 Automation Fire extinguishing System defends the facility in case of fire.

The Government Datacentre is designed to offer enterprise data hosting services with particular focus on connectivity, redundancy and resilience. Galaxy Backbone also has additional datacentres currently under development as part of its nationwide infrastructure roll out. Galaxy Backbone limited is expected to have its datacentres in 5 states across the federation.

Galaxy Backbone's new GIDC which will replace the current GIDC is under construction in Abuja.

(2) Major Issues

- Redundant Investment of some of the information resources
- Professional capability disparity in system management between MDAs
- Less refined computing environment
- Extensive security vulnerabilities

(3) To-Be Model: Integrated Data Centre for e-Government

To ensure reliable, safe and efficient e-Government services 24/7 with quality infrastructure and technical expertise, Government Integrated Data Centre (GIDC) is to be equipped with:

- buildings which can withstand stronger than level 7 of earthquakes with resistant design;
- intelligent systems for power supply, cooling and firefighting;
- the intelligent information security system; and
- a group of world class security experts guarantees seamless system operation to prevent any type of cyber-attacks from illegally intruding the system.

Being equipped with proper infrastructure and expertise, GIDC is to provide MDS with the followings:

- Integrated operation and management of information resources of MDAs including servers, storages, network, and security equipment
- Integrated Security Management of e-Government Systems that protects information systems from both physical and cyber attacks
- Integrated IT Resources Management of e-Government Systems to design and implement bulk purchase of IT resources such as H/W and system S/W
- Exclusive government communications network for all MDAs
- Optimal infrastructure that ensures stable operation of e-Government systems
- Business Continuity Plan (BCP) that provides stable IT-based government service without interruptions even in disaster.
- Modulized platforms to be shared by e-Government applications

Figure 52 shows the concept map of integrated operation service.

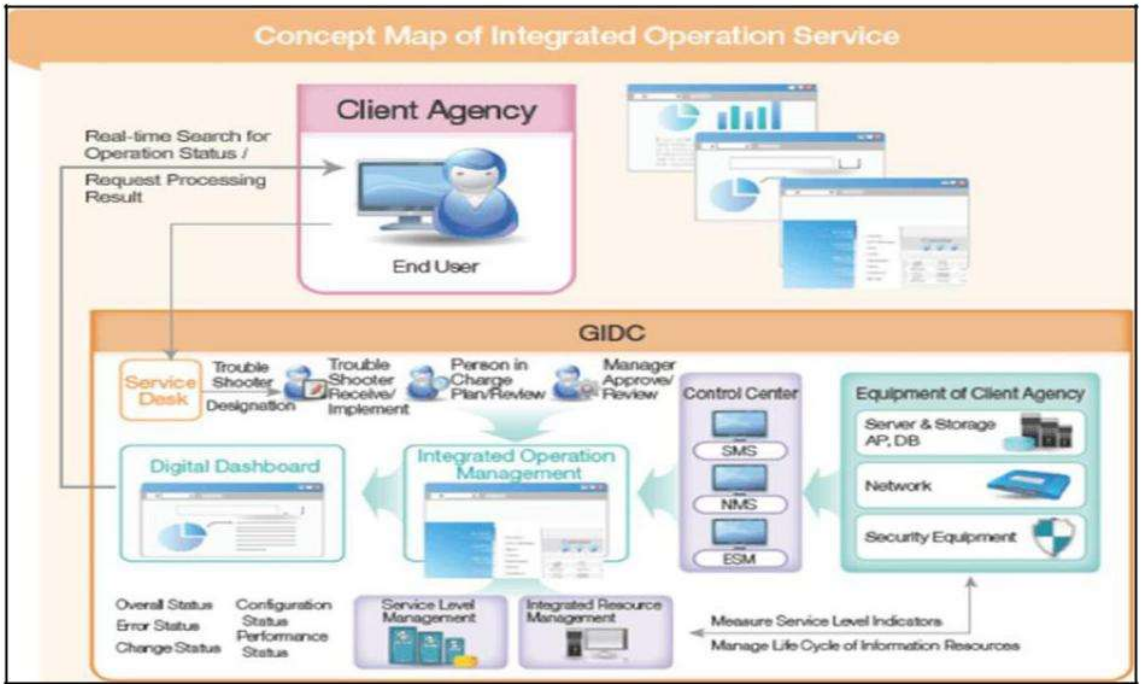


Figure 52 Concept Map of Integrated Operation Service

Figure 53 shows concept map of integrated security management system.

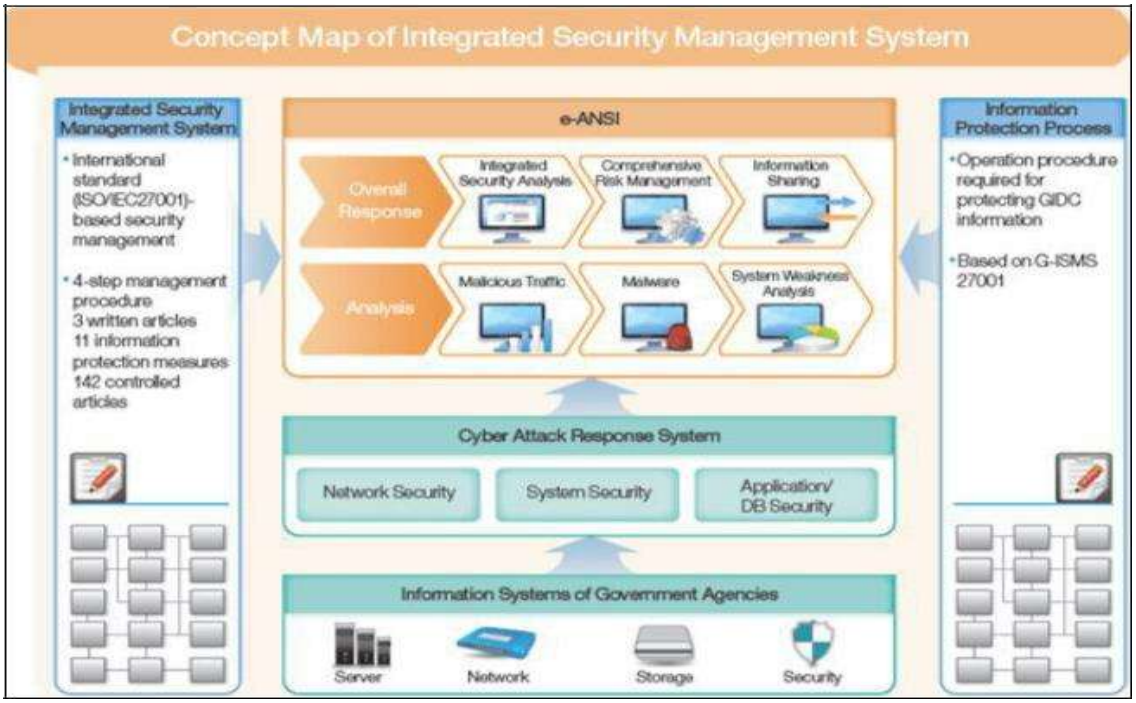


Figure 53 Concept Map of Integrated Security Management

System Figure 54 shows concept map of integrated IT resources management.

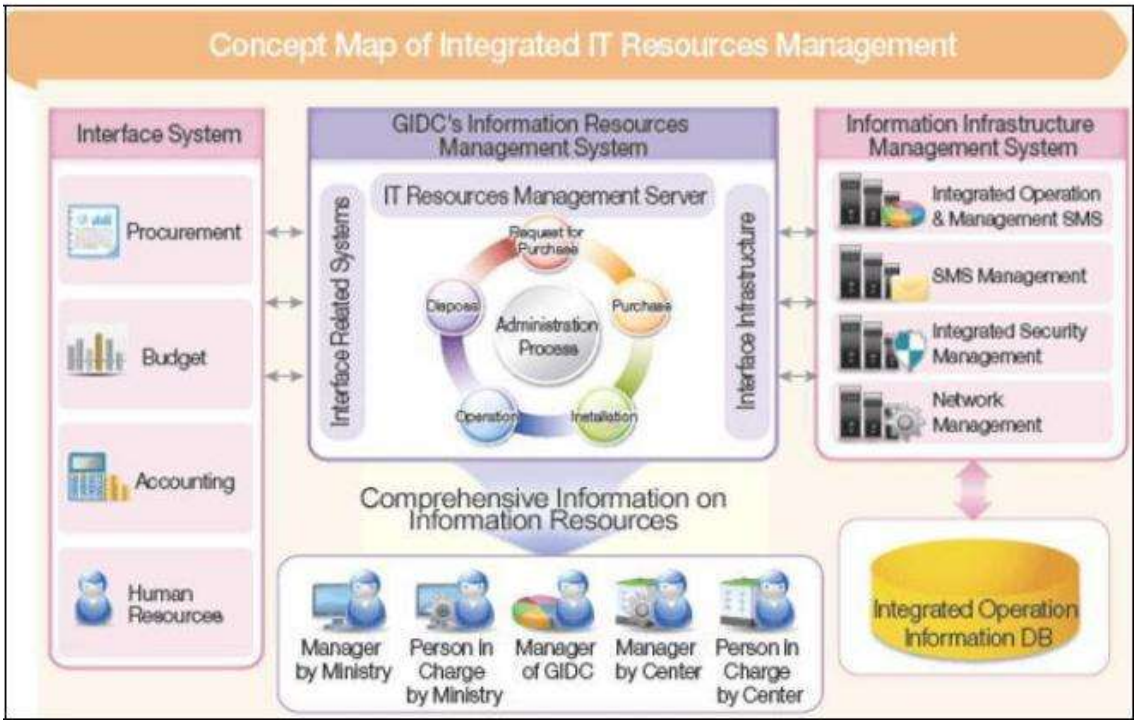


Figure 54 Concept Map of Integrated IT Resources Management

Figure 55 shows concept map of Government information and communications network.

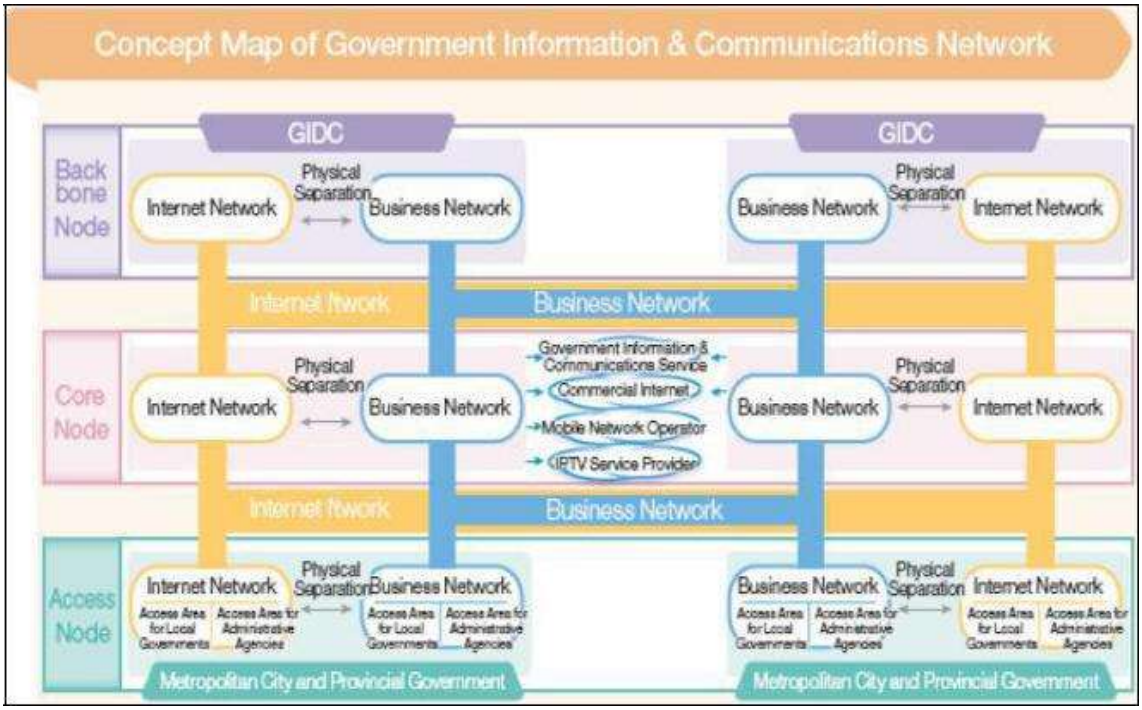


Figure 55 Concept Map of Government Information & Communications

Network Figure 56 shows concept map of data centre infrastructure operation.

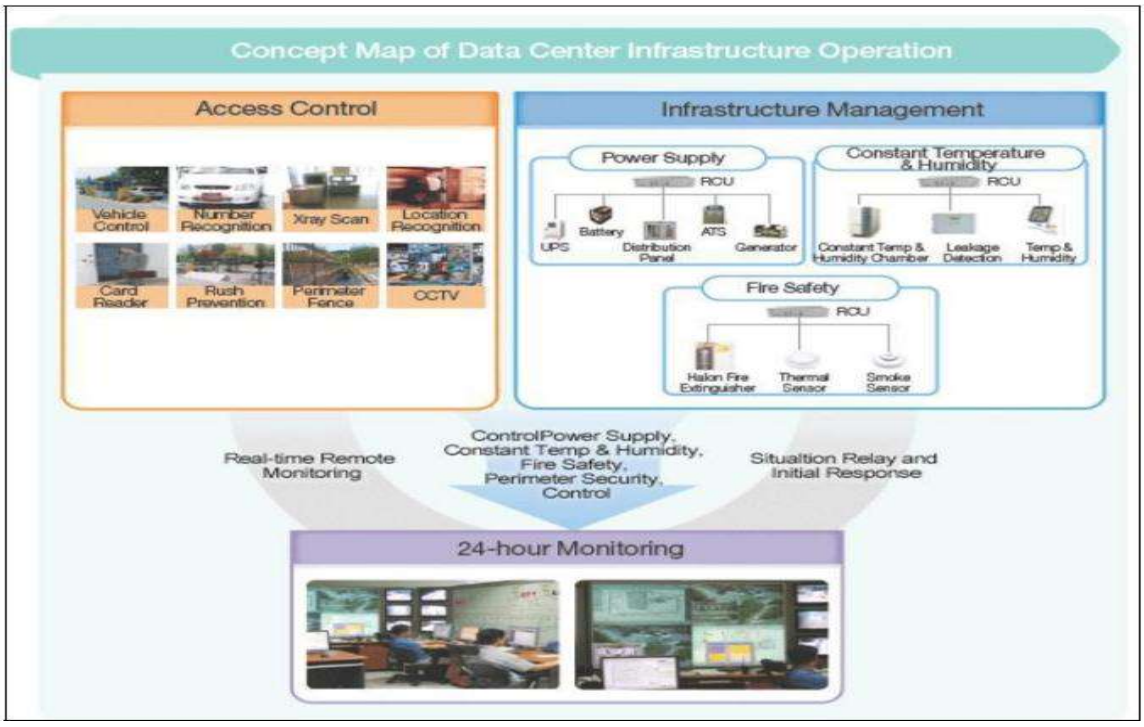


Figure 56 Concept Map of Data Centre Infrastructure

Operation Figure 57 shows concept map of business continuity guarantee service.

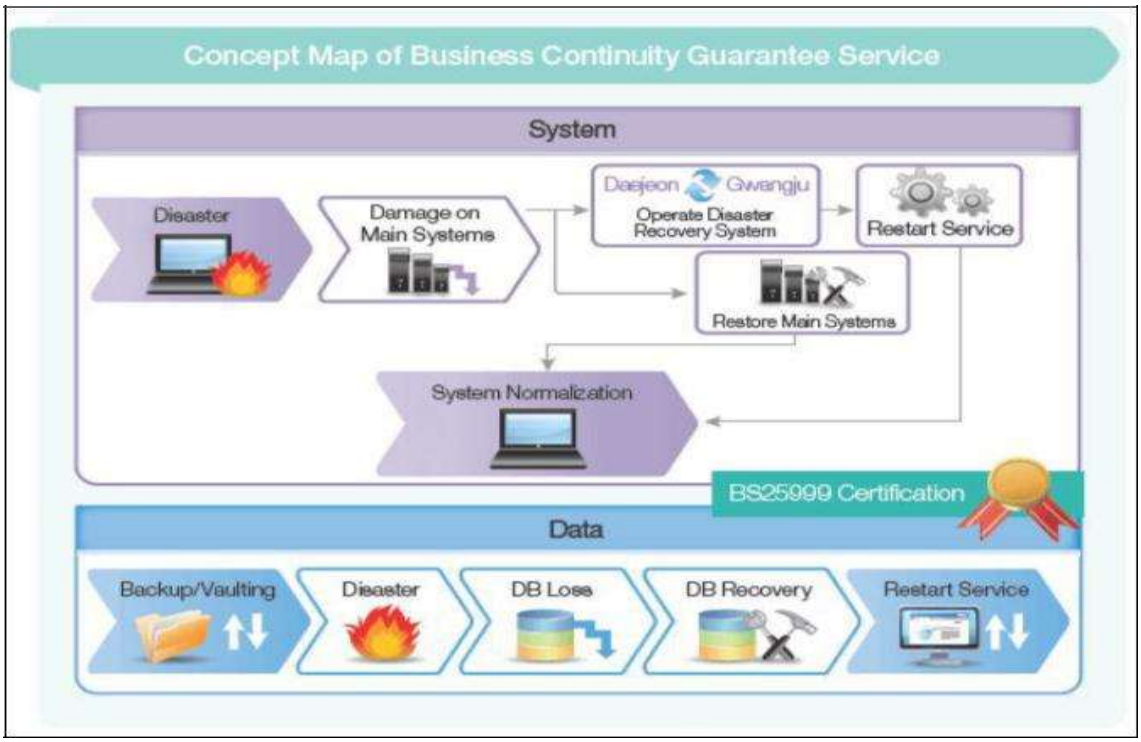


Figure 57 Concept Map of Business Continuity Guarantee Service

Figure 58 describes the modulized platforms to be developed and provided to MDAs.

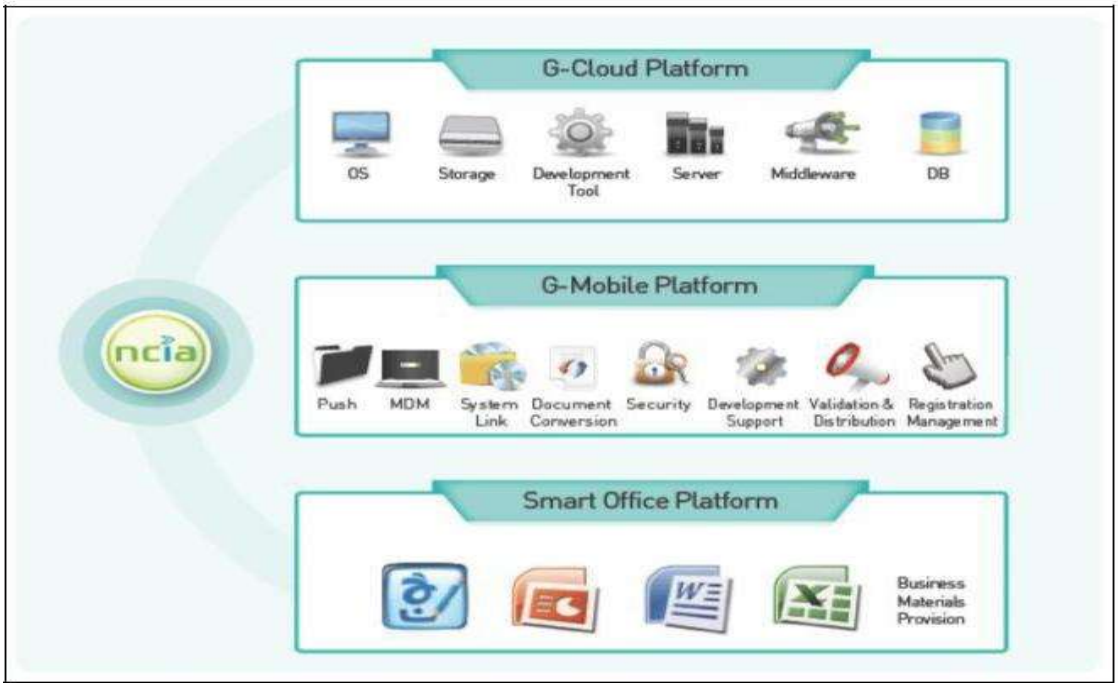


Figure 58 Modulized Platforms for e-Government Services

(4) Detailed Implementation Plan

❑ Objectives

The objective of this initiative is to implement an integrated data centre which provides secure, efficient, credible and innovative services to the MDAs and their clients.

❑ Directions

- Develop capacity building programs to improve the infrastructure and expertise of the GIDC.
- Minimize the cost and maximize the usage of the GIDC through Business Process Reengineering (BPR).
- Create shared value to include as many e-Government services as possible in the integrated data centre.

❑ Strategies

- Utilize the experiences from the best practices of other countries.
- Build cooperation channel with GIDC management agencies like NCIA of South Korea.
- Initiate multiple support channels.
- Design the operating model in detail.
- Utilize standardized open source solutions to minimize the cost and maximize the productivity.

❑ Implementation framework

- Related MDAs: FMoC, NITDA, GBB
- FMoC and NITDA have to be involved more actively in this initiative as the harmonizing authority and the implementing body.

❑ Tentative schedule

Items	2014	2015		2016		2017		2018		2019		2020
Concept Paper												
2nd Data Centre Implementation												
BPR / ISP												
Management Improvement												
eGovFrame Cloud Development												
Capacity Building												

Figure 59 Tentative Schedule: Improve GIDC

❑ Tentative Budgeting

Table 74 Tentative Budget: Improve GIDC

Items	Details	Amount (USD)
BPR, ISP	Business Process Reengineering, Information Strategic Planning, Consulting on Management Improving, etc.	1,000,000
Cloud Service Development	eGovFrame Could Service Development on top of GBB's Infrastructure	3,000,000
Capacity Building	Technical Training, Business Consulting, etc. (100,000 * 5 years)	500,000
Total		4,500,000

❑ Monitoring and performance evaluation

- Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
- Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected Effects

- Each government agency can reduce its IT budget more than 30% compared to the individual system management.
- There will be groundbreaking reductions in physical space and energy consumption.
- MDAs will be provided with open cloud platform equipped with the standard software framework which will help them to accomplish their missions with minimum efforts and maximum effects.
- The organizational capacity of the Government data centre will be dramatically improved.

Initiative #13: Develop e-Signature & e-Authentication **(1) As-Is Analysis**

The Government of Nigeria seeks to establish a National Public Key Infrastructure - PKI system, however there has been no implementation on e-Signature and authentication as of yet. There was a multi-stakeholder PKI committee setup by NITDA to make recommendations on a PKI framework. The Committee has presented their report to NITDA DG in January 2014.

(2) Major Issues

Major Cyber security issues to be solved as follows:

- Risk of deceiving identity of sender
- Risk of changing information on transmission
- Risk of denying fact information transmitted
- Risk of exposing information on transmission

(3) To-Be Model

The Functional requirement of the PKI systems can be divided into two parts. One is the establishment of systems for Root CA (certification authority). The other is the establishment of systems for CA.

- The system for Root CA consists of the system to issue and manage certificates as Root CA, the system to generate keys (Key Generation System), and homepage (WEB). The main function of Root CA should be as follows;
- The system of CA consists of the system to issue and manage certificates as National CA, the system to generate keys (Key Generation System), the software to manage subscriber authentication (PKI Client), the system of registration management (RA), directory system (DS), Homepage (WEB), and DB server.
- The third main functional requirement of the system is subscriber certification management software, called PKI Client, which is installed in subscriber personal computer. This software has functionality of electronic signature key management, certificates management, identification of person in subscribing by identification number, electronic signature generation/verification, certificates verification, subscriber S/W configuration management.
- The fourth main system of CA is RA management.
- Another main function of the Directory System (DS).

Figure 60 shows a proposed PKI Scheme.

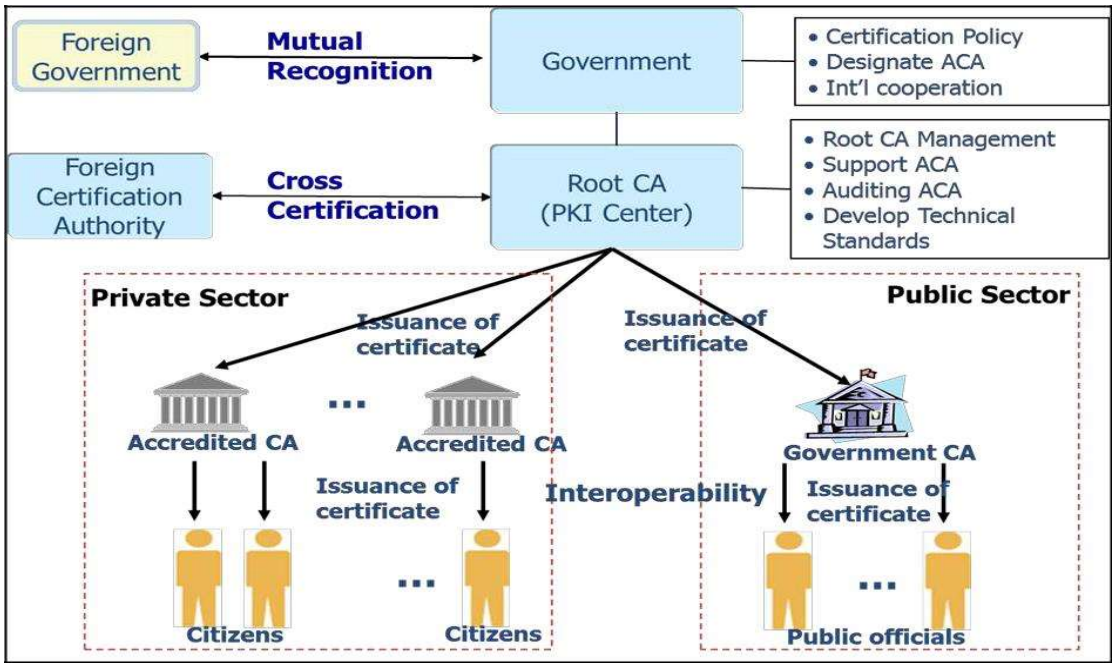


Figure 60 Proposed PKI Scheme

Government CA issues certificate only for government officials.

