ICT AUTHORITY STRATEGIC PLAN

2013 - 2018

ICT Authority

INFORMATION COMMUNICATION AND TECHNOLOGY AUTHORITY (ICTA)

STRATEGIC PLAN 2013 - 2018

TABLE OF CONTENTS

ACRONYMS

BPO:	Business Process Outsourcing
CAK:	The Communication Authority of Kenya
CCK:	Communications Commission of Kenya
CIO:	Chief Information Officer
CoE:	Centre of Excellence
CUE	Commission for University of Education
CSFs:	Critical Success Factors
DMS:	Document Management Systems
GCCN:	Government Common Core Network
GDC:	Government Data Center
GII:	Global Innovation Index
GOEs:	Government Owned Entities
GOK:	Government of Kenya
Govt:	Government
ERP:	Enterprise Resource Planning
GITS:	Government IT Services
HEIs:	Higher Education Institutions
IaaS:	Infrastructure as a Service
IFMIS:	Integrated Financial Management Information Systems
IPR:	Intellectual Property Rights
iTax:	integrated Tax system
ITO/ITES:	IT Outsourcing and IT Enabled Services
iCMS:	Integrated Customs Management System
IEEE:	Institute of Electrical and Electronics Engineers
ISIC:	International Standard Industrial Classification
KENET:	Kenya Education Network
KIE:	Kenya Institute of Education
KNSDI:	Kenya National Spatial Data Infrastructure
LAIFOMS:	Integrated Financial and Operations Management System
LTEI:	Long-Term Evolution Infrastructure
MCDA:	Ministries, Counties, Departments and Agencies
MDAs:	Ministries, Departments and Agencies.
MDM:	Master Data Management
MTPs:	Medium Term Plans
NCST&I:	National Commission of Science Technology and Innovation
No:	Number
NOFBI:	National Optic Fibre Backbone Infrastructure
NESW:	National Electronic Single Window
NRI:	Network Readiness Index
PKI:	Public Key Infrastructure
PPP:	Public Private Partnership
RFID:	Radio-frequency identification
SaaS:	Software as a Service
SAGAs:	Semi-Autonomous Government Agencies
SLAs:	Service Level Agreements
SMEs:	Small and Medium Enterprises
SSO:	Single Sign On
TIMS:	Transport Information Management System
TSA:	Transportation and Safety Authority

FOREWORD

Hon. Edwin Yinda
Chairman, ICT Authority Board of Directors

The ICTA Strategic Plan represents an important step towards the transformation of the Government ICT Services. The mandate of ICTA is to facilitate and regulate the design and implementation of ICTs in the public service, integrating the plans of all agencies, to recommend collaboration, consolidation and to direct government departments to adopt government ICT initiatives.

In 2013, H.E. the President of the Republic of Kenya gave me the opportunity to serve as the Chairman of the Board of Directors of the newly created ICT Authority. The strategic plan gives effect to the mandates I have as the functional Chairman of ICTA. The secret of a good strategy is in how well it continues to achieve its goals in an environment where the only certainty is that things will change. The future of e-government will greatly improve through the use of ICT to deliver better services, enhance wealth creation and hence improve the well being of Kenyans in a constantly changing environment.

The Strategic Plan has been aligned to the National ICT Master Plan. The aim of this strategy is for the Authority to become the leader in transforming Kenya into a regional ICT hub and a globally competitive digital economy. In order to realize this vision,the strategy will ensure that government delivers efficient and effective online services and keeps information, systems and data safe. In cooperation with other State agencies and Ministries, the Authority will deliver robust and secure government ICT infrastructure and systems. The cooperation will help ensure increased integration and synergy of ICT initiatives in Government. The Strategic Plan is key in facilitating technology innovation, sustainable ICT enterprises and developing the requisite human resource capacity.

The country can achieve economies of scale and a more seamless experience for the people through the use public services as the agencies participate in the government projects prescribed in this Strategic Plan. It is essential for the success of Better Public Services that government agencies are required to address not only their own priorities but also those across the public sector. The objectives of this Strategic Plan will be achieved through the partnership of the Public service, ICT and functional experts. The ICT Authority will also partner with the Private Sector and Development Partners to fund the projects planned for implementation during the plan period. I urge all the stakeholders and partners to be committed to ensure successful implementation of the Authority Strategic Plan for the benefit of all Kenyans.

Finally, I would like to acknowledge the strategic planning committee for working hard to develop the Strategic Plan and in particular, Professor Timothy Waema for graciously donating his time to lead the committee to develop the final document.