(4) Detailed Implementation Plan

- Objectives

The Objective of this initiative is to build the national PKI system of Nigeria.

- Scope and directions

The following implementation activities should be included:

- Organizational and legal PKI framework establishment;
- Renewal of legal systems and policies;
- Implementation of PKI system;
- Recommendations on how to link PKI system with Nigeria e-Government master plan;
- Framework establishment on certificate issuance and application procedures for government officers;
- Capacity building programs including promoting activities; and
- Rolling-out and expansion of PKI applications.

- Organizational framework establishment:
  - Define the PKI propelling structures in Nigeria.
  - Establish the role and responsibilities of each Government Ministries, and the necessary manpower in the responsible organization.
  - Establish the role of certification authority, the scope of officers who should use certificates.
  - Establish the cooperative structures among government organizations.
- Legal framework establishment:
  - Review and advice of any gaps in existing laws and regulations for the establishment of PKI systems.
  - Review and recommend international standards responding to technology advancement of electronic signature and encryption.
  - Establish management systems to control registration authority (RA) and personnel identification.
  - Provide the guideline to develop Certification Practise Statement (CPS) for the Root Certification Authority (CA) and accredited CA.
  - Prepare necessary activities to certificate crossly with other countries.
- PKI system implementation:
  - Install PKI hardware accompanying with PKI software necessary for the Root CA and CA, Comprised of Hardware Security Module, Root CA Server or CA Server, Firewall and Intrusion Prevention System, necessary L2/L3/L4 switches, NTP system, storage and SAN switch, proprietary mounting rack and KVM switch etc.
  - Perform localization for Nigeria for the Root CA and CA.
  - Perform localization of the registration management system and end-user software.
  - Build the internet homepage for the Root CA and CA.
- Tentative schedule

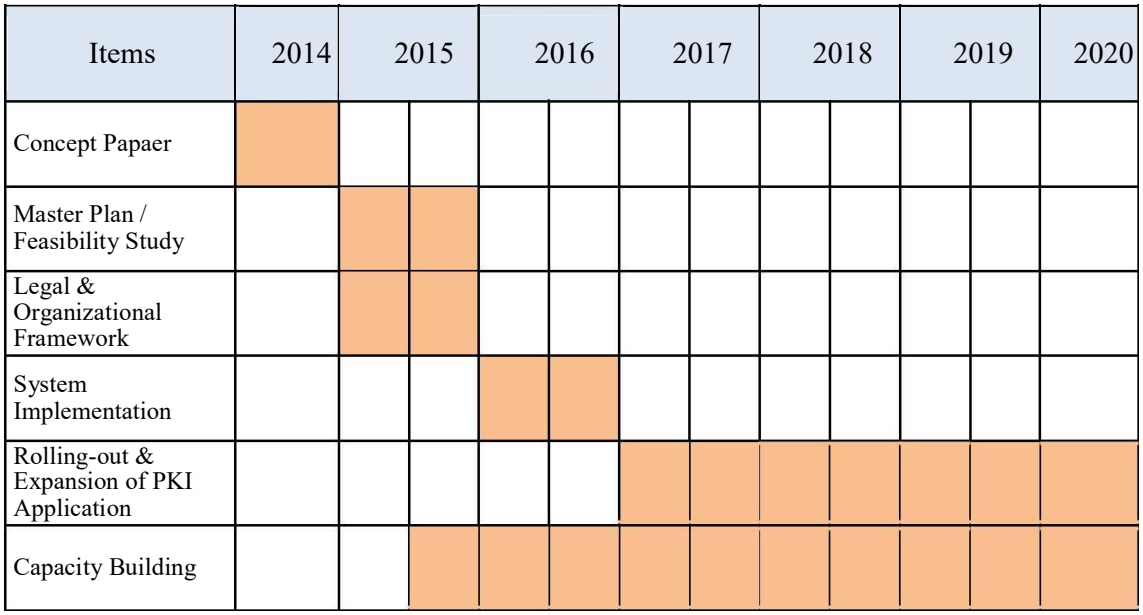


Figure 61 Tentative Schedule: e-Signature and e-Authentication

❑ Tentative Budgeting

Table 75 Tentative Budget: e-Signature and e-Authentication

Items	Details	Amount (USD)
Master Plan, F/S	Feasibility Study, Business Process Reengineering, Information Strategic Planning	150,000
System Implementation	eGovFrame Could Service Development on top of GBB's Infrastructure	6,000,000
Promotion and Capacity Building	Technical Training, Business Consulting, etc. (200,000 x 4 years)	800,000
Total		6,950,000

❑ Monitoring and Evaluation

- Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
- Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected Effects

Expected benefits for users are:

- reduction of time and cost;
- convenience of applications like Online Civil Service, Internet Banking, etc.;
- increase in confidence and trust;
- interoperability of PKI infrastructure between MDAs and other Governments;
- establishment of National Security Plan; and
- conversion of businesses from offline to online.

Initiative #14: Establish Standard Software Framework for e-Government **(1) As-Is Analysis**

For efficient development and simple maintenance, a well-developed standard software framework, which is a special case of software libraries in that they are reusable abstractions of code wrapped in a well-defined API, can be one of the key success factors for e-Government service implementation in terms of infrastructure and technology.

❑ Current Status in Nigeria

We cannot find this kind of standardized software framework currently used for e-Government initiatives in Nigeria.

❑ Case Study of Korea

To avoid dependency on any single supplier and to avoid the use of multiple frameworks for the development of applications in different parts of the administration, the Ministry of Public Administration and Security of Republic of Korea in 2007 decided to develop a standardized software framework, called e-Government Standard Framework (eGovFrame).

This framework comprises a standardized set of software tools for developing and running e-Government applications in order to improve the efficiency of ICT investment and the quality of e-Government services. It serves especially to ensure the reusability and interoperability of different applications. Finally, to encourage competition among suppliers, various steps have been taken to build the capabilities and competitiveness of IT SMEs in the country.

As of June 2014, eGovFrame had been applied to more than 477 e-Government projects, with many more in the pipeline and to 12 projects in 8 countries other than South Korea

(2) Major Issues

Government is required to intervene in the following areas:

- Open processes - Development processes related to eGovFrame must be open and reflect comments and inputs from different stakeholders (MDAs). Public- or private-sector meetings have to be organized to foster understanding and consensus among the different stakeholders;
- Open outputs - The source code, entity relationship diagrams and other outputs must be open and available on the eGovFrame website as Korean case (http://eng.egovframe.go.kr). This contributes to an open ecosystem with voluntary participation in its implementation by developers and providers as well as government officers. Moreover, a comprehensive eGovFrame education and training program has to be carried out for IT developers; and
- Open ecosystem - The Government must form an open community with enterprises of varying size and set up a public–private sector cooperation centre. This serves as the central point promoting eGovFrame, providing technical support and ensuring continuous improvement. The development and improvement of eGovFrame is achieved by the open community, quarterly expert meetings and an open forum of partners.

(3) To-Be Model: Standard Software Platform for e-Government

❑ Framework as a Comprehensive Software Development Platform

As suggested in as-is analysis, it is strongly recommended to adopt a framework template-based programming to maximize the development productivity, assure the quality and minimize the risk factors of developing Government services as depicted in Figure 62.

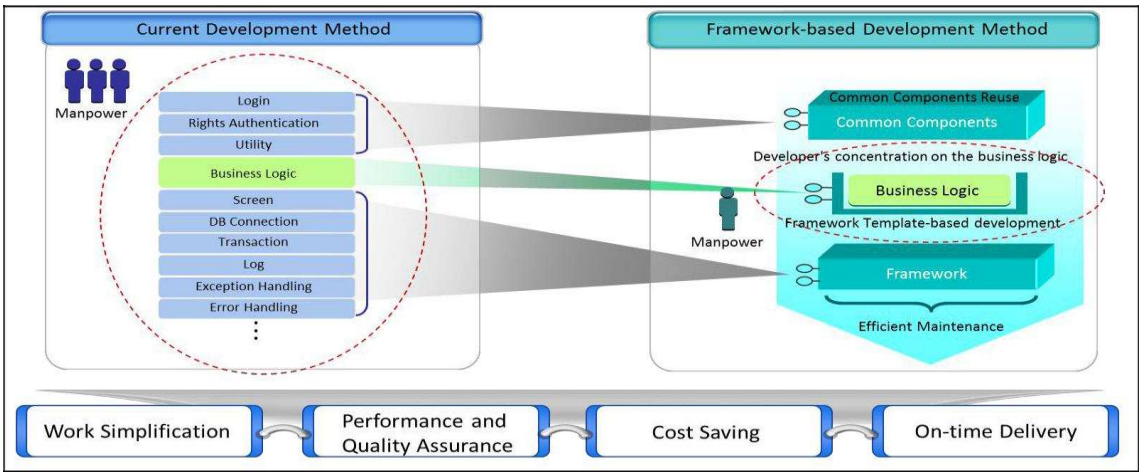


Figure 62 Current Development Method vs. Framework-based Development

Most of the technical issues are to be handled by software framework so that the developers and system designers can focus on the business requirement and functions as described in Figure 62and Figure 63.

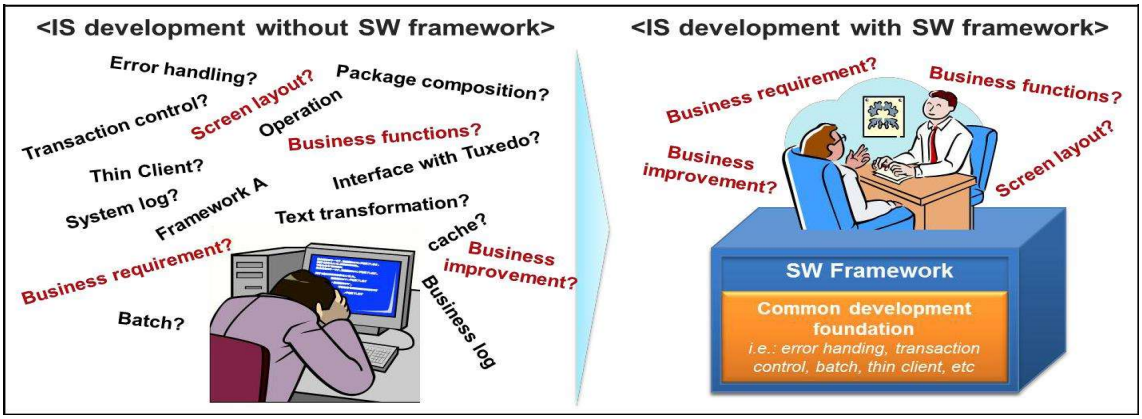


Figure 63 Development WITHOUT Framework vs. Development WITH Framework

❑ A Standard Software Framework for e-Government

When the developments of Government services are dependent on vendor-specific software solutions or framework, the software components may not be reusable for other initiatives and interoperability between different systems may not be easily guaranteed. A common standard framework is crucial for technical interoperability between different services and for the reduction of the development cost and time. Figure 64 shows the differences between the two approaches.

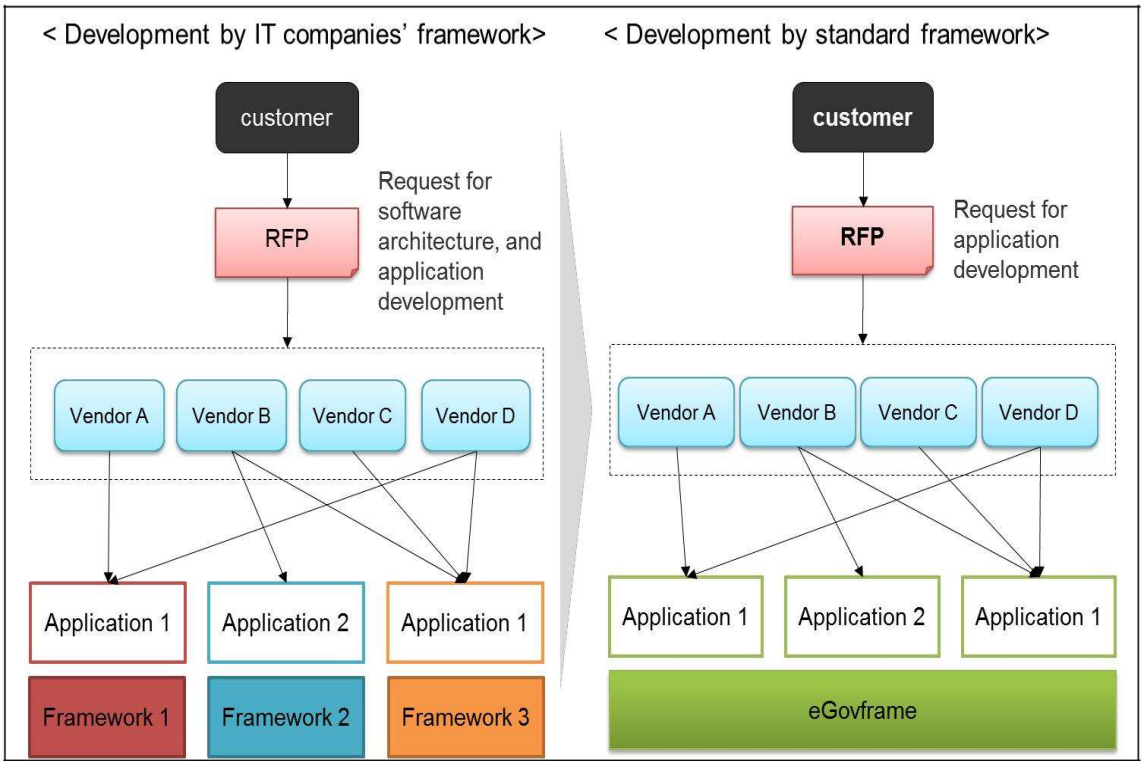


Figure 64 Vendor-specific Frameworks vs. A Standard Framework

The core of the recommended structure of the standard software framework for e-Government in Nigeria consists of four environments and 230 common components to cover system development lifecycle (SDLC) as depicted in Figure 65.

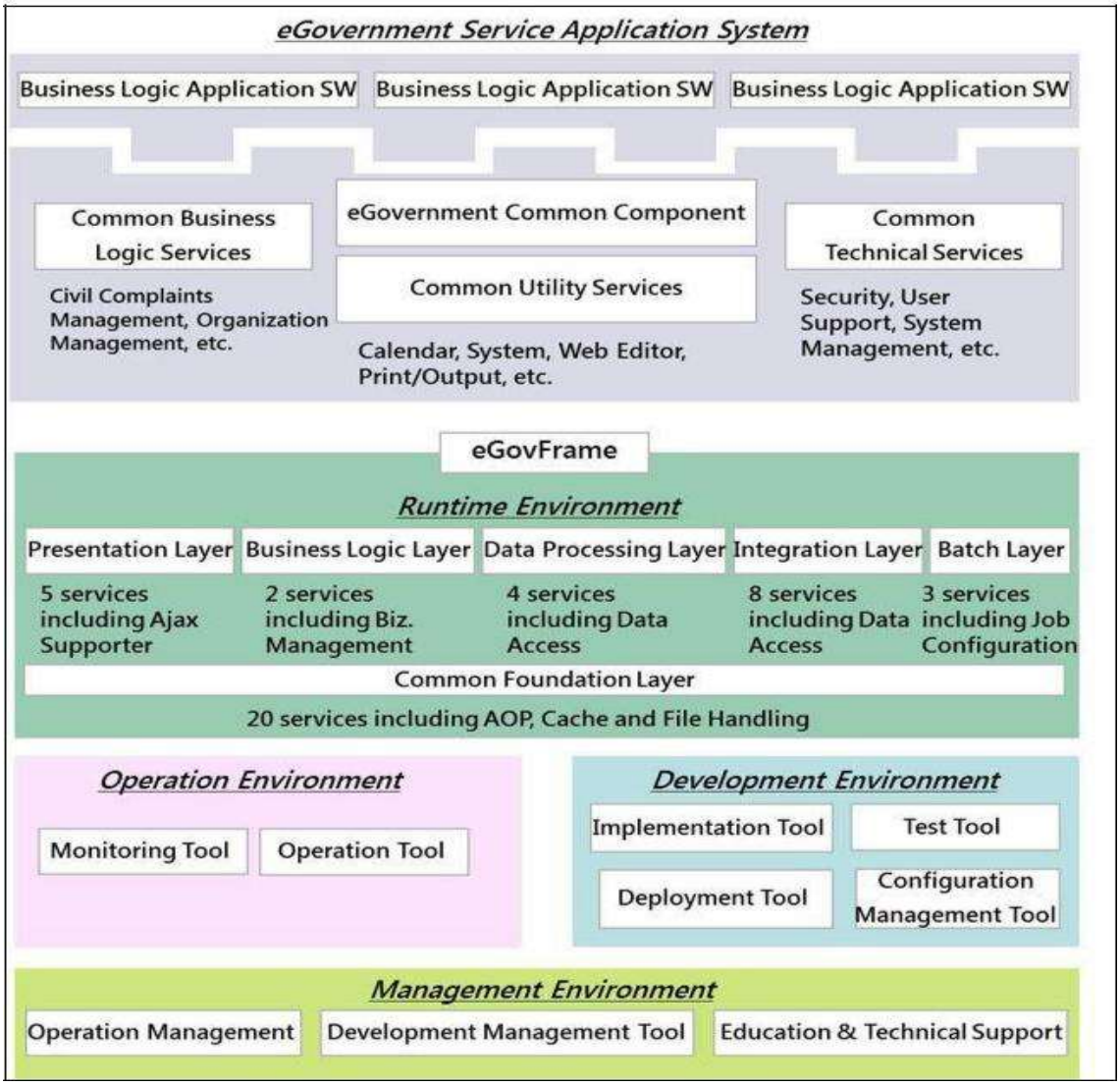


Figure 65 Structure of the e-Government Standard Framework

(4) Detailed Implementation Plan

❑ Objectives

The objective of this initiative is to implement a standard software development platform for all government service applications.

❑ Directions

- Establish the eGovFrame Centre as the implementing body of this initiative in NITDA.
- Develop capacity building programs to improve the infrastructure and expertise of the software development platform.
- Certify the information system software products which are compatible with the standard software framework.
- Create an active ecosystem for standard software framework.
- Develop a comprehensive cloud platform for e-Government services using the standard software framework.

- Strategies
  - Get support from the Korean Government to minimize the cost and maximize the effect of the standard software development platform.
  - Benchmark the Korean case.
  - Use the standard software framework as a catalyst for creation of a continent-wide open-market for information system software.
  - Design the operating model in detail.
  - Use the standard software framework as the catalyst for local contents development.
- Implementation framework
  - NITDA is to establish the eGovFrame centre as the implementing body and to oversee all the activities of the centre.
  - The eGovFrame centre initiates the research, development and capacity building projects.
- Tentative Schedule

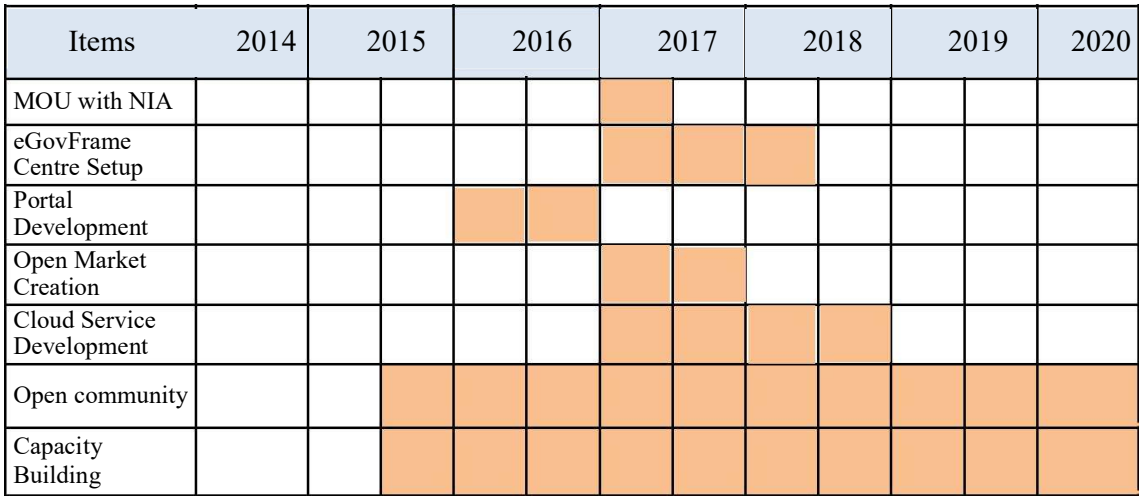


Figure 66 Tentative Schedule: Standard Software Framework for e-Government

- Tentative Budget

Table 76 Tentative Budget: Standard Software Framework for e-Government

Items	Details	Amount (USD)
eGovFrame Portal Building & Operation	eGovFrame Portal Homepage Development, Operating Cost	20,000
Cloud Service Development	eGovFrame Could Service Development on top of GBB's Infrastructure	3,000,000
Open Community Setup & Support	Seminars, Software Development Contest, etc. (100,000 / Unit x 5)	500,000
Capacity Building	Technical Training, Business Consulting, etc. (300,000 x 5 years)	1,500,000
Total		5,020,000

- Monitoring and performance evaluation
  - Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
  - Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

- Expected Effects

The e-Government Standard Framework increases development productivity and component reusability among application systems by providing a standardized infrastructure. It also increases the interoperability and promotes the standardization of application SWs through the interface standards.

- Increase in development productivity: Minimizes redundant developments by providing common essential functions and allows developers to concentrate on the business logic by defining an infrastructure.
- Increase in the reusability of eGovernment application systems: Increase the standardization of the development framework allows components already developed on the eGovernment Standard Framework to be reused in other application systems.
- Increase in the interoperability of the eGovernment systems: Increase the interoperability of application systems by using standard inter-system integration interface.

Initiative #15: e-Finance (GIFMIS/SIFMIS)

(1) As-Is Analysis

Federal Government introduced Integrated Personnel Payroll and Information System (IPPIS) to centralize the payment of Civil Servant salaries from a central point to eliminate issues of ghost workers in the system, thereby saving for the government to provide infrastructure and security to the citizenry.

The implementation of electronic banking and the cashless policy by government has resulted in elimination of physical movement of cash from location to location within the country etc. (Source: Federal Ministry of Information Abuja by Veronica Adeyemo Director Information Technology Department, Sept. 2014)

(2) Major Issues

Despite the success in the management of the few deployments in place, there are yet lots of challenges hindering the implementation of the various e-Government related projects in the Ministry. These include:

- Inadequate annual budgetary allocation to implement vital e-Government projects;
- Inappropriate Internet bandwidth allocation;
- Inadequate funding to carry out appropriate technical training on Web Management tools, Network and Security and the New Social media management;
- Non availability of high Specification Computer systems and accessories to drive the e-Government platform solutions in place; and
- Non availability of license Proprietary software to help manage the relevant web management solution. (Source: Federal Ministry of Information Abuja by Veronica Adeyemo Director Information Technology Department, Sept. 2014).

(3) To-Be Model

Korean Financial Management Information System (KFMIS) called Digital Budget and Accounts System (DBAS) is known as one of the world-best e-Finance systems. Figure 67 shows the conceptual map of to-be model of e-Finance system which is derived from DBAS of Korea.

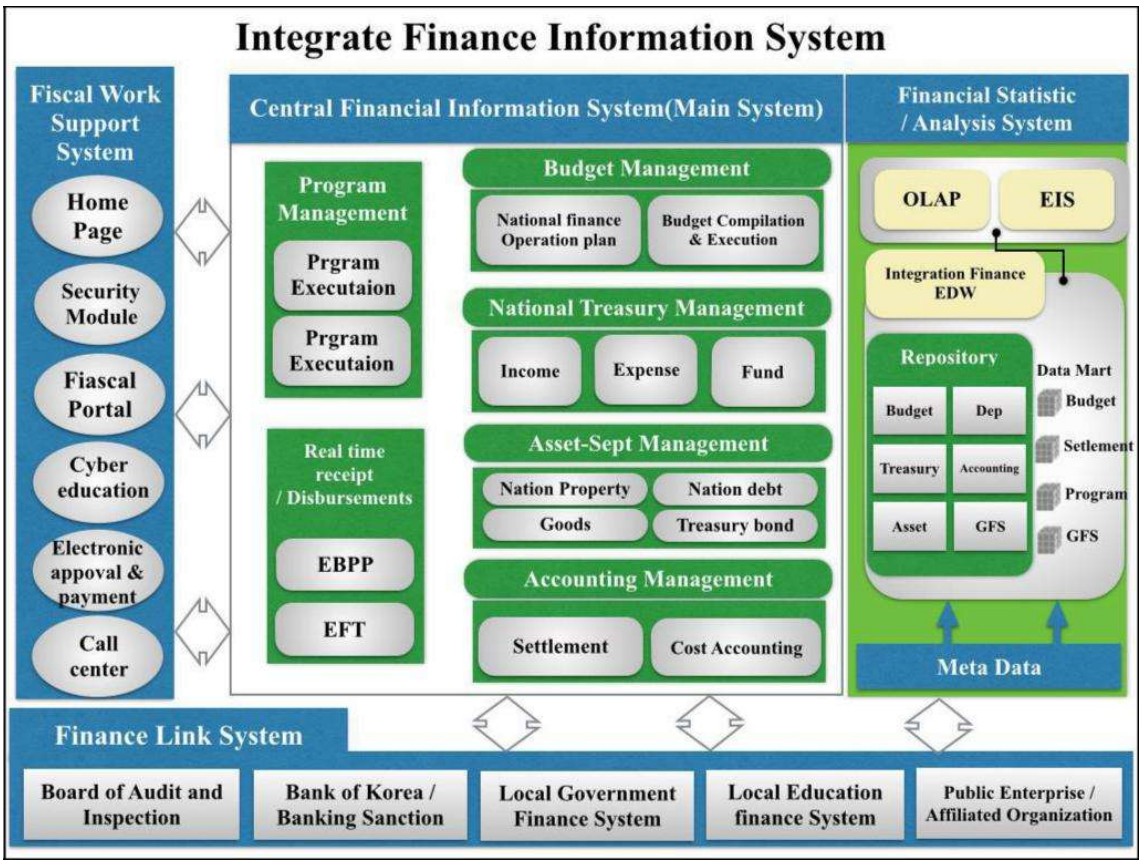


Figure 67 Conceptual Map of Integrated Finance Information System

Source: Ministry of Strategy and Finance of Republic of Korea, Fiscal Reform and Financial Management Information System in Korea, 2011

Characteristics of the e-Finance system can be described as follows:

- Adoption of new finance management ideas
- Redefinition of the coverage of national finance
- Systematic Sharing of government finance management information
- Securing accountability, transparency, and real-time operability
- Efficient finance management
- Efficient national treasury management
- Clean system which reduces the possibility of corruption

(4) Detailed Implementation Plan

❑ Objectives

The objective of this initiative is to improve the existing national financial management information system (GIFMIS/SIFMIS) to be more efficient, transparent and better-integrated.

❑ Directions

To alleviate inefficiency generated from the isolated systems, the system should be a truly integrated financial information management system.

- Strategies
  - Get support from the Korean Government to minimize the cost and maximize the effect of the standard software development platform.
  - Benchmark the Korean case.
  - Design the operating model in detail.
- Implementation framework
  - Related MDAs to e-Finance: FMF and OAGF
- Tentative schedule

Items	2014	2015		2016		2017		2018		2019		2020
Blueprint, Concept paper, Feasibility Study												
BPR / ISP												
System Upgrade Phase I												
System Upgrade Phase II												
Capacity Building												

Figure 68 Tentative Schedule: e-Finance

- Tentative Budget

Table 77 Tentative Budget: e-Finance

Items	Activities	Amount (USD)
BPR, ISP, F/S	Business Process Reengineering, Information Strategic Planning, F/S	400,000
System Upgrade Phase I	Upgrade the main system	5,000,000
System Upgrade Phase II	Integration with other related systems	2,000,000
Capacity Building	ICT Training, Business Consulting, Promotion activities, etc. (100,000 x 4 years)	400,000
Total		7,800,000

- Monitoring and performance evaluation
  - Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
  - Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected Effects

The followings are the expected impacts from the aspect of securing the transparency of national finance by establishing a fully integrated finance information system.

- Improve efficiency and ability to manage national fiscal management
- Efficient budget management removing fiscal waste factor
- Identifying public category fiscal activity's accurate present state
- Support rational decision for finance related policy
- Financial reliability increase and transparent information offer
- Provide the base for successful enforcement of the new fiscal policy

7.7.2.2 Service Application

Initiative #16: e-Procurement

(1) As-Is Analysis

The public procurement Act 2007 puts the Nigeria in the league of countries with legislation on how Public funds would be expended. The followings are the main achievements related to e-Procurement in Nigeria:

- Publication and Circulation of the Public Procurement Act (PPA) 2007
- Functional Procurement Data Centre
- Functional BPP Website
- Uploading of FEC Approved Contracts on the BPP Website
- Publishing of details of all contracts awarded in the print media and Bureau's website
- Ongoing development of a contractor categorization and classification system to ensure only competent and capable contractors are invited to tender for government projects
- Development of a robust complaint /recourse mechanism which allows aggrieved parties in a procurement process to petition such outcomes
- Ongoing development of an integrated Procurement Management System which will enable the Bureau detect and prevent corruption as it will greatly diminish human contact in the procurement process
- Introduction of the Health Check (compliance monitoring) System where the Bureau sends out consultants to various MDAs to assist in their procurement process thereby ensuring compliance with the rules
- Currently 14 States have so far passed their own versions of the Procurement laws
- National Database of Particulars, Classification and Categorisation of Federal Contractors and Service Providers. (Registration in progress)
- Ongoing development of a Tool to Monitor Prices of Tendered items and Develop a Catalogue for Standard Prices of items
- On-going implementation of a Databank Management System (e-procurement) for the country
- Development of a National procurement management system with the support of UNODC office

(2) Major Issues

- Sustaining procurement reforms and achieving effective and sustainable outcomes require continuous engagement of all Stakeholders especially the political class and civil society groups who understand the rules to mount pressure on the operators of the system to comply with the Law

- Building of a critical mass of people who understand the rules and processes along the procurement value chain
- A mechanism for sanctioning non-compliant actors must be put in place
- Deployment of technology to minimize human interaction by implementing a unified and comprehensive Government e-procurement system.

(3) To-Be Model

As shown in Figure 70, the unified and comprehensive e-procurement system should cover the following procedures:

- Supplier registration
- Invitation for e-Bid
- E-Bidding
- Bid-opening
- e-Contract
- Project Perform
- e-Payment

Figure 69 e-Procurement Process

The system should have the following sub-systems:

- e-Procurement single window portal
- e-Bidding system
- e-Contract system
- e-Payment
- Follow-up management system

(4) Detailed Implementation Plan

❑ Objectives The objectives are:

- to improve the efficiency of the procurement administration through development of a high quality procurement system that support all procurement procedures;
- to enhance the transparency; and
- to increase the accessibility and easiness to the Government procurement system.

❑ Directions

Phased approach shall be taken as described below:

- Preparation
- 1st Phase Implementation
  - Introduction of Infrastructure
  - e-Procurement Portal
  - Bidding Notice
  - Performance management
  - e-Open

- 2nd Phase Implementation
  - Introduction of e-Documents
  - e-Contract
  - e-Payment
  - Statistics Management
  - Information Security
- 3rd Phase Implementation
  - e-Guarantee
  - Linkage with Institution
  - Service Enhancement
  - Mobile Service
  - Integrated Shopping Mall

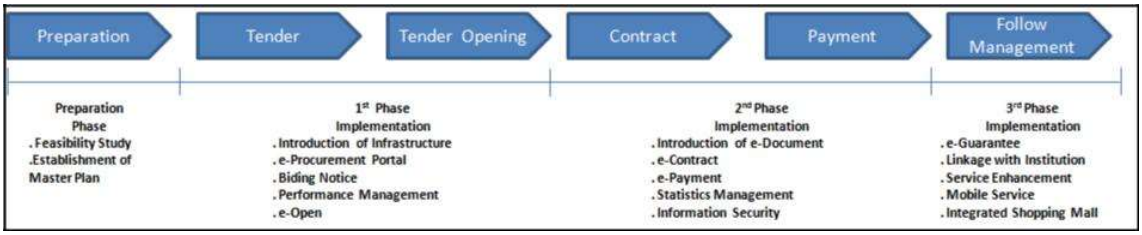


Figure 70 Phased Approach for the Government Procurement

System ❑ Strategies

- Benchmarking the best practices from other countries
- Use of International Standards: Data Model, etc.
- Pilot System Development
- Capacity Building

❑ Main MDA

- Bureau for Public Procurement (BPP)

❑ Tentative Schedule

Items		2014	2015		2016		2017		2018		2019		2020
Stage 0	Feasibility Study												
	BRP/ISP												
Stage 1	Implementation of e-bidding system												
	Equipment												
	Training												
Stage2	Implementation of e-contract system												
	e-payment system												
Stage3	Follow-up management												

Figure 71 Tentative Schedule: e-Procurement

❑ Tentative Budget

Table 78 Tentative Budget: e-Procurement

Items		Activities	Amount (USD)
Stage 0	Feasibility Study	▪ As-is/to-be, action plan	300,000
	BRP/ISP	▪ Enhance business procedure ▪ Information system design	500,000
Stage 1	Implementation of e-bidding system	▪ e-Bidding system ▪ User registration system ▪ Portal system ▪ Documents distribution and integration system	1,000,000
	Equipment	▪ Web/WAS/DB/Repository Server ▪ DRM SW	1,000,000
	Training Completion	▪ On-site ▪ Oversea	700,000
Stage2	Implementation of e-contract system	▪ e-Contract system ▪ e-Payment system	1,000,000
Stage3	Follow-up management	▪ e-Shopping mall ▪ Integration with e-Assurance	1,000,000
Total			5,000,000

❑ Monitoring and Evaluation

- Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
- Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected Effects

The expected effect of a unified and comprehensive Government e-Procurement system implementation is:

- improvement of the transparency and publicity of procurement administration;
- provision of a convenient environment for companies and lead the development of private e-commerce; and
- cost reduction for Government Procurement process.

Initiative #17: e-Taxation

(1) As-Is Analysis

The Federal Inland Revenue Service (FIRS) is the major body in Nigeria responsible for tax administration in the country. The current "e-tax pay" of the FIRS allows tax payers to pay their taxes online through payment service providers such as Banks. It also allows citizens to calculate their taxes online.

Project FACT (Friendly, Accurate, Complete and Timely) was conceived and implemented for the purpose of automating tax collection. Under the new system, taxpayers pay directly

into collecting banks, which, in turn, remit to the lead banks, which then transmit the funds to the Central Bank of Nigeria. With the aid of appropriate software technology, the whole process is monitored real time by the Tax Revenue Accounting Department. This system has replaced the old system which was prone to abuse because tax payments were frequently done by way of negotiable instruments. In addition to tax collection, other processes such as finance procurement, human resources and payroll administration, which, because of the manual nature, were prone to abuses are also being automated to ensure system integrity. The Records Management and Document Tracking, RMDT, was introduced in 2006 to tackle the challenges that hampered efficient handling of records in FIRS which in turn impacted negatively on FIRS ability to meet stakeholders' needs and expectations.

The Nigerian Joint Tax Board (JTB) has advocated for an obligatory enforcement of a nationwide issuance of a national universal electronic tax pin code, otherwise called the Taxpayer Identification Number (TIN), as a panacea for both tax evasion and incidents of double taxation. Subsequently, the Joint Tax Board (JTB), in collaboration with the Federal Inland Revenue Service (FIRS) and the 36 State Boards of Internal Revenue (SBIRs) has started the automation of tax registration activities in Nigeria.

(2) Major issues

- Non availability of a comprehensive and integrated one stop e-tax service
- Non availability of tax statistics
- Inability to prioritize tax effort
- Poor tax administration
- Multiplicity of tax
- Political risk and exchange controls
- Tax evasion and tax avoidance

(3) To-Be Model: Comprehensive Tax System

A comprehensive tax system which enables taxpayers to handle tax affairs online at home or office without visiting tax offices has to be implemented as depicted in the following Figure 73.

This model will make a one stop tax service possible. Taxpayers can handle most tax related activities online without visiting offline tax offices and banks, as described below:

- Certificates of tax payment are issued online;
- Tax returns are filed via the Internet;
- Tax payments are made online; and
- Taxpayers who visit tax offices can go through the entire process of application services using electronic devices.

Major components of this comprehensive e-tax service will be:

- e-Filing;
- e-Payment;
- e-Notification;
- e-Civil Service
- e-Certificate Service; and
- Inquiry Service.

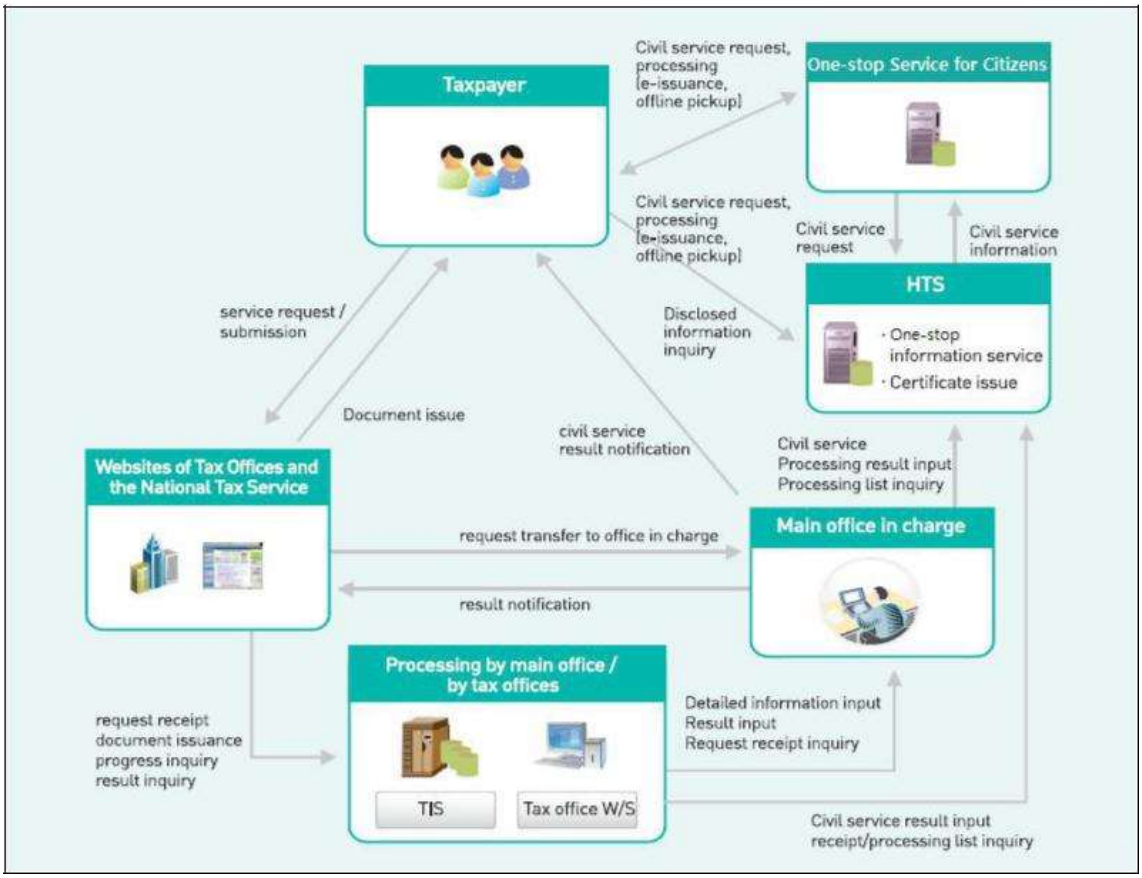


Figure 72 Concept Map of Comprehensive One-stop Tax Service

- e-Filing
  - e-Filing is a system used by taxpayers to file and submit various tax returns.
  - The system enables users to file their tax returns on the Internet, not visiting tax offices to submit paper forms.
  - Individuals, businesses, and tax accountants can use the Internet to file tax returns, with no need to visit tax offices.
  - To file tax returns, users can prepare e-Filing forms at Hometax and send them, or convert the forms prepared using tax accounting S/W and send them to Hometax.
  - Major taxes including VAT, corporation tax, and global income tax can be handled completely online.
  - Major tax forms including report on present state of business place and report on Public Service Corporation will be provide and processed online.
- e-Payment
  - e-Payment is a system used by taxpayers to pay taxes on the Internet by transferring money to National Tax Service's account.
  - The system enables users to pay taxes fast and conveniently without the need to visit tax offices or banks.
  - Taxpayers log in at the Hometax website by using a digital certificate and pay taxes through money transfer.
  - Taxpayers can check e-Filing, e-Notification, and voluntary tax payment details in

real time and pay taxes.

- All kinds of national taxes can be paid online.
- By connecting some official tax systems, the system enables taxpayers to pay some local taxes
- The system will be connected with all major banking systems, Clearings Institute and local tax systems.

❑ e-Notification

- e-Notification is a system that presents (issues) various tax bills on the Internet, not the paper
- The system enables users to check tax bill details in real time and reduces delivery time.
- The system notifies tax bill details to taxpayers using e-mails and mobile phone text messages, and users can pay the taxes online.
- Taxpayers will be provided with e-Notification service related to all kinds of national taxes that are imposed by FIRS.
- The service is provided only when a taxpayer applies for e-Notification service.

❑ e-Civil Service

- e-Civil Service is an electronic civil service handling system used by taxpayers to submit civil petition, or print certificates from their own computers.
- Application for civil petitions and issuance of certificates without visiting tax offices.
- Taxpayers can apply for various civil petitions and have certificates issued by using the e-tax service.
- This service will includes civil petitions which has the following functions
- Taxpayer will be provided with civil petitions which have functions like approvals, permits, report, etc.
- Taxpayer will be provided with certificate services including payment certificates, business registration certificates, and business suspension discontinuance certificates
- The system can process civil petitions and issue certificates in real time as it is connected with national e-tax system of FIRS.

❑ e-Inquiry Service

- e-Inquiry Service is a system used by taxpayers to inquire various tax information including their tax filing, tax payment, and business registration status
- The system provides batch inquiry function for tax information such as tax filing and tax payment, increasing taxpayers' convenience.
- Taxpayers can use inquiry function themselves and handle other services following the inquiry result for their own tax matters.
- The system is connected with bank systems and provides automatically-prepared tax returns and notifies them.
- The system also provides taxpayers with inquiry services for business registration status, refund, tax point, and credit card sales information.
- The system supports batch inquiry function for taxpayers' convenience.

❑ Tax Calculation Service

- Tax system is used by taxpayers to calculate their tax amount in advance on Hometax, which increases public convenience.
- The system enables users to check future tax amount in advance.

- By providing tax calculator for major taxes such as capital gains tax and gift tax, it helps taxpayers find out the amount and save taxes.
- The system provide taxpayers with automatic calculation of capital gains tax, confirmation of non-taxation of capital gains tax for one house per household, calculation of gift tax calculation of excise tax for vehicle purchase by the disabled, etc.
- The system provides tax calculation function based on updated data, with frequently-revised tax laws.

(4) Detailed Implementation Plan

❑ Objectives

The objectives are:

- to improve the efficiency of the tax administration through development of a comprehensive and high quality tax system that supports for all taxation procedures such as e-Filing, e-Payment, e-Notification, etc.;
- to enhance the transparency; and
- to increase the nation's tax revenue.

❑ Directions

Phased approach shall be taken.

- Information Systems Planning (ISP) and Business Process Reengineering (BPR)
- Upgrade Nigeria Tax portal
- Integration and Service Enhancement: e-Filing management, e-Payment management, e-Notification management.
- Stabilization: Security, Backup and Change Management

❑ Strategies

- Benchmarking best-practices of other countries
- Use of International Standards: Data Model, etc.
- Pilot System Development
- Capacity Building

❑ Implementation Framework

- Main Ministry and Department: Federal Ministry of Finance

❑ Tentative Schedule

Items	2014	2015		2016		2017		2018		2019		2020
Feasibility Study												
BRP/ISP												
Upgrade Nigeria Tax Portal												
Integration & Service Enhancement												
Equipment												
Training												
Completion												

Figure 73 Tentative Schedule: e-Taxation

❑ Tentative Budget

Table 79 Tentative Budget: e-Taxation

Items	Activities	Amount (USD)
Feasibility Study	• As-is/to-be, action plan	300,000
BRP/ISP	• Enhance business procedure • Information system design	500,000
Upgrade Nigeria Tax Portal	• Analysis, Design, Implementation	500,000
Integration & Service Enhancement	• e-Filing management • e-Payment management • e-Notification management • etc.	2,500,000
Equipment	• Web/WAS/DB/Repository Server • DRM SW	1,000,000
Training	• On-site • Oversea	700,000
Total		5,500,000

❑ Monitoring

Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.

❑ Evaluation

Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected Effects

- It facilitates the establishment of an efficient and transparent tax administration.
- It simplifies assessment and collection processes
- It avoids data duplication
- It reduces waiting periods for the issuing of information on a particular taxpayer account from up to four hours to only 3 minutes
- It ensures an increase in revenue collection
- By making taxation more transparent, it leads to better tax compliance, easier tax collection, and more effective enforcement

Initiative #18: e-Customs

(1) As-Is Analysis

❑ ASYCUDA

The ECOWAS Community Computer Centre (ECOWAS/CCC) installed the ASYCUDA Ver. 2.7 in Nigeria from 1999 onwards through a project financed by the Nigerian Federal Government. The achievements of this three-year project are:

- Implementation of one Single Customs Declaration model – SCD, in current use, replacing the previous 39 forms

- Use of international codes
- This version of the system is installed and operational in 15 Area Commands (customs offices)
- Customs officers gained computer skills and a relatively high percentage of them are already trained in the operation of this version of ASYCUDA
- Bonded warehouses keepers have implemented with NCS assistance ASYCUDA Ver. 2 in their premises, on their equipment and provide office space to trained customs officers.

❑ ASYCUDA Objectives

- To provide relevant MDAs with information on prices of goods
- NCS Customs Officers use this platform to check differences in goods quoted and give exit to clear goods.

❑ Nigeria Customs Information System (NICIS)

The Nigeria Customs Information System is an upgrade of its Automated System for Customs Data (ASYCUDA) which allows businesses to be transacted electronically such as the electronic payment, electronic reconciliation, electronic manifest and electronic exit. Some of the agencies inter-connected to the Customs system include the Revenue Mobilization, Allocation and Fiscal Commission (RMAFC), the Economic and Financial Crime Commission, (EFCC), the Nigerian Ports Authority, (NPA), The Nigerian Bureau of Statistics (NBS) and the office of the National Security Adviser. Others are the Nigerian Shippers Council, (NSC), Nigerian Maritime Administration and Safety Agency and at a point Presidency was also inter-connected to the Customs system.

❑ Nigeria Single Window (NSW) Trade Portal

The Nigerian Customs Service has developed a website available at https://trade.gov.ng that provides a Single Window for Trade activities. The Nigeria Single Window Trade Portal is a cross-government website that opens a new era for trade facilitation by offering a single portal for trade actors, both Nigerian and international, to access a full range of resources and standardized services from different Nigerian government agencies. The NSW Trade Portal facilitates trade by offering a platform for users to:

- Consult trade information online. For example, tariff search, arrived vessels, regulatory guidelines
- Submit trade documents and track their trade transaction status online
- Pay online through e-payment facilities using credit card (this function to be deployed in the next phase)
- Access help-desk, trouble tickets, and other support services online (for registered users)
- Quickly reference important information on different government agencies involved in trade matters, as well as link to their websites through a convenient hub.

The NSW Trade Portal is available for all involved with import and export. The MDAs include National Agency For Food Drugs and Administrative Control (NAFDAC) , Standards Organization of Nigeria (SON), Central Bank of Nigeria (CBN), Federal Ministry of Finance (FMF), National Bureau of Statistics (NBS), Federal Inland Revenue Service (FIRS), National Environmental Standards and Regulations Enforcement Agency (NESREA), Federal Road Safety Corps (FRSC), Raw Materials Research and Development Council (RMRDC) and Nigerian Financial Intelligence Unit (NFIU).

As part of measures towards developing a National Single Window in Nigeria, the Customs Service developed a trade information portal, www.nigeriatradehub.gov.ng.

The portal, which received wide support from stakeholders and active player in the maritime sector was officially launched August 19th, 2013. It has since become a reference point for traders in providing relevant and accurate trade information.

The portal is equipped with tools such as import and export classification tools, duty calculator, and currency converter, directory of Government Regulatory Agencies and directory of Customs Brokers among others.

- Pre Arrival Assessment Report (PAAR)

This was formerly called the Risk Assessment Report (RAR). The PAAR system is an online application designed and developed by the Nigeria Customs Service for the generation of the PAAR. The PAAR is a document generated by the newly developed Nigeria Customs Service PAAR system to replace Risk Assessment Report (RAR) issued by the Service Providers at the end of Service providers' contract by December 1st, 2013. PAAR key features are:

- Digitalization of Import Documentation (based on UN-ADS)
- Expert Tariff Classification Tool (HS Convention)
- Assessment of Customs Value (WTO-ACV)
- Import Export Commodity Database (IECD)
- Detail Intelligent Risk Configuration encompassing (LGAs)
- Issuance of Pre-Arrival Assessment Report (PAAR) WCO Revised Kyoto
- SMS Alert integration service
- Confirmation of Transaction value by the Supplier
- Flagging up of High Risk Commodities (WCO-GHRI)
- Fast Tracking of Trusted Traders (AEO)
- 3rd Party Pricing Data

- Difference between the PAAR and the RAR

  - PAAR is generated by the Nigeria Customs Service for Nigeria Customs Service use; whereas RAR was generated and issued by the service provider as an advisory report to NCS.
  - PAAR is to be generated within 6 hours for a compliant trader, which is in conformity with the Federal Government's vision of achieving 24 hour clearance at the port; whereas with the RAR this was not possible.
  - The PAAR automatically recognizes an importer who is consistently compliant and categorizes such importer as an Authorized Economy Operator (AEO) i.e. trusted trader once he is consistently compliant thereby enabling such a trader speedy clearance at the ports; the RAR did not have such a tool.
  - The PAAR has a built-in intuitive classification tool which makes product classification easy and accurate; this feature is not present in the RAR.
  - The PAAR system notifies importer when their documents are approved or rejected.
  - PAAR is complimented by the Classification Tool in the Nigeria Trade Hub – www.nigeriatradehub.gov.ng an online tool available to all traders to ensure accurate classification at source.

(2) Major Issues

- Areas Requiring Immediate Government Intervention
  - Effective take-over of all Customs import and export clearance functions.
  - Legislative reform to provide a basis for the application of modern Customs Procedures.
  - Improved capacity building-completion of the construction of Customs Staff College.
  - Streamlining of procedure with other Government Agencies.
  - Review of current penalty regime lacking effective deterrents against violations of Customs Laws.
  - Better funding for infrastructures as applied to modern procedure.
  - Simplification and harmonization of Customs procedures.
  - Reduction of items on the prohibition list.
  - Just-in-time delivery of goods and services by removal of non-tariff barriers.
  - Promotion of transparent and predictable business environment.
- To Be Improved
  - Effective risk management.
  - Full implementation of modern Customs procedures.
  - Strengthening of Post Clearance controls and re-engineering of processes.
  - Effective use of advance information system through electronic data interchange (EDI). eg. e-manifest and Alerts.
  - Elimination of archaic Customs procedures inconsistent with developments in transportation technology and business practices
  - Seamless real time transactions, paperless flows and connectivity with other stakeholders.
  - Development of a single window for harmonizing and standardizing international trade information.
  - Increased awareness/capacity building of stakeholders.
  - More cost efficient and predictable border processing of goods and people.
  - Adoption of i-border (intelligent border) solutions.
  - Use of biometrics and improved baggage management at Airports.
  - Hone strategic direction and use of capacity building measures to minimize the operational gaps between the Service and stakeholders
  - Developing the capacity to conduct compliance and audits at trader premises.
  - Requirement of financial guarantees from all Authorized Economic Operators.
  - Building a Service that has integrity and good image.

(3) To-Be Model

- Structure Overview

UNI-PASS can be divided into: single window, clearance mgt system, cargo mgt system, information mgt system and the administration system.

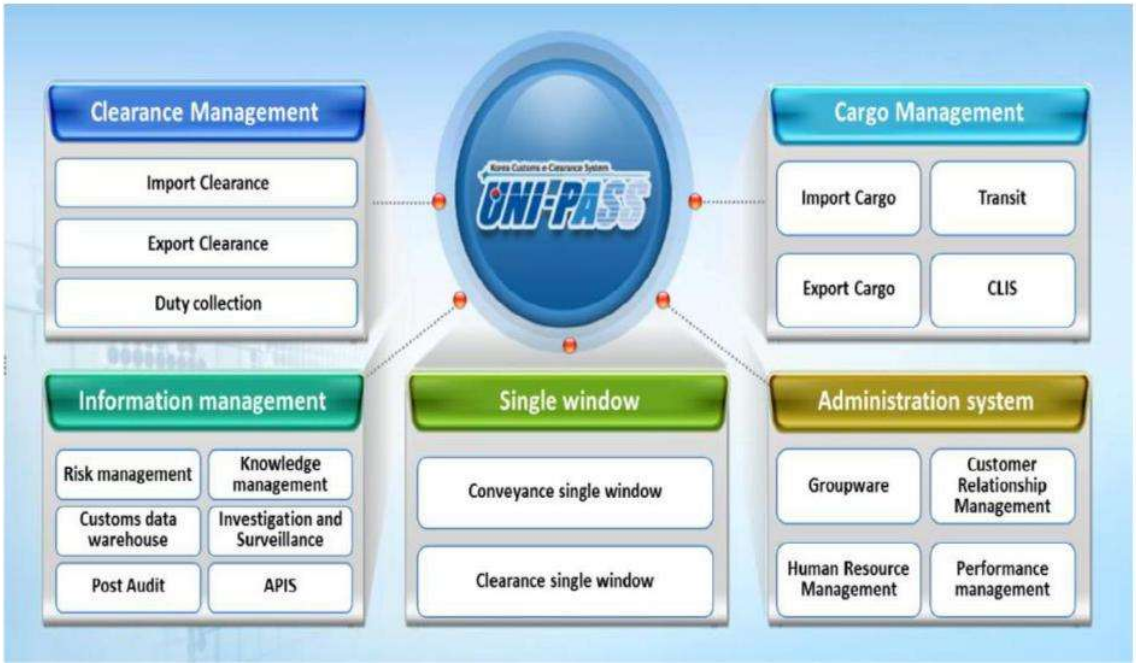


Figure 74 UNI-PASS Structure Overview

❑ Single Window

UNI-PASS single window provides a one-stop service for declarers during the cargo arrival and clearance stage.

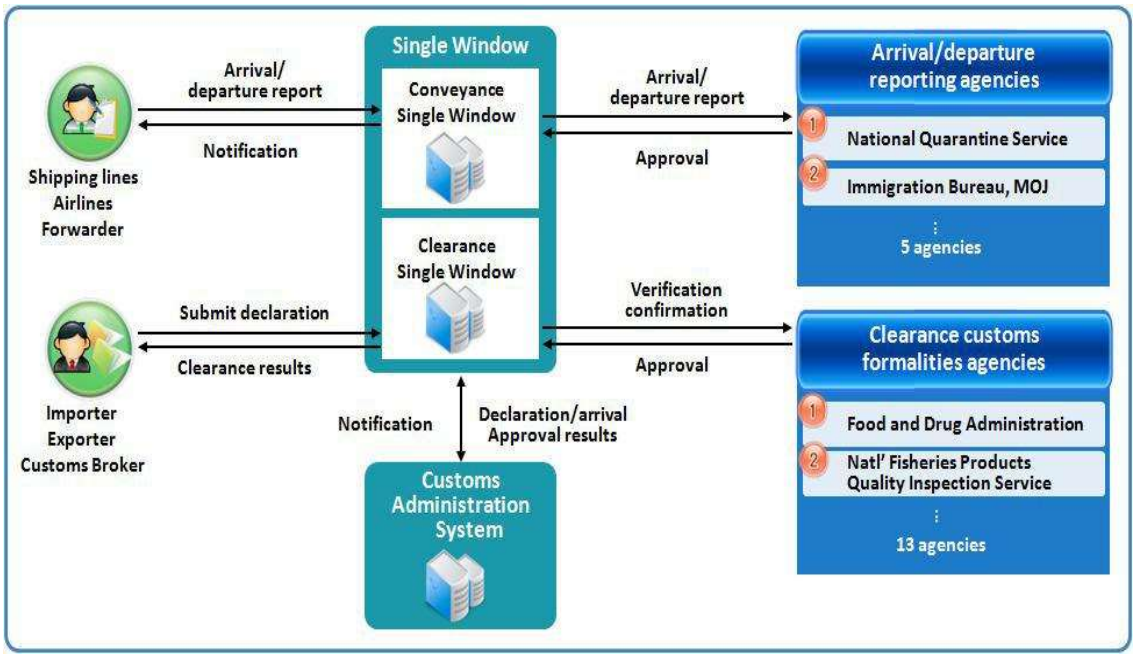


Figure 75 UNI-PASS Single Window

❑ Import Cargo

UNI-PASS Import Cargo provides a cargo information management for all cargo movement from arrival at the port to release

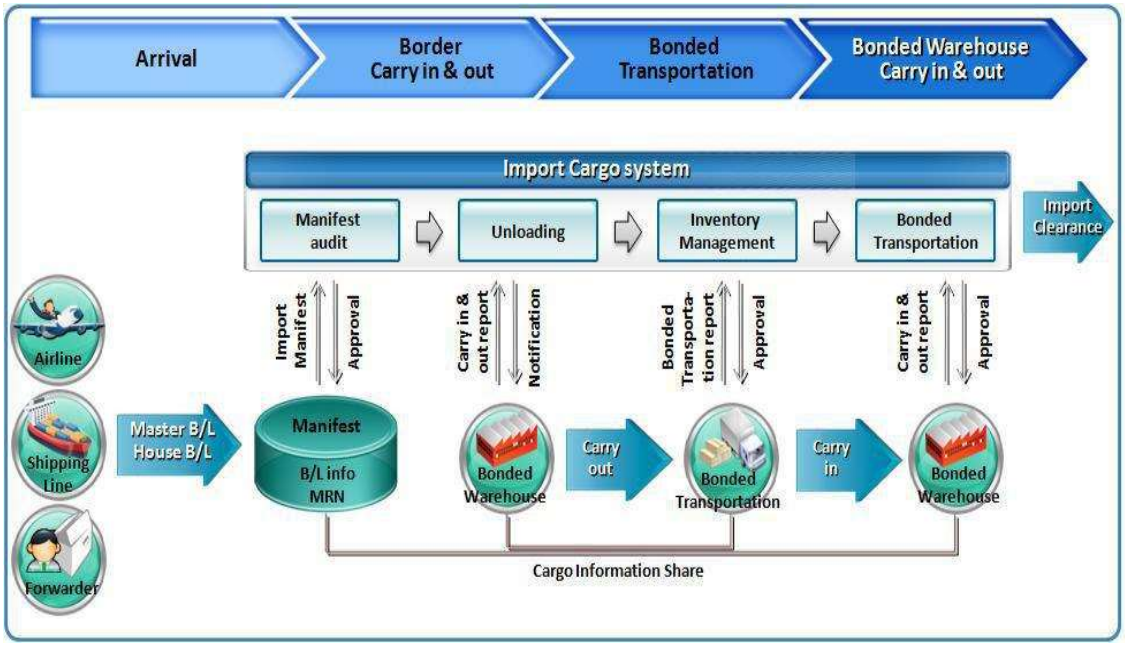


Figure 76 UNI-PASS Cargo

❑ Import Clearance

UNI-PASS Import Clearance provides a paperless declaration for declarers during all clearance stages.

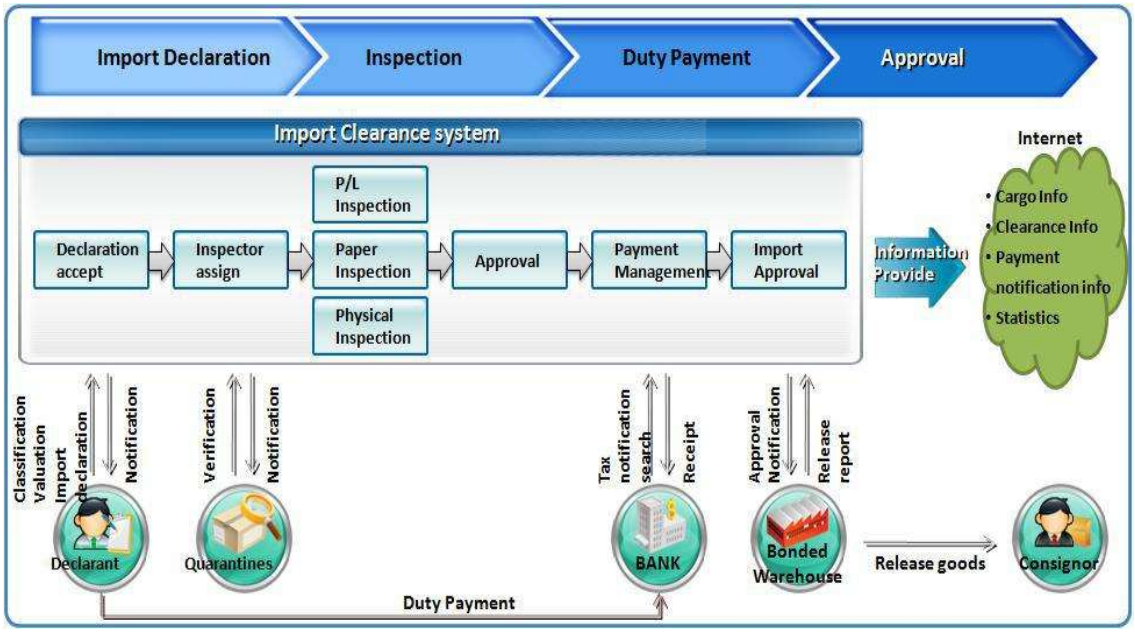


Figure 77 UNI-PASS Clearance

❑ Export Cargo & Clearance

UNI-PASS Export Cargo & Clearance provides a simplified procedures to increase competitiveness of local company.

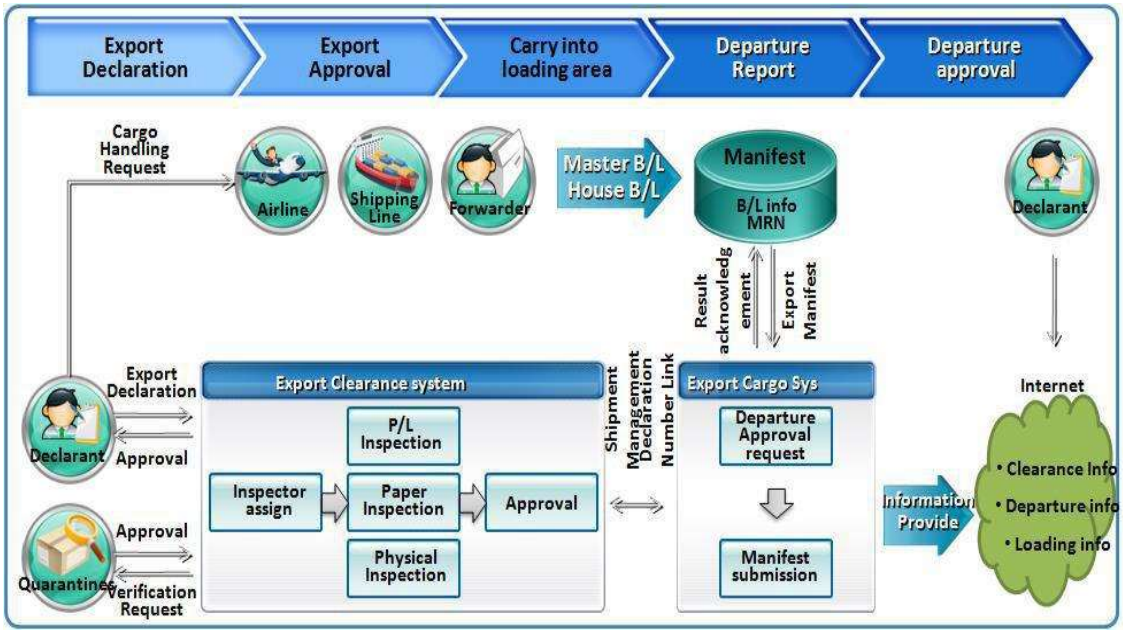


Figure 78 UNI-PASS Cargo & Clearance

❑ Post Audit

UNI-PASS Post Audit provides Individual audit and company audit functions for customs officer after the declaration.

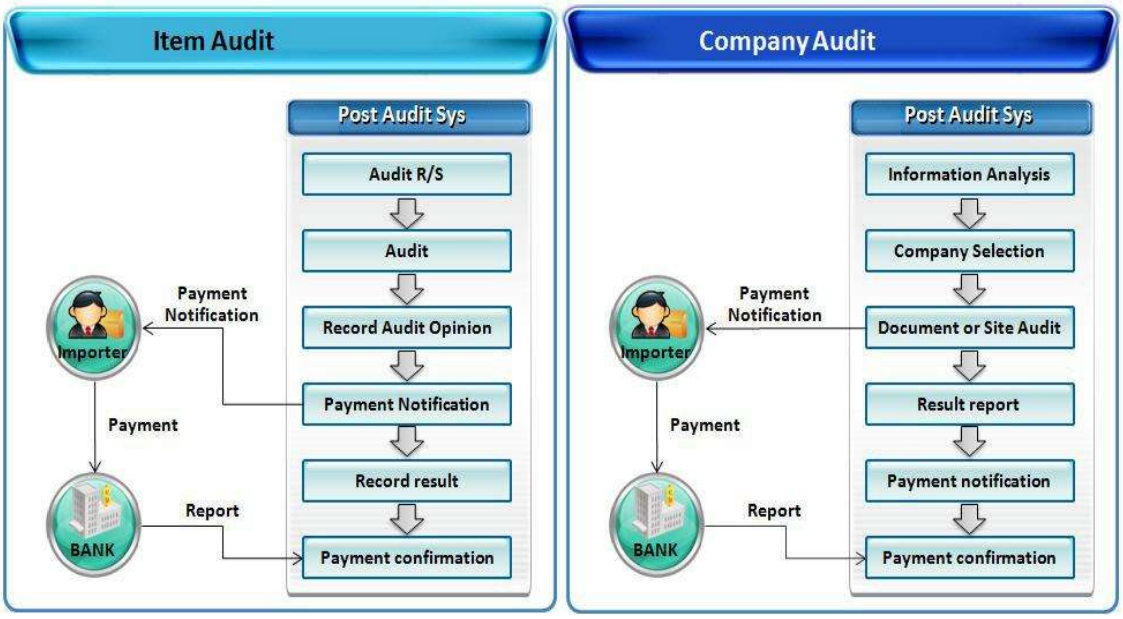


Figure 79 UNI-PASS Post Audit

❑ UNI-PASS Risk Management

UNI-PASS Risk Management provides a information analysis service for cargo selectivity, clearance selectivity, audit selectivity and etc.

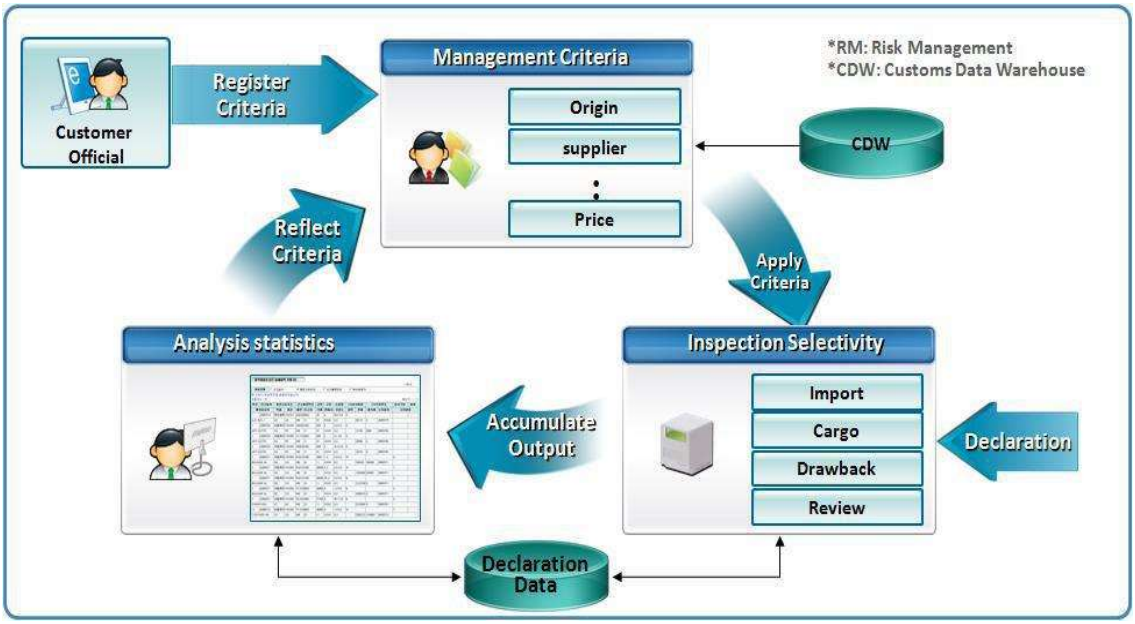


Figure 80 UNI-PASS Risk Management

❑ Advanced Passenger Information System

UNI-PASS APIS provides a high risk passenger selection service for airport passenger.

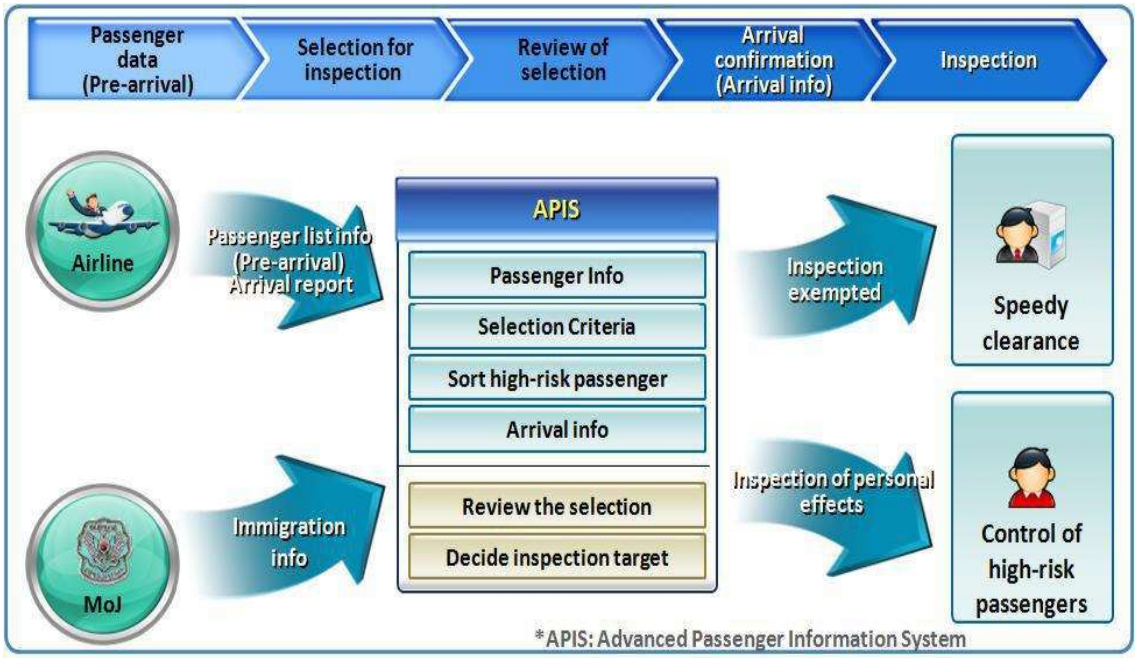


Figure 81 UNI-PASS Advanced Passenger Information System

❑ System Architecture

UNI-PASS system architecture is divided into 3 zones: Internal zone, Shared zone, and External Zone.

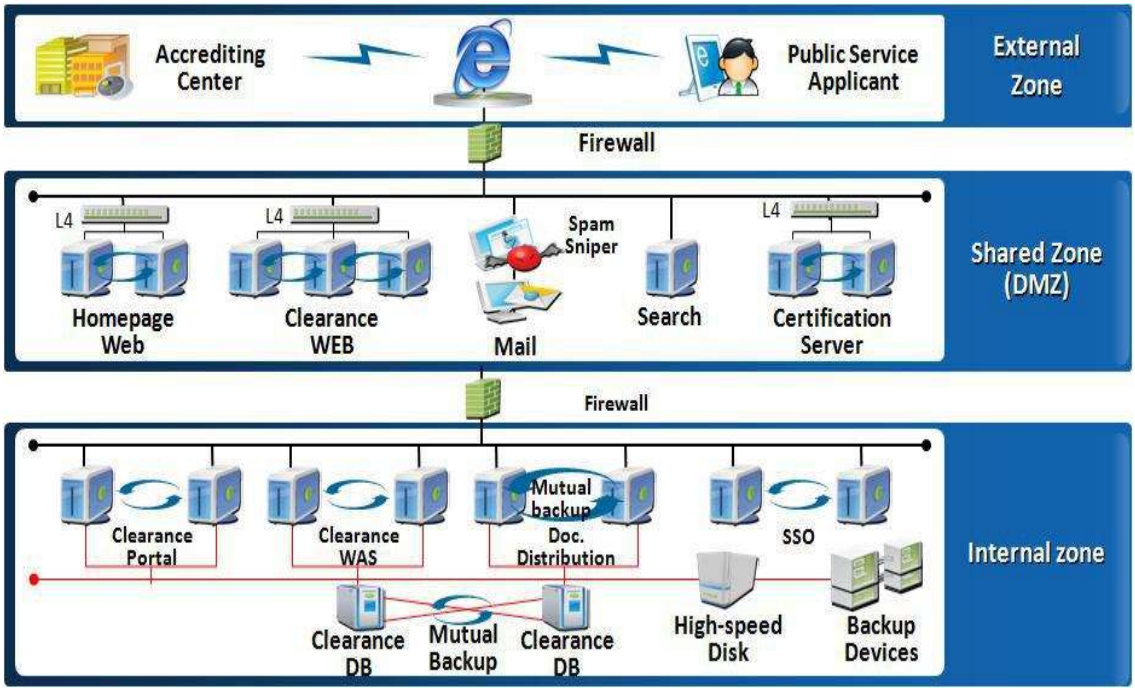


Figure 82 UNI-PASS System Architecture

❑ Software Architecture

UNI-PASS has been developed by applying EJB on the base of J2EE component

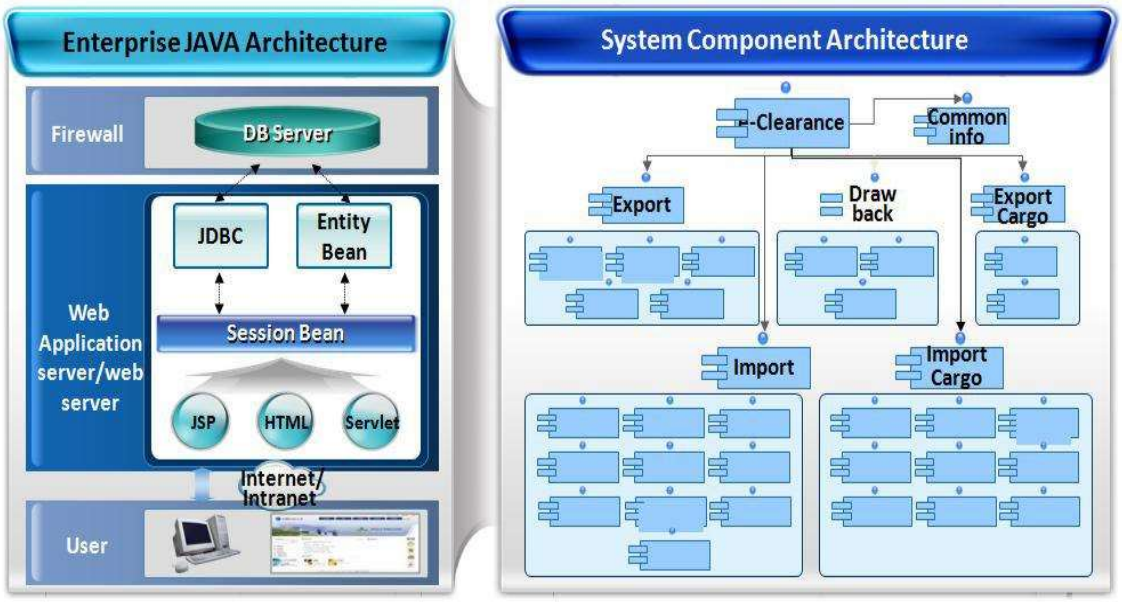


Figure 83 UNI-PASS Software Architecture

(4) Detailed Implementation Plan

❑ Objectives

The objectives are: (1) to improve the efficiency of the customs administration through development of a high quality customs system that support all customs procedures such as clearance, cargo, collection, etc.; (2) to enhance the transparency; (3) to increase the nation's tax revenue.

❑ Directions

The system includes single window, clearance management, cargo management, information management and administration management.

Phased approach shall be taken.

- Phase 1. Information Systems Planning (ISP) and Business Process Reengineering (BPR)
- Phase 2. Upgrade Nigeria Single Window System
- Phase 3. Integration and Service Enhancement: e-Clearance, Risk Management, Cargo Management, Data Centre and Data Warehouse
- Phase 4: Stabilization: Security and Back-Up, Change Management

❑ Strategies

- Use of International Standards: WCO (World Customs Organization) Data Model, etc.
- Pilot System Development
- Capacity Building

❑ Implementation Framework

Main MDAs are Federal Ministry of Finance (FMF) and Nigeria Customs Service (NCS).

❑ Tentative Schedule

Items	2014	2015		2016		2017		2018		2019		2020
Feasibility Study												
BRP/ISP												
Upgrade e-Customs Portal												
Integration & Service Enhancement												
Equipment												
Training												
Completion												

Figure 84 Tentative Schedule: e-Customs

❑ Tentative Budget

Table 80 Tentative Budget: e-Customs

Items	Activities	Amount (USD)
Feasibility Study	• As-is/to-be, action plan	300,000
BRP/ISP	• Enhance business procedure • Information system design	500,000
Upgrade e-Customs Portal	• Analysis, Design, Implementation	500,000
Integration & Service Enhancement	• Clearance Management • Cargo Management • Information Management • Administration Management • Data warehouse	2,500,000
Equipment	• Web/WAS/DB/Repository Server • DRM SW	1,000,000
Training	• On-site • Overseas	700,000
Total		**5,500,000**

❑ Monitoring and Performance Evaluation

Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.

Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Benefits

UNI-PASS has improved customs administration, maximized productivity and raise efficiency in clearance and trade.

Figure 85 UNI-PASS Imporve National & Corporate Competitiveness

In case of Korea, 3.8 million USD/year is saved by ROI research from NIA 2006 and one customs officer is handling USD 127 million cargo.

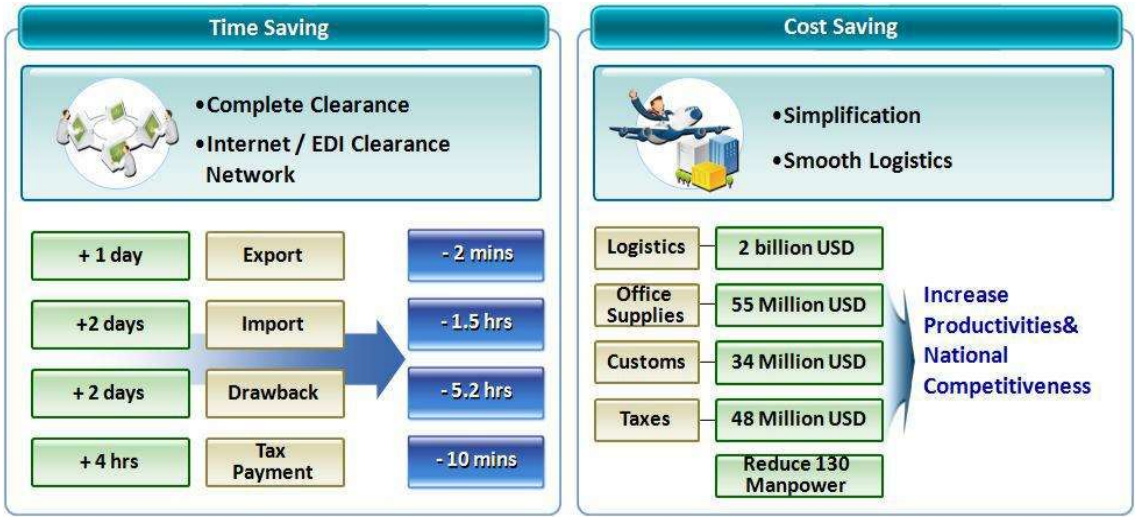


Figure 86 UNI-PASS Time and Cost

Initiative #19: e-Education

(1) As-Is Analysis

The mission of ICT in Education in Nigeria is to improve educational outcomes using the best breed of technologies to deliver educational-related materials and solutions for the enhancement of educational administration, knowledge and performance of learners, and access to education and information**.**

The focus of ICT Program in Education so far has been on the following:

- Policy Development
- Availability and accessibility to ICT infrastructure and services
- Human capacity development
- Standards Development and Coordination
- Borderless access to learning and learning expertise
- Data harmonization and availability
- Communication of information about the Education Sector Research and Development

Major challenges are recognized as:

- Poor funding of ICT in education
- Dearth of critical ICT infrastructure including bandwidth
- Insufficient ICT resources for teaching and learning
- Highly insufficient pool of ICT professionals especially at the school level
- Low capacity of teachers/staff to deploy existing ICT infrastructure.
- Dearth of requisite training for professional ICT staff
- Disparate silo approach to ICT deployment
- Inability to cope with high ICT curriculum dynamism resulting in obsolescence
- Inequities in ICT distribution between urban and rural schools and between public and private schools

- Lack of instructional materials especially textbooks for the teaching and learning of Computer Studies in schools
- Lack of data on ICT in education
- Low research on ICT in education
- Poor regulation of IT education especially at the non-formal sector

The Ministry sets the way forward as to:

- Build and encourage the development and sustenance of the ICT manpower required to achieve an ICT-furthered education
- Establish and sustain a common ICT infrastructure platform for education
- Expand NGREN to interconnect all educational institutions
- Restructure the teaching and learning environment to be ICT-driven
- Support periodic review of IT curricula to reflect emerging paradigms
- Adopt convergence approach to ICT deployment
- Strengthen e-learning
- Support Research and Development in ICT in education
- Engage in regular stakeholder consultations to achieve a broad-based consensus on ICT in education
- Provide appropriate legal, regulatory and security framework to ensure that ICT in Education and the conduct of related activities are focused on achieving ICT-furthered Education
- Increase budgetary allocation for ICT and adopt creative financing models for ICT in Education

❑ WAEC e-Learning

The West African Senior School Certificate Examination (WASSCE) is a type of standardized test in West Africa. It is administered by the West African Examinations Council. It is only offered to candidates residing in Anglophone West African countries. The academic school-leaving qualification awarded upon successful completion of the exams is the West African Senior School Certificate (WASSCE).

The primary aim of the WAEC's e-Learning Tool Kit initiative is to equip Nigerian students for better performance in future examinations. Student's performances on previous exams are analysed with the secondary aim of detecting the weaknesses proffering solutions for all stakeholders concerned with Senior Secondary School Examinations.

It consists of a CD with resources for all WAEC approved subjects that will help students understand the standards required for success in respective Examinations. The subjects covered include Building Construction, Auto Mechanic, Wood Work, Technical Drawing, Metal Work, Electronics, Applied Electricity, Mathematics, Further Mathematics, English Language, Yoruba, Igbo, Hausa, French, Biology, Chemistry, Physics, Agricultural Science, Health Science, Food & Nutrition, Physical Education, Geography, Financial Accounting, and Commerce.

❑ WAEC Online

With WAEC Online, it simply means examination candidates can check their examination results online by visiting the WAEC direct website (http://www.waecdirect.org/) and follow the following steps.

- Enter your 10-digit WAEC Examination Number
- Enter the 4 digits of your Examination Year (e.g. 2012)

- Select the Type of Examination. Options are NOV/DEC and MAY/JUNE
- Enter the Card Serial Number found on the reverse side of your Scratch card
- Enter the Personal Identification Number (PIN) on your Scratch card
- Click Submit and wait for the results window to come up.

❑ Challenges of WAEC Online

Scratch cards are expensive. A user has to buy different scratch cards to register and check results at every time.

❑ JAMB Online

The Joint Admissions and Matriculations Board (JAMB) is a Nigerian entrance examination board for tertiary-level institutions. The examinations being administered are available for most students who choose to apply to Nigerian public and private monotechnics, polytechnics, and universities. JAMB online registration can be used to check admission status and check exam results.

❑ Challenges of JAMB Online

Citizens complain of the high costs of scratch cards which can only be used once. Different cards have to be bought for registration, checking of result and changing universities.

❑ E-TRCN [Teachers Registration Council of Nigeria]

Teachers Registration Council of Nigeria (TRCN) is an agency of the Federal Ministry of Education. It was established by the TRCN Decree N0. 31 of 1993 (now TRCN Act CAP T3 of 2004) with the major mandate of regulation and control of the Teaching Profession at all levels of the Nigerian Education System, both in the public and private sectors.

The major aim of the e-TRCN is to register professional teachers nationwide more efficiently and manage their administration more effectively. The goal is to have a database of all public and private teachers in Nigeria. Some of the achievements of the TRCN include: Registration of over one million teachers and licensing of the registered ones; Engagement of employers of teachers and other stakeholders to rid the teaching profession of quacks and improve the status, image and performance of the teaching profession; Strengthening professional discipline among teachers through development, publication and distribution of Teachers Code of Conduct and Professional Standards and establishment of Teachers Investigating Panel across the country.

❑ NuNet (The Nigerian Universities Network)

To connect all the Nigerian Universities on a Wide Area Network to the Internet. The Capacity Building was handled by University of IOWA in USA. Refer as well the National Open University Network (NOUN) website (www.nuc.edu.ng)

❑ Challenge of NuNet

Not every University is connected to NuNet.

(1) Major Issues

- It is necessary to reduce the workload of teachers by reengineering the way of administrative works to be done.
- It is necessary to strengthen the role of school and home by providing information on children's school life.
- It is necessary to provide more quick and convenient services to citizens.

- It is necessary to enhance the efficiency and transparency of the educational administration.
- It is necessary to support transparent college entrance process by electronic one stop examination-related services.
- It is necessary to develop the knowledge society oriented e-Government for enhancing the national competitiveness.

(3) To-Be Model

❑ Structure Overview

National Education Information System (NEIS) consist of services for students, services for parents, and educational administration portal.

Building NEIS should be a government-wide initiative to connect elementary and secondary schools, provincial education offices and their sub-agencies, and the Ministry of Education into one network. Students, parents, and school administrators shall have access to education-related information that will be shared across the nation.

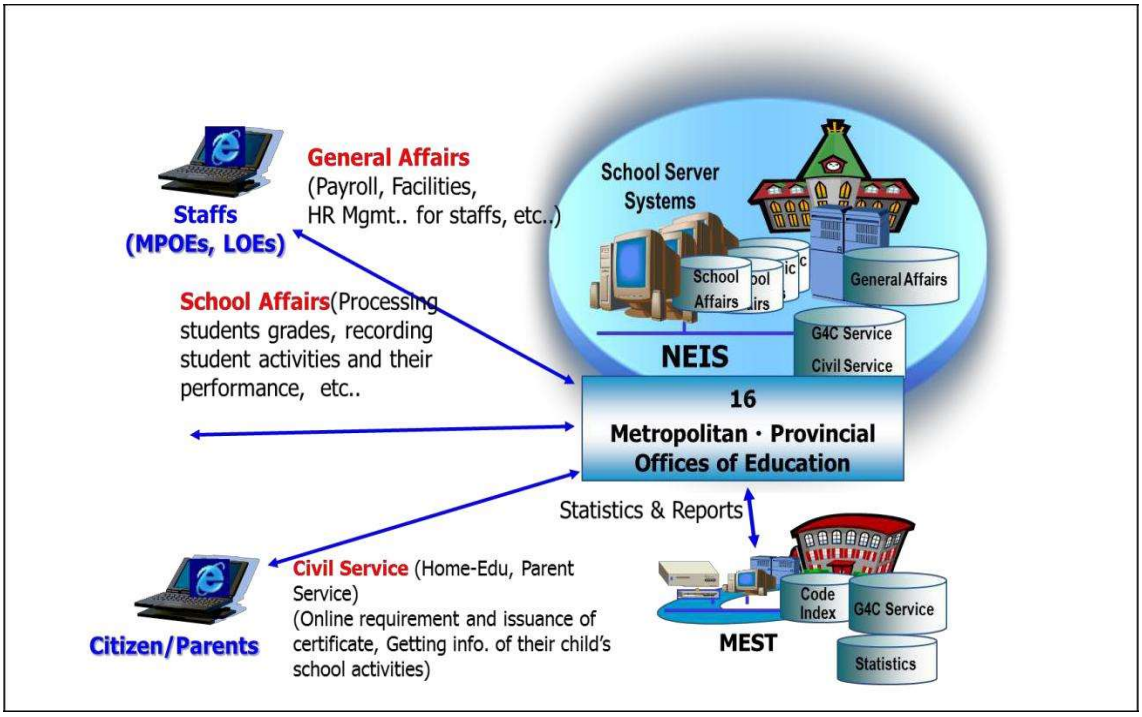


Figure 87 Concept Map of National Education Information System

❑ Services for Parents

- Services for parents encourage parents to participate in the education process so that they take right and responsibility to educate their children.
- Parents can get various kinds of information on their children's school lives, without physically visiting the school, including the grade, attendance, and behavior record. They can also communicate through the system with the teacher about the education of their children.

❑ Services for Students

- Services for students let students check information on their own including the

curriculum, grade, attendance, educational schedule, behavior record, menu for school meals, health record, etc.

- The system guarantees the student's right to see information on their own and creates an educational environment for self-directed.

❑ Educational Administration

Information service to process the administrative works of schools and central, provincial education offices consists of the following menus:

- Teaching Staff Personnel Management
- Administrative Staff Personnel Management
- Temporary Staff Personnel Management
- Work Civil Defense
- Life-long Education
- Corporate Affairs
- Qualification Exam
- Internal Audit
- On Duty Schedule
- Facilities
- Petitions
- System Management
- Public School Salary
- Private School Salary
- Statistics

(4) Detailed Implementation Plan

❑ Objectives

The objectives of utilizing ICT in education are to enhance the quality of school education and academic research, to provide opportunity for every citizen to develop capacity and to learn life-long, and to reduce the gap of knowledge and information.

❑ Directions

- Division of roles among interested parties and the aggregation of national competency
- Flexible and continuous informatization reflecting the ICT development trend
- Reduction of information divide through ICT education
- Shift from the establishment of infrastructure to the utilization of ICT

❑ Strategies

Adopt a stepwise approach that improves from a simple but single window education information portal toward a more sophisticated service platform.

- Step 0. Information System Planning (ISP) for National Education Information System
  - Development of a roadmap for developing the National Education Information System
- Step 1. Development of Basic Structure
  - Development of the Education Facilities Information System
  - Improvement of administrative efficiency through information sharing amongst relevant institutions
  - Provision of single window for education information per beneficiary

- Step2. Expansion of National Education Information System
  - Enlargement of contents and enhancement of portal functions
  - Provision of single window for education information according to lifecycle
- Step 3. Sophistication of National Education Information System
  - Expansion of education information coverage for the pre- and after-school period.
  - Expansion of education information coverage to local jurisdiction

❑ Main Ministry and Department

The Federal Ministry of Education (FME) is the MDA in charge. The National Universities Commission (NUC) and the Teachers Registration Council of Nigeria (TRCN) are relevant MDAs and need to collaborate.

❑ Tentative Schedule

Items	2014	2015		2016		2017		2018		2019		2020
Feasibility Study												
BRP/ISP												
System Development												
S/W Installation & Integration												
Equipment Installation												
Training												

Figure 88 Tentative Schedule: e-Education

❑ Tentative Budgeting

- Stage 0 & 1

Table 81 Tentative Budget: Stage 0 & 1 (e-Education)

Items	Activities	Amount (USD)
Feasibility Study	As-is / To-be, Action plan	150,000
BPR/ISP	Enhance business procedure Information system design	350,000
Development of Single Window Portal	Analysis, Design, Implementation	500,000
Equipment	H/W, S/W	1,000,000
Training	On-site / Overseas	500,000
Total		2,500,000

- Stage 2 & 3

Table 82 Tentative Budget: Stage 2 & 3 (e-Education)

Items	Activities	Amount (USD)
Integration and Service Enhancement	Full Scale Upgrade (Stage 2)	2,500,000
Total		2,500,000

❑ Monitoring

Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.

❑ Evaluation

Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Benefit

The Ministry of Education can benefit from:

- Compiling statistical data related to business processes; and
- Formulating scientific education policy through compilation of accurate data.

The Board of Education can benefit from:

- Easier compilation of a garden variety of information; and
- Reduction of administration duties.

Schools can benefit from:

- Reduction of administration duties for teachers; and
- Systematic use of information technology to enhance the learning experience.

Parents and/or Students can benefit from:

- Internet-based education administration services; and
- Strong ties between the local community and schools.

Initiative #20: e-Health

(1) As-Is Analysis

❑ The Mobile Authentication Service (MAS)

The Mobile Authentication Service (MAS) is powered by Sproxil® . Sproxil actively supports Nigeria's National Agency for Food and Drug Administration and Control (NAFDAC) in the fight against counterfeiting drugs by pioneering Nigeria's first Mobile Authentication Service.

On February 2, 2010, NAFDAC launched the NAFDAC MAS, putting the power of product verification right in the hands of the consumer. MAS is powered by Sproxil's award-winning cloud-based Mobile Product Authentication™ technology, and remains the world's largest nation-wide implementation of consumer-facing SMS anti-counterfeiting technology in the world.

❑ HOW DOES NAFDAC MAS WORK?

At the point of purchase, a consumer seeking to buy a genuine product will:

- Scratch the Sproxil label on the product to reveal a unique 12-digit PIN
- Text in the unique PIN to the shortcode 38353
- Receive a response within seconds indicating if the product is genuine, or potentially fake or stolen
- This process works anywhere in Nigeria where you can get mobile phone service on any of Nigeria's GSM networks: Airtel, MTN, Globacom and Etisalat.
- The Text message is free of charge to the consumer.

Because the text message is free, pharmacists can easily use their own phone to assist their customers to verify products; there is no charge to the pharmacist. Consumers are encouraged to always remember to scratch and text to 38353, and if the response doesn't say "OK, Genuine/Original", promptly call for help: +234 803 901 2929 (In Nigeria: 0803 901 2929). A trained agent will walk customers through the steps and help them stay safe from fake medicines. MAS is only available for malaria drugs and antibiotics.

❑ SCOPE OF IMPLEMENTATION

To have an online tracking of products in NAFDAC, Registration of products is made online. The said product must come to the office of NAFDAC for inspection and approval

(2) To-Be Model

❑ Overview

The e-healthcare service needs to be developed for integrated management of national health system and public health service improvement including disease control through information sharing among hospitals, drug stores, patients and governments.

Figure 89 Vision of e-Health

❑ Structure of Public Health Portal

The portal is designed to meet the need for user-friendly health and medical services as well as to improve the effectiveness of the Health Institutions Integrated Information System. It also provides convenient health and medical services by allowing users to get information on health policy, make an appointment with a doctor, retrieve their medical history, and get medical certificates online.

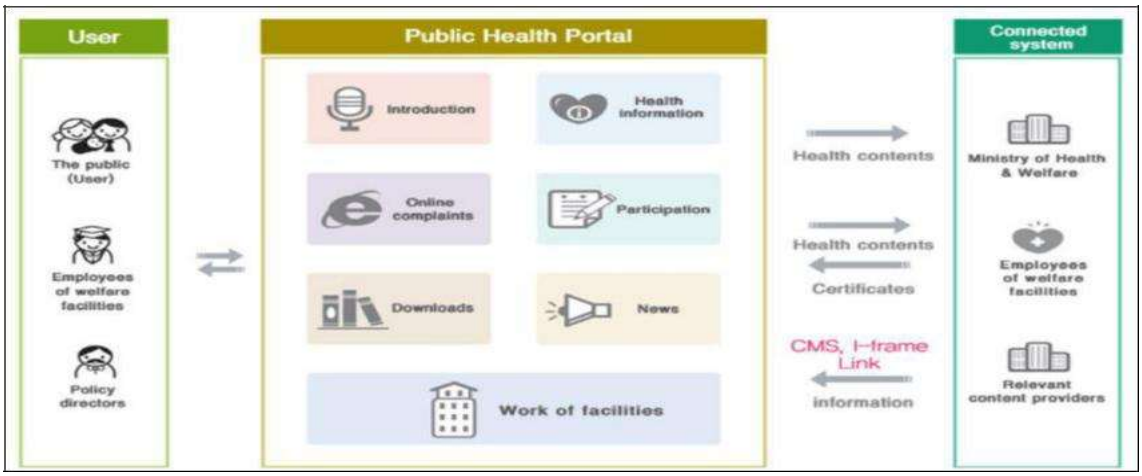


Figure 90 Structure of Public Health Portal

❑ Structure of Health Institutions Integrated Information System

It is the system to advance public health and medical service by linking health institutions around the country to provide convenient health administrative services as well as good and safe medical services

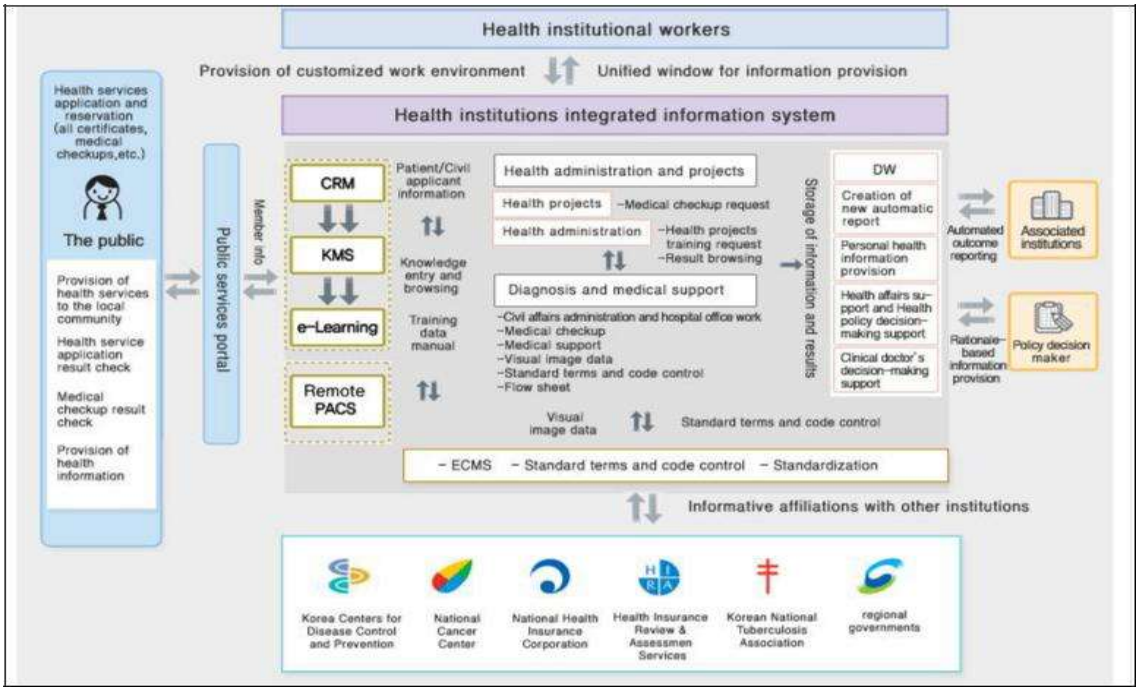


Figure 91 Structure of Health Institutions Integrated Information System

(3) Detailed Implementation Plan

❑ Objectives

The objective of developing the public health portal is to provide the following services:

- Online Medical Certificates Issuance: Users can get medical certificates such as medical report and immunization certificate as well as search diagnosis information online.
- Health information in daily life: Serviced-health information, self-diagnosis, health lecture, health reports, etc.
- Provides the latest health news: Health policy information, legislation data, academic data, etc.
- Provides the latest health policy information: Press release/health and medical news/news on my public health centre/health column, etc.

The objective of developing Health Institutions Integrated Information System is to provide the following services:

- Digitization of diagnosis and clinical support services: Increase efficiency of work by applying EMR (Electronic Medical Record), digitizing all works related to diagnosis (inspection, charge, etc.), and sharing diagnosis data of health institutions.
- Digitization of health businesses and administrative works: Digitize user-friendly, door-to-door health care, chronic disease management, contagious disease management, and medical examination business to improve the efficiency of health services.
- Digitization of statistical business process: Provide statistical data to health institutions by establishing the Data Warehouse (DW).
- Public Health Portal Services: Provide civil applicants with Internet-based services regarding health information, certificate issuance, and health checkup result confirmation

❑ Directions and Strategies

Adopt a stepwise approach that improves from a simple but single window health information portal toward a more sophisticated service platform.

- Step 0. Information System Planning(ISP) for National Health Information System
  - Development of a roadmap for developing the National Health Information System
- Step 1. Development of Basic Structure
  - Development of the Health Facilities Information System
  - Improvement of administrative efficiency through information sharing amongst relevant institutions
  - Provision of single window for health information per beneficiary
- Step2. Expansion of National Health Information System
  - Enlargement of contents and enhancement of portal functions
  - Provision of single window for health information according to lifecycle
- Step 3. Sophistication of National Health Information System
  - Expansion of health information coverage for the whole healthcare cycle.
  - Expansion of health information coverage to local jurisdiction

❑ Main Ministry and Department

The Federal Ministry of Health (FMH) is the MDA in charge. The National Agency for Food and Drug Administration and Control (NAFDAC) is a relevant MDA and need to collaborate.

❑ Tentative Schedule

Items	2014	2015		2016		2017		2018		2019		2020
Feasibility Study												
BRP/ISP												
System Development												
S/W Installation & Integration												
Equipment Installation												
Training												

Figure 92 Tentative Schedule: e-Health

❑ Tentative Budget

- Stage 0 & 1

Table 83 Tentative Budget: Stage 0&1 (e-Health)

Items	Activities	Amount (USD)
Feasibility Study	As-is / To-be, Action plan	150,000
BPR/ISP	Enhance business procedure Information system design	350,000
Development of Single Window Portal	Analysis, Design, Implementation	500,000
Equipment	H/W, S/W	1,000,000
Training	On-site / Overseas	500,000
Total		2,500,000

- Stage 2 & 3

Table 84 Tentative Budget: Stage 2&3 (e-Health)

Items	Activities	Amount (USD)
Integration and Service Enhancement	Full Scale Upgrade (Stage 2)	2,500,000
Total		2,500,000

❑ Monitoring

Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.

❑ Evaluation

Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

Initiative #21: e-Agriculture

(1) As-Is Analysis

❑ The National e-Agriculture Web Portal

NITDA in collaboration with the FMARD embarked on the development of a national e-Agriculture portal to aggregate, optimize, and deliver the transformative effects of local ICT capacity for the transformed Agricultural Value Chain under the Agricultural Transformation Agenda. The main objective is to provide technical information related to agricultural inputs, market prices, procuring quality seeds and advise farmers on crop rotation and use of fertilizers and pesticides amongst others. It is expected to improve the capacity of the communities involved in agriculture and increase productivity and profitability by at least 10% through the utilization of the various ICT applications.

The portal is live at: www.eagriculture.com.ng OR www.eagriculture.org.ng and the project aids in delivering optimized accessibility, affordability, and availability for a fully-interactive portal, promoting comprehensive Access to Capital; Access to Land; Access to Markets; and Access to Capacity resources.

❑ e-Wallet

For four decades, the Nigerian government sought to support its agricultural sector through the procurement and distribution of fertilizer and other inputs to the farmers in the country. Unfortunately, the government's reliance on a broken and corrupt system resulted in the siphoning off of billions of dollars and a small percentage of farmers actually receiving the inputs. Recognizing the need to extricate the middlemen, in 2012, The Minister of Agriculture and Rural Development, Akinwumi Adesina oversaw the introduction of a first of its kind Electronic Wallet ("e-wallet") System through which subsidized electronic vouchers for inputs are delivered directly to the farmers' mobile phones and then the vouchers are used like cash to purchase the inputs directly from agro-dealers. He was named 2013 Forbes African person of the year for his reforms to the country's farming sector introducing more transparency into the supply and distribution of fertilizer. In January 2013 he announced a scheme to hand out 10 million mobile phones to farmers to "drive an agriculture revolution" so they can find out the latest market information, phones are also used to get vouchers for seeds and fertilizer.

The e-wallet system, which took only ninety days to implement, has enjoyed rapid adoption across the value chain. On the demand side, there now are ten million Nigerian farmers with access to the e-wallet system. On the supply side, there has been a ten-fold increase in the number of fertilizer and seed companies and provision of these inputs has become a one billion dollar industry. With the successful efforts to eradicate corruption from the subsidy scheme, banks have begun to regard agriculture as a legitimate business and are demonstrating an increased willingness to lend into the agricultural sector. Ultimately, the e-wallet system beneficially impacts 40 million Nigerians.

(2) Major Issues

- The National e-Agriculture Web Portal is still not accessible to many farmers in remote rural areas because there are many remote places where the Internet access is not available.
- Even though the Minister of Agriculture and Rural Development announced a scheme to hand out 10 million mobile phones to farmers to "drive an agriculture revolution", this goal has not been achieved, because there is no mobile network coverage in many rural areas.
- Only 1.2M farmers out of 4.2M farmers registered have signed up for e-wallet.

(3) To-Be Model

As shown in Figure 94, the unified and comprehensive e-Agriculture initiative should include:

- development of applied system with effective combination of Bio Tech and ICT;
- Precision agriculture through informatics of cultivation and mechatronics technology;
- Database development and management of soil environment information and national network of agricultural weather; and
- Information system development for farm management improvement.

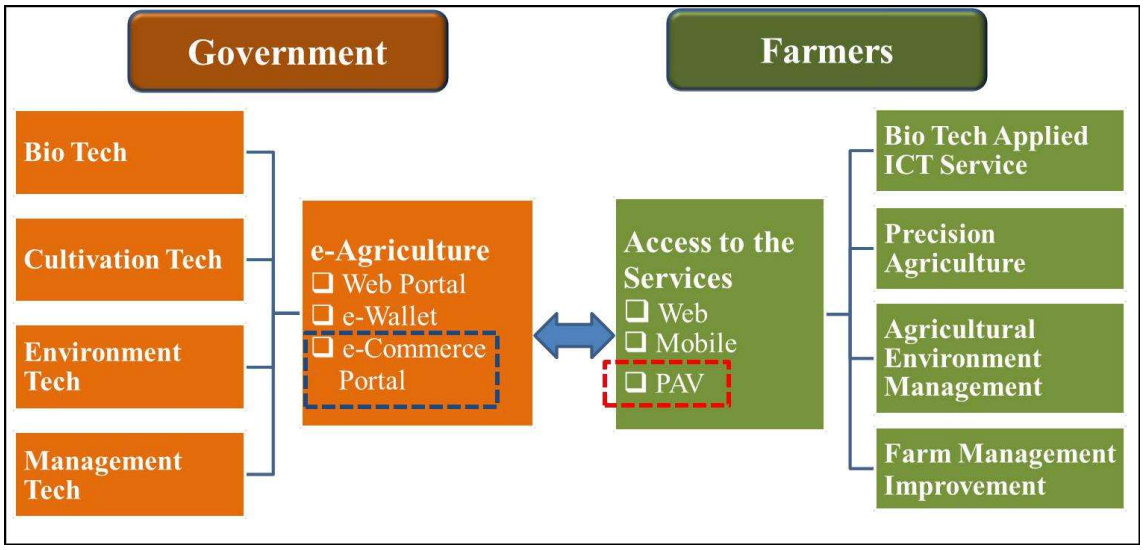


Figure 93 Conceptual Map of e-Agriculture

e-Agriculture services described above will be provided to farmers through the National e-Agriculture Web Portal, e-Wallet and e-Commerce portal. To increase the accessibility of the farmers to the services, the functions of PAV need to be strengthened as described in Initiative # 5 under section 7.7.1.1. To-Be Model of PAV as a part of e-Agriculture initiative should include the following functions:

- Access centre that provides farmers with access to the Internet and to mobile networks;
- Community centre that provides a place for a variety of activities for local community
- Training centre that provides farmers with online and offline training programs;
- Support centre that provides farmers with support for business model development and management including e-Commerce; and

- INVIL centre that enables self-sustainable village communities that are capable of continued growth by creating information network environments and improving the income of residents through e-Commerce as described in Initiative #5.

(4) Detailed Implementation Plan

❑ Objectives

The objective of this initiative is:

- to improve and sophisticate the existing e-Agriculture services;
- to improve infrastructure (PAV) which provides the farmers in rural areas with the access to those services;
- to improve transparency of Government's support to the farmers;
- to improve efficiency of farm management; and
- to implement e-Commerce Portal that sells mainly local goods produced or supplied by INVIL communities through NIPOST postal network (see Initiative #5 for the details of INVIL).

❑ Main MDAs

- FMoC, FMARD, NITDA, NIPOST

❑ Tentative Schedule

Items	2014	2015	2016	2017	2018	2019	2020
Feasibility Study							
BPR/ISP for e-Commerce							
System Development							
System Installation & Pilot Test							
System Launch							
System Improvement							
Improvement of Web Porta & e-Wallet							
Improvement of PAV (Refer to Initiative #5)							

Figure 94 Tentative Schedule: e-Agriculture

❑ Tentative Budget

Table 85 Tentative Budget: e-Agriculture

Items	Activities	Amount (USD)
Feasibility Study, BRP/ISP	As-Is/To-Be, Action Plan, Feasibility Studies	600,000
e-Commerce System Development & Improvement	System Development, Installation, Pilot test	1,500,000

Items	Activities	Amount (USD)
Improvement of Web Porta & e-Wallet		500,000
Improvement of PAV	Refer to Initiative #5	(Refer to Initiative #5)
Total		2,600,000

- Monitoring and Performance Evaluation
  - Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
  - Ad-hoc, interim, completion, and post-project evaluation shall be conducted.
- Benefit
  - Computer literacy improvement of farmers
  - Expansion of local e-Commerce market
  - Increase of rural household incomes
  - Strengthening of competitive power of local products

Initiative #22: e-Immigration

(1) As-Is analysis

- Nigeria is the first country in Africa and the 50th in the world to begin the use of the electronic passport with enhanced security features.
- ISTL entered into a public private partnership with the Federal Republic of Nigeria for the upgrading of the Nigeria travel document to an internationally compliant e-passport in 2003.[75]
- ISTL, as the private partner, designed, supplied, installed, tested, commissioned, trained immigration staff, operate, support and maintain the complete system at its own expense and only receive compensation through the issuance of the passport.
- In this partnership, ISTL provides and operate the technology and the Nigeria Immigration Service provides the officials to register applicants, personalise passports, issue passports, deal with day-to-day queries and manage the passport inventory.
- The project has been running successfully since 2007. To date more than 3.5 million passports have been issued and the daily rate of issuance can be up to 5,000 with some Registration Office dealing with more than 700 applications per day.

(2) Major issues

- Nigeria Immigration Service (NIS) launched the newly introduced 64-page Nigerian e-passport on July 30, 2014. The new travel document is in use with the existing 32-page e-passport. The change has caused some hardship for applicants seeking new passports or renewal of old ones. Among the problems are long queues at passports offices, with applicants complaining of delays.
- Lack of IT infrastructure and trained manpower in passport offices to take care of the large number of applicants. (A woman said that she had already spent close to two months at the passport office without securing a passport. May 12, 2014 – New

[75] IRIS Smart Technologies Limited (ISTL) is the leading ICT company in Nigeria.

Telegraph)

- Corruption: Some unscrupulous officials of NIS have been supplying passports in hundreds to criminals, including drug traffickers, visa racketeers and fraudsters trying to escape the long arm of the law, using the names of prominent Nigerians and their family members.

(3) To-Be Model

Information on passengers scheduled to enter is analyzed beforehand, while the entire process of immigration such as checking of forged passports is handled electronically. To-Be Model of Nigeria e-Immigration can be depicted as in Figure 95.

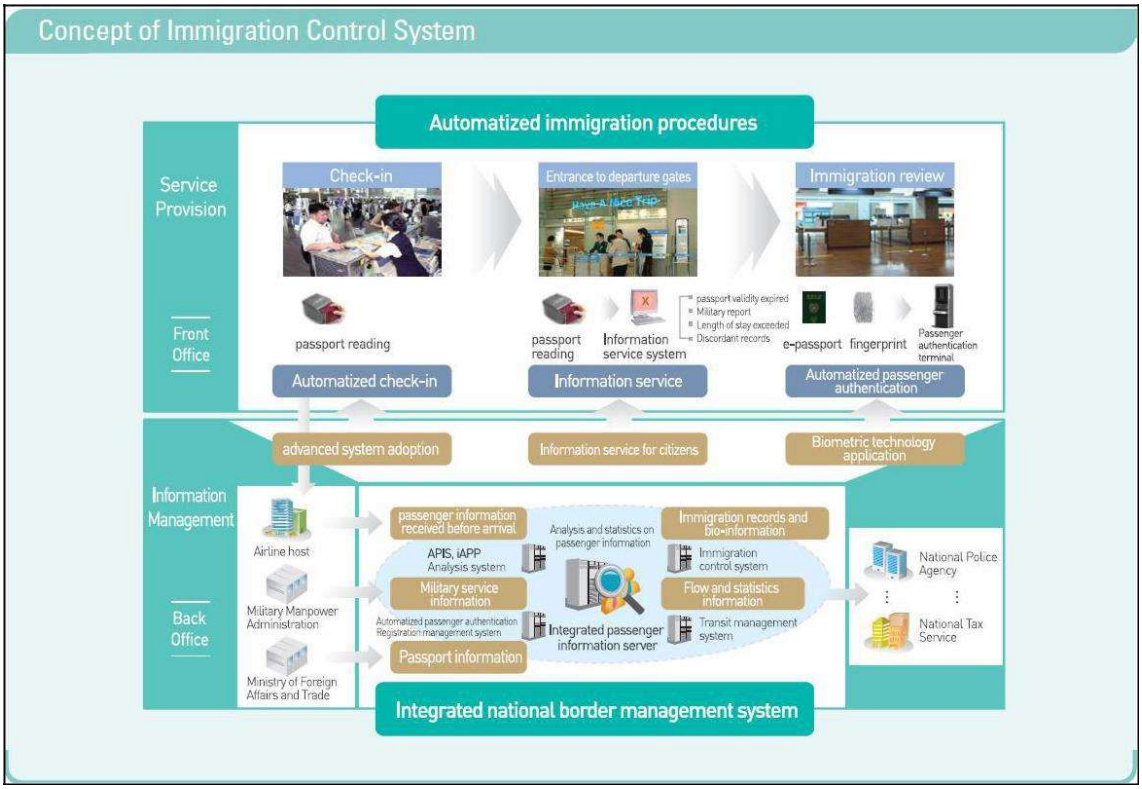


Figure 95 To-Be Model of e-Immigration

The services of Nigeria e-Immigration which will be implemented based on this model can be described as follows:

- Passenger information is delivered to the immigration authority from air carriers before their entry. The analytic results are displayed on the monitors of immigration counters for officers to use, facilitating faster immigration.
- By applying e-passport IC chip reading technology to the existing passport reading system, forged passports can be detected immediately and accurately through the process of chip certification.
- By applying bio-information (facial images) and biometrics technology (fingerprints) to immigration control, automatic immigration is possible without having to pass through the checkpoint counters.
- Comparing the information of passengers moving toward transit zones to the information of passengers actually on board allows the detection of illegal transit.

- Fingerprint data of entering foreigners entering Nigeria aged 17 or older and of unregistered foreigners staying in Nigeria for 91 days or longer are collected and utilized for accurate identification of disaster or accident victims and crime investigations.

(4) Detailed implementation plan

❑ Objectives

The objective of this initiative is to implement a comprehensive and unified e-Immigration system:

- To analyze the information on passengers scheduled to enter beforehand
- To handle the entire process of immigration electronically.
- To improve the national security with better reaction capability to forged passports.
- To provide foreigners with online visa application service.

❑ Directions

To alleviate inefficiency generated from the isolated systems, the system should be a truly integrated and optimized immigration management system.

❑ Strategies

- Get support from the Korean Government to minimize the cost and maximize the effect of e-Immigration system.
- Benchmark the Korean case.
- Design the operating model in detail.

❑ Implementation framework: Main MDA

- NIS

❑ Tentative Time schedule

Items	2014	2015		2016		2017		2018		2019		2020
Feasibility Study												
BRP/ISP												
Upgrade Current e-Immigration System												
Integration & Service Enhancement												
Equipment												
Training												
Completion												

Figure 96 Tentative Schedule: e-Immigration

❑ Tentative budget

Table 86 Tentative Budget: e-Immigration

Items	Activities	Amount (USD)
Feasibility Study	• As-is/to-be, action plan	300,000
BRP/ISP	• Enhance business procedure • Information system design	500,000
Upgrade Current e-Immigration System	• Analysis, Design, Implementation	2,000,000
Integration & Service Enhancement	• Analysis, Design, Implementation	3,000,000
Equipment	• Web/WAS/DB/Repository Server • Passport Scanner • Bio-information (facial image, fingerprint) Scanner	3,000,000
Training	• On-site • Overseas	700,000
Total		10,000,000

❑ Monitoring and Performance Evaluation

Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.

Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected effects

- National security can be improved with better reaction capability to forged passports.
- Automatic immigration gates can provide fast and accurate screening and increase passenger convenience and over all operational efficiency.
- Waiting time can be reduced and omissions of face-to-face reviews can protect privacy.
- The automatic immigration control system can reduce screening of local passengers to approximately 10~15 seconds.
- Cross-checking of data in MRZ (Machine Readable Zone) and chips can increase the accuracy of information management. The high-definition photo data stored in the chips can be also provided for crime investigations, further contributing to social safety in Nigeria.

Initiative #23: e-Voting

(1) As-Is analysis

❑ Current Status of Election

- Nigeria is a federation of 36 states with a federal capital territory and it has 774 local governments, about 8,800 registration areas, 111,119 polling units, senatorial districts, federal constituencies, and the state constituencies.

- The general observation is that conducting elections that are free, fair, peaceful and credible in a country such as Nigeria given its size, large population, terrain, and ethno-religious diversity is a difficult assignment even under normal circumstances

(2) Major issues

❑ Major issues

- Many Nigerians say that their political and electioneering process is branded with so many irregularities, ranging from ballot box snatching, stuffing of ballot boxes, political killings, using of political thugs to harass opposing candidates and finally weak Electoral Act. This mainly, is due to the fact that electoral processes in Nigeria are done manually and the result of such manual electoral process inevitably produces questionable electoral results.[76]
- The proposed adoption of e-Voting in Nigeria by the electoral body, the Independent National Electoral Commission (INEC), was resisted by the law makers and a sizeable portion of the populace.
- The reasons are connected with the previous unsuccessful attempts by government to implement such magnificent projects, particularly, the National ID card scheme; and lack of basic infrastructures to implement the system.[77]
- On January 13, 2013 one of major political parties Action Congress of Nigeria (ACN) has said "Nigeria must use electronic voting in 2015, it is time for the country to embrace electronic voting in order to ensure the integrity of its elections and hand over the elections back to Nigerians instead of the judiciary.
- Section 52 sub-section 2 of the Electoral Act bans the use of electronic voting, the National Assembly should move quickly to amend that part of the law, while the Federal Government should provide INEC with all the resources needed to make electronic voting a reality.

(3) To-Be Model

- e-Voting in controlled environments in polling stations, polling kiosks or other locations under the supervision of staff appointed by the electoral management body (EMB)
- Internet voting as an alternative channel while voting machines as the only voting channel available to voters in a polling station.
- e-Voting with physical evidence of the vote cast in the form of paper receipts for the voters
-
- e-Voting system with authentication

(4) Detailed implementation plan

❑ Objective

The objective of this initiative is to implement systems where all the voting process including the recording, casting and counting of votes in political elections can be done electronically.

[76] Shafi'í Muhammad Abdulhamid and Olawale Surajudeen Adebayo, The Design and Development of Real-Time EVoting System in Nigeria with Emphasis on Security and Result Veracity, *I. J. Computer Network and Information Security*, 2013, 5, 9-18.

[77] Ayo, C. K.and Adebiyi, A. A.and Sofoluwe, A. B. (2012), *E-VOTING IMPLEMENTATION IN NIGERIA: The Success Factors.* In Curbing Political Violence in Nigeria: The Role of Security Profession.

- Directions and strategies
  - e-Voting system developed by international partners with local companies
  - Define the goals clearly. Make sure electronic voting is the most appropriate solution.
  - Be aware of the challenges. None of the systems currently available is perfect, nor is there agreement on what a perfect e-voting system would look like. Learn from previous, international experience.
  - Get key stakeholders to buy in. Opponents of the system can and will come up with objections and weaknesses and create distrust in the system and potentially in the entire electoral process.
  - Provide for auditing and certification. These are important confidence-building measures and should be transparent, allowing stakeholders' access to procedures and documentation.
  - Allow enough time for project implementation. Usually the technical implementation of e-voting systems takes at least one year after awarding the tender and it takes a much longer time for an e-voting system to be socially accepted.
  - Plan for training, professional development, and civic and voter education. Well-informed stakeholders will find it easier to trust a new system.
  - Consider sustainability issues and plan for the future. Consider the total cost of ownership, including review, upgrades and replacement as well as adjustments to new requirements over time, rather than the one-time purchase costs.
- Implementation framework: Related MDA
  - INEC
- Tentative Time schedule

Items	2014	2015		2016		2017		2018		2019		2020
Feasibility Study												
BRP/ISP												
Implementation												
Equipment Installation												
Training												
Completion												

Figure 97 Tentative Schedule: e-Voting

- Tentative budget

Table 87 Tentative Budget: e-Voting

Items	Activities	Amount (USD)
Feasibility Study	• As-is/to-be, action plan	300,000
BRP/ISP	• Enhance business procedure • Information system design	500,000
Implementation	• Analysis, Design, Implementation	5,000,000

Items	Activities	Amount (USD)
Equipment Installation	• Web/WAS/DB/Repository Server • Voting Machine, Kiosk • Etc.	3,000,000
Training	• On-site • Overseas	700,000
Total		10,000,000

❑ Monitoring and Performance Evaluation

Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.

Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected effects

- Faster vote count and tabulation
- More accurate results as human error is excluded
- Efficient handling of complicated electoral systems formulae that require laborious counting procedures
- Improved presentation of complicated ballot papers
- Increased convenience for voters
- Potentially increased participation and turnout, particularly with the use of Internet voting
- More attuned to the needs of an increasingly mobile society
- Prevention of fraud in polling stations and during the transmission and tabulation of results by reducing human intervention
- Increased accessibility
- Possibility of multilingual user interfaces that can serve a multilingual electorate better than paper ballots
- Reduction of spoilt ballot papers as voting systems can warn voters about any invalid votes
- Potential long-term cost savings through savings in poll worker time, and reduced costs for the production and distribution of ballot papers
- Cost savings by using Internet voting: global reach with very little logistical overhead. No shipment costs, no delays in sending out material and receiving it back
- Compared to postal voting, Internet voting can reduce the incidence of vote-selling and family voting by allowing multiple voting where only the last vote counts and prevent manipulation with mail-in deadlines through direct control of voting times

***Initiative #24: Clean Civil Servant: Real-time Monitoring System at Local Government* (1) As-Is Analysis**

Improvement of transparency is regarded as one of the major benefits and goals of e-Government initiatives but some cases show little improvement even after major e-Government services were implemented.

❑ Case Study of Korea

South Korea is an example of those cases mentioned above. It was ranked at 46th in terms of corruption perception index (CPI) in 2013 while it was placed at 42th in 2001 when e-Government was fully initiated.

To tackle this challenging concern, Korean government launched a new e-Government initiative named 'ChungBaek-e' in 2010, which phonemically stands for a clean (incorrupt) government employee and of which main function is real-time e-Government system monitoring at Local Governments. The system applied to several district offices in selected local governments is now under being extended to all local government offices. The first pilot test was applied only to Gyunggi Province and its major cities but it turned out very effective with additional revenue increase accounting for about 2 billion KRW by imposing taxes which had been left out as well as more speedy work processes realized.

❑ Current Status in Nigeria

According to Transparency International (TI) report in 2013, Nigeria was placed at 144th in terms of corruption perception index (CPI). To maximize the benefits of e-Government in terms of transparency, a comprehensive strategy and a detailed action plan have to be developed from the early stage.

(2) Major Issues

Major challenges encountered are:

- Lack or immaturity of Local Government Information Systems;
- Lack of proper infrastructure for e-Government, especially in Local Governments;
- Lack of interoperability in terms of both offline and online government systems;
- Limitation of ex-post facto monitoring of misbehavior; and
- Limited collaboration between Federal, State and Local government due to the constraints of data sharing

(3) To-Be Model

Clean Civil Servant is an initiative to develop a real-time monitoring system at Local Government, of which conceptual map is depicted in Figure 98.

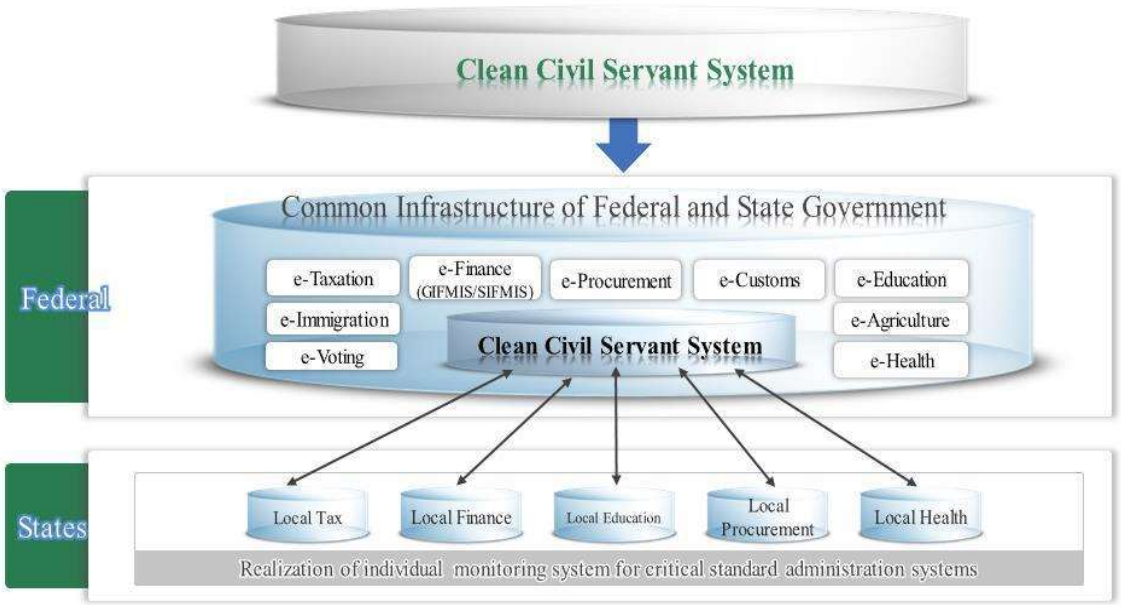


Figure 98 Conceptual Map of Clean Civil Servant

(4) Detailed Implementation Plan

❑ Objectives

The objective of this initiative is to implement a clean local administration to be trusted by the people.

❑ Directions

- Block the root causes of misbehavior of manipulating the administrative systems.
- Establish internal control system for local administration.
- Eliminate manual handling of data in licensing and permitting processes.
- Prevent revenue source omissions and maintain accounting transparency.

❑ Strategies

- Get support from the Korean Government to minimize the cost and maximize the effect of the system.
- Benchmark the Korean case.
- Make all the stakeholders be involved.
- Design the operating model in detail.
- Minimize the risk by starting with pilot tests.

❑ Implementation framework

- Main MDAs: FMoC, OHCSF, NITDA

❑ Tentative schedule

Items	2014	2015		2016		2017		2018		2019		2020
Concept Paper												
BPR / ISP												
1st Pilot Project												
2nd Pilot Project												
Nation-wide Distribution												
Capacity Building												

Figure 99 Tentative Schedule: Clean Civil Servant

❑ Tentative Budget

Table 88 Tentative Budget: Clean Civil Servant

Items	Details	Amount (USD)
F/S, BRP, ISP	Feasibility Study, Business Process Reengineering, Information Strategic Planning	1,000,000
1st Pilot Project	1 Pilot Project for selected State Governments	2,000,000

Items	Details	Amount (USD)
2nd Pilot Project	2 Pilot Project for selected State Governments	2,000,000
S/W Distribution and Capacity Building	Technical Training, Business Consulting, etc. (200,000 x 4 years)	800,000
Total		5,800,000

❑ Monitoring and performance evaluation

- Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
- Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected Effects

The Clean Civil Servant system increases Government reliability and transparency in local autonomy at State and Local Governments as depicted in Figure 100.

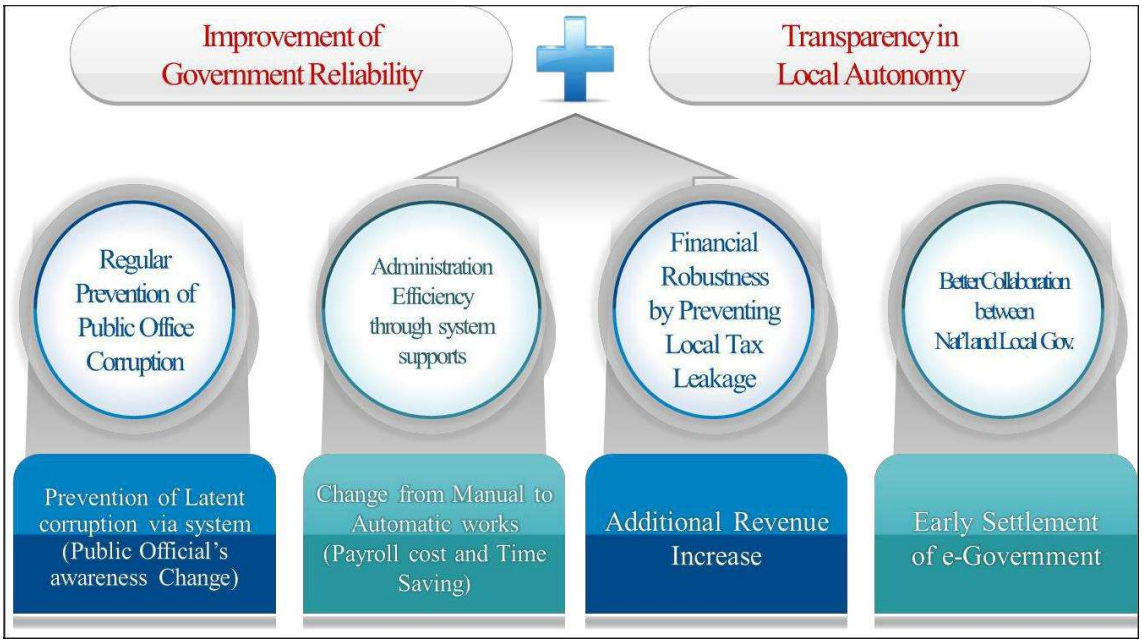


Figure 100 Benefits of Clean Civil Servant System

Initiative #25: Public Information Sharing System (PISS)

(1) As-Is Analysis

In some countries, as e-Government was getting more matured, it turned out that more paper documents were produced as opposed to the initial anticipation. It is primarily due to the persistent customary paper proof culture prevailing in public.

❑ Case Study of Korea

About 440 million paper-documents per year were submitted to administrative, public and private institutions. In result an average of 10 days was wasted simply in preparing

documents for administrative claim or petition service, which amounts nearly 2.7 trillion won (KRW) of social costs corresponding to 0.5% of GDP.

In order to alleviate (or remove if possible) such burden the Korean government determined to build data sharing system through which both governmental agencies and the public could significantly reduce time and costs in preparing and acquiring required paper documents. The core idea behind the Public Information Sharing System (PISS) is to relay data and information between the demander and the provider as depicted in Figure 102.

❑ Current Status in Nigeria

Enormous amount of paper transaction instead of data transaction is still the main method of business communication within (or between) MDAs.

(2) Major Issues

Major challenges encountered are:

- persistent customary paper proof culture prevailing in public;
- increase in demand for information processing which brings more work load with more documentation;
- increase of organizational rigidity which in turn leads to deterioration of the organization's responsiveness (flexibility) to the environmental change; and
- lack of data sharing culture between MDAs.

(3) To-Be Model

PISS is an initiative to introduce shared resource system to e-Government in Nigeria, of which conceptual map is depicted in Figure 101.

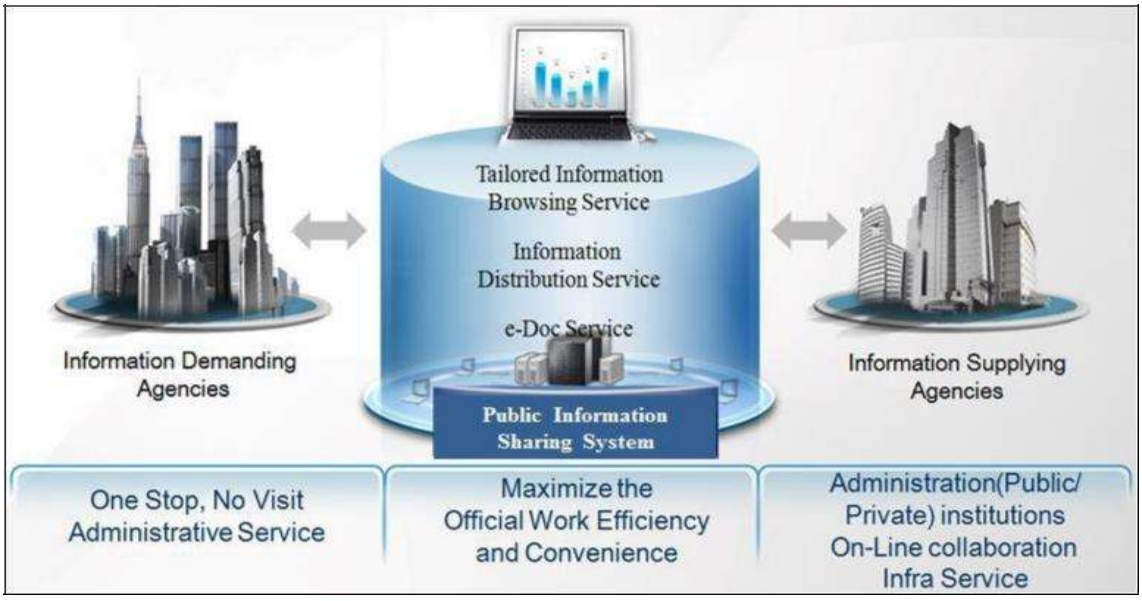


Figure 101 Concept Map of Public Information Sharing

System Figure 102 shows the to-be model of PISS.

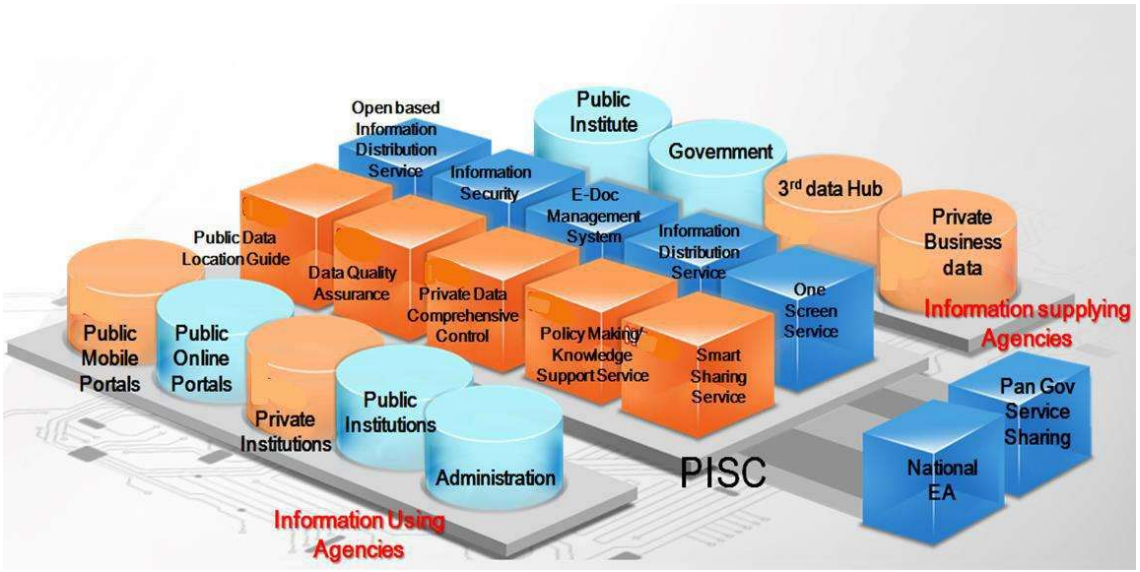


Figure 102 To-Be Model of Public Information Sharing System (PISS)

(4) Detailed Implementation Plan

❑ Objectives

The objective of this initiative is to increase the productivity by:

- providing one-stop administrative services;
- maximizing the official work efficiency and convenience; and
- providing all MDAs with infra-service for online collaboration.

❑ Directions

- Maximize the interoperability between different systems.
- Maximize the usage of the standard software framework.

❑ Strategies

- Get support from the Korean Government to minimize the cost and maximize the effect of the system.
- Benchmark the Korean case.
- Make all the stakeholders be involved.
- Design the operating model in detail.
- Minimize the risk by starting with pilot tests.

❑ Implementation framework

- Main MDAs: FMoC, OHCSF, NITDA, GBB

❑ Tentative schedule

Items	2014	2015		2016		2017		2018		2019		2020
Concept Paper												
BPR / ISP												
1st Phase												

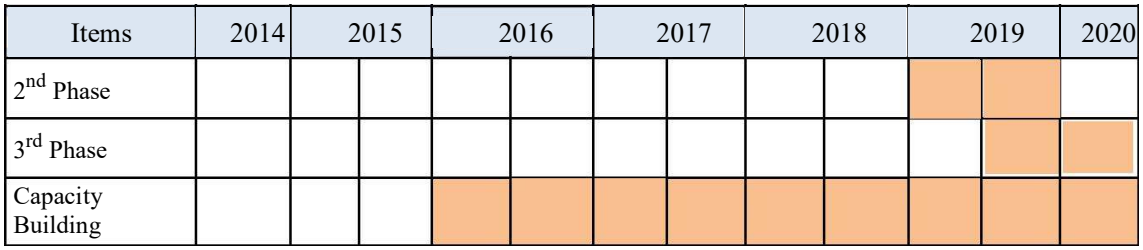


Figure 103 Tentative Schedule: PISS

❑ Tentative Budget

Table 89 Tentative Budget: PISS

Items	Details	Amount (USD)
F/S, BRP, ISP	Feasibility Study, Business Process Reengineering, Information Strategic Planning	1,000,000
1st Phase	System development interfacing it with a small number of selected systems	2,000,000
2nd Phase	Expansion of interface with major services	2,000,000
3rd Phase	Completion of the system by interfacing all MDAs	2,000,000
Capacity Building	Technical Training, Business Consulting, etc. (200,000 x 4 years)	800,000
Total		7,800,000

❑ Monitoring and performance evaluation

- Monitoring based on indicators representing the performance through ad-hoc, interim, completion, and post-project evaluation.
- Ad-hoc, interim, completion, and post-project evaluation shall be conducted.

❑ Expected Effects

- Public Information Sharing System (PISS) will increase Government efficiency and productivity.
- PISS will bring huge amount of cost reduction.
- PISS will dramatically reduce the processing time for administration services

7.8 Nigeria's e-Government Road Map

A3 PowerPoint Slide Insertion

Figure 104 Nigeria e-Government 2020 Road Map

7.9 Change Management as a Critical Success Factor in e-Government Implementation

7.9.1 Definition and Concepts of Change Management

Change management is a structured approach to transitioning individuals, teams, and organizations from the current state to the desired future state (Sacheva, 2009, p. 109). It is an organizational process aimed at empowering employees to accept and embrace changes in their current business environment (Hiatt, 2010). Change management has been widely acknowledged as a critical success factor in software systems (Apostolou, Mentzas, Stojanovic, Thoenssen and Pariente Lobo, 2011).

Change management can be reactive, i.e. responding to changes in the macro environment, proactive in order to achieve the desired goal, continuous basis, or program by program basis, i.e. ad-hoc basis (Sacheva, 2009).

In the context of organizational change, change management consists of a hard side and a soft side. The hard side refers to the processes, systems, strategies, tactics, and technologies that will help to implement changes and the soft side involves behavioral and attitudinal changes (e.g. persuading, reassuring and communicating, identifying and addressing emotional reactions, influencing and motivating) that will allow the hard changes to be successful (Dias de Lima, 2009).

7.9.2 Change Management in e-Government Implementation

Change management in software engineering, in particular software evolution as well as change management of business processes have been extensively studied, while corresponding methods and tools that support change management of e-Government services are still missing at large (Apostolou et al., 2011). e-Government services pose unique challenges to change management because they require the co-evolution of the front office service and related back office IT infrastructure (Apostolou et al.,2011). In determination of critical issues in e-Government implementation initiatives, there is a strong need to adequately address the change of management issues. Managing e-Government is invariably managing change (Saboohi and Sushil, 2010).

Poor change management strategy is one of the causes why the success rate of e-Government projects is dismal, especially in developing countries (Kifle and Low Kim Cheng, 2009; Saboohi and Sushil, 2010). In one survey by Heeks (2003), only 15 percent of e-Government projects in developing countries are successful, 35 percent are total failures and 50 percent partial failures. Kifle and Low Kim Cheng (2009) analysed core factors of leadership in e-Government implementation in twelve ministries in Brunei and identified that poor change management strategy is one area that has been overlooked in Brunei e-Government. Government has no strategy how to handle changes brought on by technology, like changes in policy, culture, mindset, organizational structure and process; e.g. simple application of using email system failed as people still treated papers as the only official tool of communication as it has signature on it. Civil servants need to change their thinking and accept e-ways.

Ndou (2004) e.g. points out that to change management (especially in e-Government implementation) should be divided in change management approach and management of resistance to change. The first refers to change management procedures established within organizations, e.g. identification of bureaucracy, silos, and cultures in the public sector that helps as e-Government should revolutionize and reinvent government processes and functions. The second – management of resistance to change refers to managing the

resistance to change by the employees as this is one of the biggest barriers to a successful change. Sacheva (2009) enumerate numerous causes why people resist changes in e-Government implementation, such as long implementation cycle, unknown drivers, lack of clarity of a vision, inadequately support of the top management, the process change, official secrets, un-measurable benefits, disjointed systems and departments, fear of job loss, fear of loss power, change in job profile, cultural gap, comfort with status quo, work overload, etc.

There has to be emphasized that managing the changes of e-Government is very complex not only due to overload so many resistance to change, but also because e-Government services are frequently distributed over different IT systems and organizations. Even if they are provided and managed by a single organization, their design and development rely on the collaboration of many people with different roles (Apostolou et al., 2011). Moreover, changes may be triggered by events from outside the public administration such as globalization, new opportunities, pressure of good governance, stakeholders needs, new technology, the e-platform, governments policies and legislation, public-private partnership over which public administration has little or no control (Saboohi and Sushil, 2010).

Although managing changes in e-Government implementation is quite hard and complex, some cases of successful change management exist. Sacheva (2009) provides one example of Kotter`s Eight-step Change Model in the National eGovernance Plan (NeGP) program of the Government in India. For initial two years the e-Government manager and IT secretary spoke of the need of a comprehensive program. All stakeholders were sensitized to the program and thereafter a team of internal and external consultants were identified. The vision is created and that is “to have all government services accessible to the common man in his locality through a One-Stop-Shop”. The vision was presented to the stakeholders and a high powered committee made up of 27 members of parliament. Then the structure was established to make the adoption of e-Government permanent. Another example is of Lewin`s model and is demonstrated by the Chief Minister who initially unfroze the GoAP (Goal-Oriented Action Planning) employees from their comfort zones by regular and surprise inspections. He ensured that the message was received so the need to improve services is fully understood. He brought the transition period of 7–8 years to bring change through e-Government. After that he unfroze the model through regular video conferences with state government officials and the adoption of paperless office.

7.9.3 Changes to Be Managed in e-Government Implementation

Changes in technology bring changes in policy, culture, mindset, organizational structure, and the process (Kifle and Low Kim Cheng, 2009). This claim is consistent with the socio-technical view on organization that regards an organization as a socio-technical system built from two correlated systems – social and technical. The technical system is composed of the processes, tasks, and technologies needed to transform input into output, whereas the social system is composed of people (their believes, skills, values, knowledge, needs), the relationships between them, remuneration systems and authority structures (Bostrom and Heinen, 1977). Every (trans)formation of an organisation as a system must consider these two sub-systems.

The following figure shows Leavitt's extended model that illustrates an organization as a system of people, structure, process, technology and organisational culture and its revised model in which ICT is a central actor. These key elements of organisation are independent, which means that changes in one of them cause changes in the other. For example, changes in technology cause changes in processes and consequently in people, culture and structure.

From the review of existing literature that deals with the relationship between ICT and organizational changes in e-Government period, necessary changes of each of the five elements of the extended Leavitt`s model would be identified. This is presented in Table 61. There exists awareness of that these are not all of the changes that have to be managed in e-Government implementation process, but on the other hand we believe that if managers take into an account at least this set of changes, e-Government projects would be more successful. Leaders are therefore the most important success factor of managing, realizing and implementing such changes. To manage such complex system with so many changes the new style of leadership is needed in e-Government implementation.

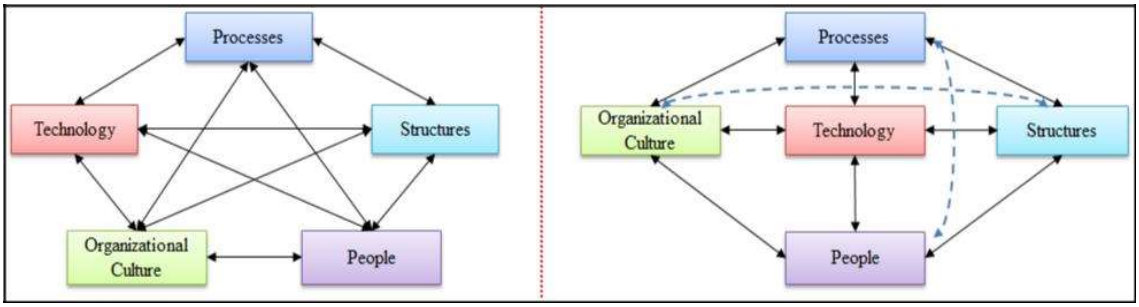


Figure 105 Leavitt's Organizational Model and Adjusted Model *Source: Norgrasek (2011), Business Systems Research, Vol.2, No.2, pp. 13-24*

Table 90 Necessary Changes of Individual Elements to Be Managed in e-Government Implementation

Element	Extent of Changes
Technology	· national information infrastructure · network infrastructure and network databases · architecture interoperability · compatible data standards (Extensible Markup Language – XML) · compatible technical standards · security models · implementation of discussion support, multimedia, automation, · tracking and tracing and personal identification technologies
Processes	· changes to the entire process (consideration of business process change principles from the private sector) · significantly accelerated process execution (from a few minutes to a couple of seconds); process can be executed 24/7 · horizontal (integration among functions and departments) and vertical process executions (integration among organisations) · changes to the rules, which determine the process (trust,safety, maintenance and integrity must be dealt with therein)

Element	Extent of Changes
People	· employees must gain a horizontal process view · new and complex skills (e.g. self-organisation, confrontation with unexpected tasks) and knowledge · staff training must be organised, collective learning must be encouraged · leaders must be able to combine their ICT knowledge and skills with their understanding of the process dimension · leaders must be able to develop a strategic vision and comprehensive human resource management, project management and user-orientation strategies
Organizational Culture	· transition to a service-oriented culture · employees must overcome departmentalisation thinking · organisational loyalty must be strengthened · employees must be encouraged to perform more challenging tasks, to be willing to take responsibility · inter-departmental and inter-organisational cooperation and trust must be strengthened · understanding of organisational learning must be strengthened · leaders' way of thinking must be radically changed
Structure	· it must be taken into account, that, on one hand, due to the horizontal and vertical integration (activities are being de-centralised, a great level of flexibility in task-performing is required), tasks are undergoing a de-specialisation process, while on the other hand, a new task-structuring is required · data digitalisation must be standardised, procedures being standardised for several departments or organisations simultaneously (e.g. the introduction of e-public procurement), common standards being applied (e.g. XML structures) · as procedures are simplified and informatised, the level of formalization is decreased, while, on the other hand, a new procedure execution method requires new record safety, trust, maintenance and integrity rules · decisions on the introduction of e-Government is transferred to e-leaders, which appear both on the top (eLeadership) and the middle level (eChampions, CIO leaders), which leads to a decentralized decision-making process, nevertheless their coordination and control role is strengthened · hierarchical structure is transformed into a network one

7.9.4 New Style of Leadership as a Critical Success Factor

Many researchers insist that one of the precondition for successful transformation of public sector organizations is the role of leadership (e.g. Ho, 2002; O`Donnell, Boyle and Timonen, 2003; Scholl, 2003; Griffin, Foster and Halpin, 2004; Schedler and Schmidt, 2004; Leitner and Kreuzeder, 2005; Elnaghi, Alshawi and Missi, 2007). Thus, leadership in e-Government is currently receiving considerable attention.

The first generation of e-Government leaders implementing projects across sectors and levels are pioneers. They are tackling the big challenges of e-Government and assuming professional risks as they excercise their skills in cross boundary leadership. From their experiences they create a set of practices and policies for future generations of e-Government leaders (Elnaghi et al., 2007). From their current and further experiences, they have created some lists of competencies that leaders should have for a successful e-Government implementation. OECD (2003b) list of essential skills of e-Government leaders for dealing with e-Government processes apart from basic technical skills, enumerates information management, information society and management skills (Table 91). Enlaghi et al. (2007) provides other e-Government leadership competencies that are divided into three groups – i.e. setting new directions transforming processes, resource usage, and using information strategically (Table 92).

From the above listed competencies and skills of e-Government leadership, we can see that skills to drive change in e-Government implementation are very complex. Elnaghi et al. (2007) talks about the need of new visionary style of leadership – those who can best help navigate unknown challenges ahead. Leitner and Kreuzeder (2005) further note that e-Government calls for strong leadership at different levels to provide a strategic vision and the operational implementation of innovation and change management in public administration. The transformation cannot be made by the public service alone but it requires strong and committed leadership at the political level. Commitment of politicians and public sector managers is crucial in order to manage change. They also talk about new top level leadership (eLeaders) and mid-level leadership (eChampions) that are responsible to drive changes in organizations. Some authors warn that it is important that top public managers do not hand over responsibility for e-Government to the professional IT experts (Joyce, 2002; Kifle and Low Kim Cheng, 2009). Kifle and Low Kim Cheng (2009) in studying e-Government in Brunei government realize that the way of e-Government implementation in Brunei is bottom-up rather than top-down. Such way is appropriate for the private sector and not for major changes in the public sector. They conclude that innovation in the public sector has to be top-down first and followed bottom-up approach. They further point out that poor change management strategy is one of the critical leadership issues in e-Government implementation and is too overlooked in Brunei government.

After all discussion of the required new leadership style of managing changes in e-Government implementation, there has to be emphasized that the main problem of public managers is that they treated e-Government just as “technological mission”. However, they have to work on organizational infrastructure if they want to realize full potential of new technologies, especially in achieving joined-up, network government. E.g. Naill Barry, at the Department of Social, Community and Family Affairs in Dublin, considers that building the organizational infrastructure for e-Government could take between 12 to 18 months (Joyce, 2002).

Table 91 Essential Skills for Dealing with e-Government Processes

Skills	Needed by
Information Technology	All employees, managers and IT specialists
Basic IT Literacy	
Specialist IT Skills	

Skills	Needed by
Information Management	Managers and IM specialists
Internal Information Management	
External Information Management	
Privacy Protection	
Feedback Mechanisms	
Information Society	Managers
Understand Capability of ICT	
Ability to Evaluate Trends	
Foresee ICT's Impact on Organizational Culture	
Ability to Set ICT Strategy	
Management/Business	Managers
Organizational Change	
Risk management	
Accountability Frameworks	
Financing Arrangements	
Cooperation and Collaboration	
Public-Private partnership	

Source: Leitner and Kreuzeder, 2005, p. 213

Table 92 e-Government Leadership Competencies

Setting New Directions	
Policy of e-Government	Understanding the environment, principles, policies, and foundations
Thinking Challenges	Applying systems thinking to complex e-Government
Planning	Planning and organizing strategically for e-Government
Change	Transforming organizations and cultures to sustain e-Government
Transforming Processes and Resource Use	
Collaboration	Collaborating across boundaries to achieve e-Government goals
Architecture and Systems	Understanding and applying effective architecture and enterprise integration for e-Government
Human Capital	Using new models to extend human capital for e-Government
Financial Resources and Investment management	Planning and managing funds resources strategically for e-Government
Performance Management	Managing performance-based e-Government programs and projects
Execution/Implementation	Moving from concept to reality

Using Information Strategically	
Information and Knowledge Resources	Providing the right information and knowledge at the right time within and across boundaries
Security and Privacy	Balancing security, privacy, access issues, and protection of information
Technologies	Understanding strategic uses of information through the use of technologies

7.9.5 Change Management Model in e-Government Implementation

Figure 106 shows conceptual change management model of e-Government implementation in which in the centre the adjusted model is positioned representing the role of ICT in the e-Government period in relation to other organizational factors. All changes that occurred in each of the element of the adjusted model have to be managed and included in comprehensive change management strategy. Those changes have to be managed by e-Government leaders that have to conquer adequate skills to manage them (see Table 91 and Table 92) and select the most appropriate change management model that is suitable for their particular organization.

There is no doubt, that successful introduction of changes in e-Government requires interdisciplinary approaches and leaders who are able to combine their ICT knowledge with their understanding of the process dimension (Griffin et al., 2004). The awareness must be strengthened that e-Government calls for strong leaders at various levels. A new top management (eLeadership) and new middle management (eChampions) are required, who will be able to develop a strategic vision and execution of changes in the e-Government processes. On the other hand, the transformation cannot be made by the public service alone but requires strong and committed leadership at the political level. Commitment of politicians and public sector managers are crucial in order to manage change. (Leitner and Kreuzeder, 2005). Elnaghi et al. (2007) who place emphasis upon the role of leading figures in an organisation as the key actors for a successful e-Government implementation, warn that lack of authority is the main obstacle towards the development of e-Government, which is regarded by leaders as a technological mission and not as a strategic vision.

As there have been acknowledged so many unsuccessful introductions of changes in e-Government, Ndou (2004) pointed out that change management (especially in e-Government implementation) should be divided into change management approach and management of resistance to change. Ndou's idea should be in the place and have to be included in change management strategy.

Proposed change management model is as far behind its realization, but considering so many unsuccessful introductions of changes in the past, the main barriers could be identified and change management strategies have to offer solutions to pass through of them.

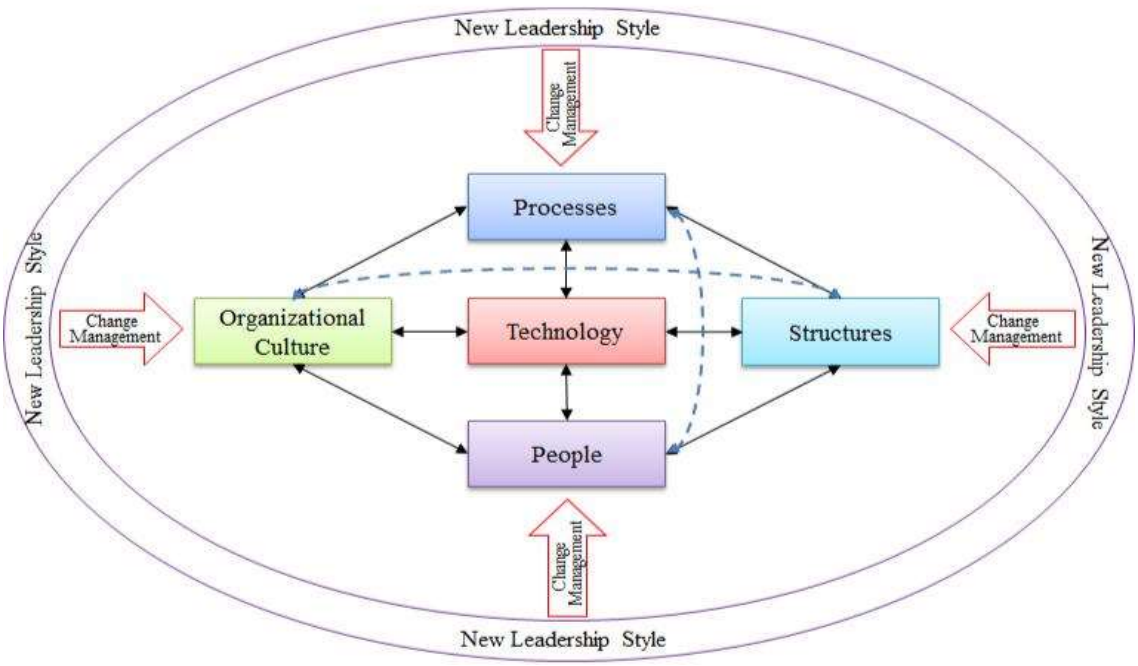


Figure 106 Change Management Model of e-Government Implementation

Source:
Norgrasek (2011), Business Systems Research, Vol.2, No.2, p. 20

VIII. POST-IMPLEMENTATION

8.1 Monitoring and Evaluation

8.1.1 Project Monitoring

The project management body performs general management of the project, controlling major factors including the scope of the project schedule, expenses, quality, human resources, telecommunication, risks, purchases and customer relationship. The project monitoring includes all activities performed to ensure the success of the project, such as systematically collecting managerial and financial information generated from the implementation of the project reconfirming the objectives, identifying and addressing potential problems at the early stage, and collecting input information for post-evaluation. The monitoring plan, corresponding to the evaluation objectives, should be set up at the early stage to effectively carry out monitoring. In addition, it is crucial to comprehensively monitor not only external risk factors impacting the implementation of e-Government, but also internal restraints resulting from the system development.

The core risks of the e-Government project, identified from many experiences, vary from strategies to information security (Table 93). These risks should be always monitored during project implementation.

Table 93 Risks of e-Government and Corresponding Strategies

Risk	Problem	Corresponding Strategy
Strategy	The project fails to achieve national goal, causing uneconomical management of the organization	Validity review for direction of e-Government
Administrative Culture	Sectionalism and resistance of bureaucracy against changes and standards	Strong determination and involvement of the leader
Change Management	More emphasis on automation of existing process than effective solution suggested by BPR, and more focus on the demand and convenience of the organization than the demand and satisfaction of citizens.	Staffs' participation in planning process, and provision of training for them
Project Management	Poor procurement plan and dependency on a few vendors	Development of competitive procurement plan and introduction of incentive system
Finance	Errors in estimation of lifetime cost, little cost reduction, the existence of legacy system and sunk cost	Utilization of neutral and professional financial plan made by the third party
Performance Management	More emphasis on the system operating time rather than the performance benefit of the project	Introduction of an evaluation method enabling assessment of long-term, intangible effects

Risk	Problem	Corresponding Strategy
Standard	Adoption of sectional standard based on the internal demand of the organization rather than interoperability among organizations	Cooperation among ministries focusing on ministerial linkage
Technology	Adoption of promptly applicable tools and methods suggested by a few vendors and adoption of poorly functioning applications	Adoption of competitive bidding, piloting/prototyping
Data Management	Errors made by data loss/misuse, possibility of data dependency on other organizations	Data warehouse/backup, process mapping, information - sharing and co-utilization
User Demand	Development of the system not reflecting the users' demand	Full adoption of users' demand
Personal Information	Violation of privacy, intellectual property right, and classified national information	Control of access to electronic authentication, trainings
Information Security	Vulnerability of system, website, networks, and information misuse	Security plan authentication corresponding to the level of threats, fire walls

Table 94 Check List for Monitoring Progress

Perspective	Factors	Monitoring Items
Vision and Change	Vision & Leadership	▪ Clear vision and long-term goals ▪ Leader's concern and involvement
	Government Reform	▪ Linkage to government reform ▪ Examination of external barriers
Institutional Rearrangements	Inter-agency Coordination	▪ Inter-agency cooperation and coordination ▪ Inter-agency information sharing and interoperability
	Resource Allocation	▪ Budget allocation ▪ Human resource ▪ Technology of the state of the art
	Institutional	▪ Legal & institutional rearrangements
Customer	Access	▪ Respond to customer needs ▪ Improving access to online service
	User Requirements	▪ Users and stakeholders
Governance	Accountability	▪ Inter-agency accountability ▪ Self-correction mechanism ▪ Public relations
	Security and Privacy	▪ Privacy protection ▪ Information security
Project Management	Scope	▪ Consistency between vision & goals and project

	Time Schedule	▪ Managing time schedule
	Risk	▪ Overcoming dependency of outsourcing ▪ Protecting privacy and national credentials
	Customer	▪ Reflecting user requirements ▪ Upgrading user's expediency
	Change	▪ Explaining rationales for change ▪ Managing change content and its expected effects

8.1.2 Evaluation

8.1.2.1 Significance of Evaluation Activities

Evaluation is a kind of control activity, systematically analyzing the overall process from objective setting to project completion in order to improve the performance of the project. The evaluation activities include the pre-assessment to generate the best outcome, the performance evaluation to review whether the original objectives were well achieved, the process evaluation to assess the appropriateness of project processes, and the meta evaluation to examine the appropriateness of evaluation system..

In general, the national assembly and the citizens show great interests in the outcome of the input budget. Yet, it is quite difficult to quantitatively measure the outcome of resources input to e-Government, shown as Return on Investment (ROI), performance. Accordingly, many countries are developing a variety of methods to measure long-term, intangible and potential benefits of e-Government.

Table 95 Methods of e-Government Performance Evaluation

Standard	Expected Value	Methodology	Direction
Impact	Intangible, long-term	Balanced Scorecard (BSC)	
Outcome	Benefit and cost	Benefit/cost analysis (BCA) Information Economics (IE)	
Output	Tangible and short-term	Return on investment (ROI) Internal Rate of Return (IRR) Net Present Value (NPV)	

8.1.2.2 Contents and Methods

The evaluation for the e-Government project is difficult because its performance is not long-term and tangible, but short and intangible. Due to such reasons, a lot of evaluation models including the Balanced Score Card (BSC) model, which is good for evaluating long-term performance, are developed and adopted by many countries. The BSC carries out the evaluation by looking at the government projects in terms of finance, internal process innovation, training for staffs' development, customer satisfaction. Yet, most of government projects are evaluated by ROI, which is measurable and factual.

Korean government performs the annual evaluation for national informatization project. The evaluation for the e-Government project is done for 3 stages; formation, implementation and

performance. At the formation on stage, the relevance of goals and fullness of the content of the plan are weighted by 20%. At the implementation stage, the efficiency and appropriateness of processes are weighted by 30%. Lastly, at the performance stage, 50% weight is imposed on effectiveness and impact. Imposing 50% weight on performance can be found in many evaluation models including the Office of Management & Budget Program Assessment Rating Tool (PART) made by USA.

Table 96 Criteria and Factors for Policy Evaluation in Korea

Stage	Evaluation Criteria	Weight	Evaluation Factors
Formation	1. Relevance of goals	10	1-1. Appropriateness of high level objectives and their correspondence with environment 1-2. Clarity of objectives
	2. Fullness of the content of the plan	10	2-1. Thoroughness of methods 2-2. Implementation of related processes such as collection of public opinion
Implementation	3. Efficiency	10	3-1. Project progress 3-2. Effective utilization of resources
	4. Appropriateness of process	20	4-1. Responsiveness to changes in environment 4-2. Promotion for people and stakeholders 40-10. Cooperation with related organizations
Performance	5. Effectiveness	30	5.1 Achievement of the initial objective
	6. Impact	20	6-1. Actual effectiveness of policies

The result of performance evaluation of the e-Government project can be differed by the way of setting performance objectives. The objectives should be able to show an ideal and desirable future, while relatively tangible and concrete. Such objectives can help the constituents of the organization perform better management by objectives (MBO).

Table 97 Exemplary Performance Objectives of e-Government

Performance Index	Sub-Index	Measurement
Finance	Budget (personnel) reduction Income increase	Benefit/Cost Analysis Return on Investment
Service Improvement	Service response	Reduction in time taken to process civil services (getting approvals/permissions) The number of visitors and viewers of website
	Customer satisfaction	Staff satisfaction Customer satisfaction

Performance Index	Sub-Index	Measurement
Process Innovation	Reduction in repetitive work processes Reduction in overlapping investment in IT	Work process streamlining and reduction in attached documents Co-utilization of database

8.1.2.3 Organization for Evaluation

The organization for evaluation plays an important role in improving the outcomes of evaluation. Generally, in USA, UK and Canada, the ministry of finance carries out the evaluation focusing on financial performance, while in France, Germany and Japan, the office of prime minister, or a general administrative organization do not focusing on administrative control. As such difference makes dissimilar performance of e-Government, it is desirable to set up an appropriate organization for evaluation, reflecting distinction

In Korea, the evaluation committee for national informatization, chaired by the minister of the office for government policy coordination, has carried out the evaluation since 1996 when the Basic Informatization Promotion Act was enacted. Nowadays, many of its functions are decentralized and devolved as the evaluation becomes its main function

8.2 Operation and Maintenance

8.2.1 System Operation and Maintenance

It is important for securing users' convenience to set up the plan for system operation and maintenance after development.

Firstly, a comprehensive plan should be set up for system operation and maintenance. In general, the system receives 'after service' during several months for customization. Yet, chances are high that the operational plan after 'after service' is not developed or implemented. Without full preparation for this stage, the users would experience inconvenience, becoming reluctant to use the system. Therefore, the thorough plan for operation and maintenance should be developed; bearing in mind that it also requires expertise to maintain and operate the system, just like system development.

Secondly, the appropriate budget should be allocated to operation and maintenance. In general, it is about 10% of the budget for system development. However, the leader who considers only visible outcome shows interests in the development of the information system, but does not care for management of the developed system. As a result, it becomes difficult to secure sufficient financial and human resources as well as appropriate operational structure crucial for system management. In this case, the utilization of the system may be hindered, making the system a total failure. The structure of expenses required for system operation and maintenance after system design and development is as follows:

- Hardware: Maintenance, Upgrading, Lifecycle renewal
- Software: Maintenance, Upgrading, Patent loyalty
- Operation and maintenance support (government, contractor)
  - Supervision of program management
  - Operation
  - Security
  - Helpdesk
- Education and on-the-job training

- Other operation and maintenance activities

The system cannot properly provide services if the expenses for operation and maintenance are not reflected at the budget, before the completion of system development. Generally, the cost for system operation and maintenance is not fluctuant unlike system development. However, it should be considered that loyalty may have to be additionally paid for the system developed by other ministry according to an IPR contract. Therefore, it is desirable to make a more detailed contract for system development, in preparation for such situation.

8.2.1.1 IPPR for Personnel Policy Support System

Korean government developed the Personnel Policy Support System (PPSS) as one of the first phase of e-Government project. It was one of the best Personnel System developed by Korean company, customized to manage the governmental officers according to the human resources management policy of the central government. It manages all processes of human resources management, including recruiting, job rotation, promotion, on the job training, payment, retirement. By doing so, it enabled the organization to position right persons to the right places, and allowed an individual to manage his/her careers, improving efficiency and transparency of human resources management.

The system was successfully installed at 4 model organizations. However, when distributing the system to other 54 central administrative organization, huge additional cost was incurred. As the contract was made to purchase a system developed by a private company and customize it into the PSPP, whenever other ministry adopted the PSPP additional payment for the use and customization of the system had to be made. Accordingly, the expansion of the PSPP was blocked because the additional cost, much larger than the cost for system development had to be made. Therefore, a lesson can be learned that an indisputable condition for IPR should be clarified in the contract to be prepared for such problem.

8.2.2 Information Resource Management

Information resources management means a comprehensive system to manage technological resources of e-Government, including hardware, software and network. The need for comprehensive management of information resources is increasing, as a lot of resource inputs are made to the E-Government project corresponding to rapid development in ICT.

If there is no national plan to comprehensively manage information resources, chances are high that a lot of information resources are duplicated or dead-stored, due to lack of cooperation among ministries, causing an uneconomical result. In addition, many governmental organizations may fail to secure either enough experts or sufficient place, required to manage the information system, causing concerns for the efficiency and security of information system management. Therefore, the effective management of information resources should be viewed as a national task, as critical as system development. Yet, many countries not only fail to set up a comprehensive plan for information resources management, but even do not understand the current status of information resources.

As e-Government aims at seamless integration and linkage, many discussions are ongoing regarding the economics of integrated management as well as security of information resources. The integrated management of information resources has many advantages, in general, yet, can be heavily criticized from a standpoint of security. Some argue that the physical collocation of information resources is vulnerable to terrors or physical attacks, while the others point out that it contributes to achieving the economy of scale for information security. In this case, a systematic design for backup functions is crucial.

8.2.2.1 National Computing & Information Resource Administration

Korean government has implemented the National Computing & Information Resources Administration (NCIR). This project is an outstanding case of integrated management of information resources, which can be found only in a few countries including Austria.

The decentralized management of information resources by each ministry caused a lot of problems in the areas such as upgrade of technologies, sharing and co-utilization of information, security, specialization of supporting organizations and personnel, securing spaces for equipment.

As many ministries placed servers at the cramped space of the basement, and delivered services with only a few non-special staffs, the security and management turned out to be vulnerable. Unlike pure back-office tasks, a small error of information resources management for online civil services can result in a huge social problem.

The NCIR project was initiated as one of 11 unit projects of the first phase of E-Government to solve such problems, but terminated only completing the BPR for 2 years, due to serious confrontation among ministries. The major issues included the economy of scale, security and technical expertise. However, the real key issue was who will be responsible for the NCIR.

The second phase of e-Government was able to complete ISP by designating Ministry of Information and Communication as a main ministry responsible for the project.

The MIC selected the site and the building for the first centre, and started to move the information system including servers in October, 2005. The 2nd centre was at the provincial city, hundreds kilometers far from the 1st centre. In a standpoint of security design, it was the most important to keep geographical distance between the 1st and the 2nd centre, and to design a real time mutual backup system. About 300 million USD was invested in the NCIR project.

Most outcomes of the e-Government project are intangible, like service delivery through the computer. On the other hand, the NCIR is able to show some physical outcomes such as a physical location, bringing promotional effects.

8.3 Utilization Management

8.3.1 Publicity Activities

One of practical problems the e-Government project is facing after completion is how to promote the system utilization of the users. The system can be fully utilized, delivering services customized to reflect users' interests and securing convenience and timeliness of usage based on high acknowledgement of users, regarding the services.

There is a paradox promotional activities face; the active promotion of the system by the government aiming at increase of system utilization, will lead to high expectation of users, making even small errors of system operation intolerable. On the other hand, without active promotion, the system will be poorly utilized since users' acknowledgement for services provided by the system is low. Therefore, the level of promotional activities should be appropriately decided so that e-Government services are not recognized as a panacea of civil services.

One solution for this dilemma is to make people understand the fact that information services, unlike face-to face administrative services, are delivered online, causing some administrative and technical problems, which can be perfectly customized after trials and errors at the early stage. For this, the Gartner Group suggested the Hype Cycle Mode of e-Government; the

peak of inflated expectation for e-Government, caused by a technical trigger, will soon be lowered while going through the trough of disillusion. After moving up the slope of enlightenment and the plateau of productivity, it evolves into the maturity level (Gartner, 2002).

8.3.2 Training

Appropriate trainings to facilitate users' system unitization are one of the important post-implementation activities

8.3.3 Feedback

Feedback is an activity of comprehensive reviewing the outcomes of e-Government processes including planning, implementation and evaluation, and applying the learning to the next project. The implementation of e-Government generates a variety of success and failure cases. In order to feedback the studying result of success and failure cases to the next project, the responsibility of keeping daily records should be assigned to a staff. At the same time, it is desirable to make some of committee members and public officers, who participated in the previous e-Government project, work for the next one as well, in order to keep work consistency and continuity in spite of power transition.

8.3.3.1 Recording the Implementation Process of the Project

The special committee for e-Government preserved the records of the comments each member made and the meeting minutes generated during the implementation of the first and second phase of e-Government. In addition, it published the white paper on e-Government, which contained all related records and documents including the project plan, progress reports, the list of participants (committee members, public officers, private companies), success factors and restraints, lessons. The records and archives are important, being used not only as a tool to secure administrative transparency and responsibility but also as critical learning materials for next e-Government project.

IX. CONCLUSION

9.1 Nigeria e-Government 2020 Framework

The following figure depicts that the successful implementation of the e-Government master plan will contribute to the accomplishment of the Vision 20:2020.

Nigeria e-Government 2020 Framework

A3 PowerPoint Slide Insertion

Figure 107 Nigeria e-Government 2020 Framework

9.2 Recommendations for Success

9.2.1 Seven Critical Success Factor

In order to successfully implement the e-Government in Nigeria, it is strongly recommended to take into consideration at the least the following six success factors that underlies the notable achievement in e-Government found in the advanced countries.

CSF-1. Adoption of the Master Plan of Nigeria e-Government as a National Agenda CSF-2. Sustained Investment in e-Government

The sustained investment is required for transforming the nation by ICT/e-Government.

- 1% of the national budget shall be invested into e-Government implementation every year
- It is highly recommended to create and utilize the Information and Telecommunication Promotion Fund to build e-Government projects

CSF-3. Appropriate Institution for Each Phase of e-Government Implementation

In order to sustain e-Government implementation, appropriate laws need to be enacted during each phase ensuring a positive enabling environment for e-Government.

- The establishment of legal systems and the empowerment from the President to the project steering organization will keep Nigeria e-Government policies and strategies consistent.

CSF-4. Dedicated Organization Structure for e-Government Implementation

It is critical to form a dedicated organization structure for e-Government implementation.

- A supervisory committee shall be established directly under the President or Prime Minister
- CIOs shall be designated for central and regional e-Governments, thus creating streamlined support structure.
- Specialized e-Government technical support agencies including NITDA and GBB shall be utilized for field works required for the projects.

CSF-5. Balance between Demand for and Supply of e-Government Services

Nigerian government needs to develop policies for balanced development of information-oriented society on demand side and IT industry on supply-side, so that both sides together can maintain virtuous cycle where one side enforces the other.

- Efficient role division with the government taking care of e-Government policy making, IT companies providing technology and skills, and citizens actively participating were key factors in e-Government implementation and utilization

CSF-6. Change Management of Public Officers in Emerging ICT Environment

What is more important than anything else is to create a positive environment from the potential users like government officials and the general public.

- A scheme for change management in emerging environment needs to be developed to overcome resistance from the users which primarily is caused by fear of workforce reduction. The avoidance of using information systems.

CSF-7. Capacity Development Program for Civil Servants and Citizens

Capacity development program can be used as a catalyst for government reform.

- A dedicated training organization for e-Government has to be established.
- Optimized e-Government training courses for Nigeria have to be developed.

9.2.2 Ten Principles

It is also recommended to adhere to the following principles when implementing the e-Government.

Principle 1. More Attention to Organizational Changes

The primary goal of e-Transformation lies in government transformation and social change rather than IT Initiatives. More attention has to be paid to organizational changes than application developments obsessed with technical fantasy.

Principle 2. Consistent Policy

Information Systems is not made all at once but grows over time. Remarkable achievement of e-Transformation is not made in a day or two, but it is the results from strenuous efforts and consistent policy line all through the implementation period.

Principle 3. Inclusion of the Users

The success of e-Transformation projects is not determined by the IS outputs but the outcomes perceived by the users. Inclusion of the users in all sectors of e-Government system as a feedback mechanism is critical to the success

Principle 4. Sharing a Vision

The purpose of formulating a vision of e-Transformation is not to show up but to share among the parties concerned. Vision is tomorrow's reality but not yet realized today. Sharing a vision is the source of leadership to propel the project and the energy for the positive climate creation.

Principle 5. Focus on the Citizens

The focus of e-Transformation should be on the citizens not on the government. IS at the core of e-Transformation is nothing but a vehicle of value to the users. Therefore we need to think hard what the citizens really want from the services by the government.

Principle 6. Establishing Data Reference Model (DRM)

Global databases has to be designed first of all to cover entire government functions. Securing the data as shared resource common to all business units is the key to successful improvement of responsiveness of entire organization and the source to develop a variety of services. Therefore, establishing data reference model (DRM) to cover the entire government functions has to be done above all else.

Principle 7. New Practices of Managing Data by Attributes

Data management practices have to be changed to accommodate new breeds of data. Data management by forms should be shifted to the new practices of managing data by attributes, so that not only predefined alphanumeric business data but also new types of data like stream social data circulating though social media and the data sensed from all artifacts in real world.

Principle 8. Plan for Tomorrow

e-Transformation plan has to be set up not for today but for tomorrow. True ICT revolution is yet to come. We need to be attentive to the new opportunities provided by the Internet of Things (IoT) via ubiquitous-IT and the socialization of the Internet via social media.

Principle 9. Adaptive Officials and the Public

A way to enlighten government officials and the public has to be found to make them adaptive to emerging information environment. We need a new breed of people who are capable of interpreting and utilizing multi-dimensional information (not only alphanumeric data processing but sensed data-based context processing as well).

Principle 10. Laws Adaptive to Environmental Changes

Laws adaptive to environmental changes should be prepared in advance. Management of growth simply means management of timing. We should be aware of the bust to come soon after rapid growth, which will in turn require tremendous social costs.

9.2.3 Top 6 Priority Initiatives

Top 6 priority initiatives suggested in 7.6 can be used as ways to maximize the impact of Nigeria e-Government as 11 major e-Government initiatives selected by the presidential committee used as catalysts for the great improvement of e-Government in Korea. The suggested top priority initiatives are as follows:

- Establish Presidential Committee on ICT/e-Government;
- Develop capacity building program;
- Create and utilize e-Government promotion fund;
- Laws necessary for e-Government;
- Establish Standard Software Framework for e-Government; and
- Develop e-Procurement system.

One of the key roles of the presidential special committee on e-Government should be to take the initiative on making the implantation of top priority initiatives a presidential agenda. The top priority initiatives may be adjusted by the presidential committee on e-Government based on this master plan.

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APPENDICES