CHAPTER 1: INTRODUCTION

1.1 Background

Kenya is one of the largest economies in Africa with a GDP of $32 billion (Sb2.5 trillion) and an economic growth rate of 5 per cent during the past five years. ICT contributes significantly to this growth. There has been tremendous growth in the ICT sector particularly in the mobile sector, which had 31.3 million subscribers and a penetration of 76.9 per cent by September 2013. At the same time, there were 25.1 million mobile money subscribers and an estimated 19.1 million Internet users with 47.1 per cent inhabitants having access to Internet services (CCK, 2014). This is an indication that Kenyans are ready to embrace information and communication technology as long as it enhances their quality of life.

The advent of better international connectivity is going to be beneficial to Kenya's telecoms market and the Internet in particular. It will also see the growth of new industries such as Business Process Outsourcing (BPO) and IT enabled services (ITES). The key driver for BPO and ITES is the quality of communication services, including the Internet. New technologies are shaping the economy and changing the way people work, spend their leisure time, access information and communicate.

One of the key aspects of the Kenya Constitution 2010 is Devolution. Under the second medium term plan 2013-2017 of vision 2030, Counties will retain their right to plan as stated in the county Government act of 2012, and the transition to devolved Government act of 2012. However, the main challenges for counties will be generation of revenue and creation of employment opportunities for the youth. This calls for ICTA to draw strategies for collaboration and partnership with county Governments to enhance the usage and investments in the ICT sector.

ICT is one of the foundations for economic development in the second Vision 2030 MTP, with the theme, 'strengthening the foundation for a knowledge economy'. ICT is a critical tool in Kenya's vision of knowledge-based economy of innovation, adoption and adaptation of which are key for economic growth. ICT as a foundation of the second MTP would focus on;

a) Upgrading the national ICT infrastructure;

b) Improving public service delivery;

c) Developing the ICT industry; and

d) Upgrading ICT capacity.

1.2 National Development Agenda

The MTP 2013-2017 gives priority to devolution as spelt out in our constitution and to more rapid socio-economic development with equity as a tool for building National unity. The Second MTP underlines the scale and pace of economic transformation through infrastructure development, with strategic emphasis on priority sectors under the economic and social pillars of Vision 2030. Under this MTP, transformation of the economy is pegged on rapid economic growth on a stable macro-economic environment, modernization of our infrastructure, diversification and commercialization of agriculture, a higher contribution of manufacturing to our GDP, wider access to African and global markets, wider access for better quality of education and health care, job creation for unemployed youth, better housing and improved water sources and good sanitation to Kenyan households. In doing all this, Kenya will be in a better position to secure the technological environment and to build resilience to climate change. Much of this will be done in collaboration with county governments and new urban management boards as provided for under the constitution and the laws. The overall aim of the plan is that by 2018 Kenyan families will have experienced a positive transformation in their earnings and quality of livelihoods and be a more prosperous society commanding respect in Africa and the world.

Kenya launched a national broadband strategy in 2013. Its vision is 'a knowledge-based society driven by reliable high-capacity nationwide broadband connectivity'. The overall objective of this strategy is to provide quality broadband services to all citizens. It will therefore compliment the national ICT master plan in improving ICT access.

The Jubilee manifesto has spelt out broad development goals to improve ICT access and capacity among its citizens. These goals include, development of ICT Parks and Clusters in the Counties, pursing of Public Private Partnerships (PPPs) in major infrastructural projects. Other reforms include, investing at least 2 percent of annual GDP in research and development; increasing savings and investment rates by rejuvenating the co-operative movement and expanding access to credit through a strong micro-finance sector; and lastly by investing at least 10 percent of GDP in infrastructure development over the next five years.

Kenya produced its first ICT policy in the year 2006. The vision of the policy is a prosperous ICT-driven Kenyan society, while its mission is to improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services. This policy was guided by the need for infrastructure development, human resource development,

stakeholder participation and appropriate policy and regulatory framework. It focuses on IT, broadcasting, telecommunications, postal services, radio frequency spectrum, universal access and institutional framework for implementation. Though there has been tremendous technological advancement in Kenya and the World, the Kenyan ICT policy has not been updated for close to eight years. The policy therefore needs to be updated to take into account the changes, Vision 2030, the new Constitution, new sectoral strategies and other realities that have emerged since 2006. The ICT State Department has developed a draft policy, which is yet to be completed.

1.3 Brief History of ICTA

The Government acquired the first mainframe computer in 1967. This equipment was mainly used for data processing of payroll and other financial transactions, under the Director of Statistics within the Ministry of Finance. As technology grew in complexity, sophistication and versatility, other government ministries/departments started acquiring their own data capture and processing equipment. To avoid duplication in procurement of data processing equipment, Treasury was given the authority to oversee and coordinate procurement of such equipment. The Government thereafter formed the Government Computer Services (GCS) as the central agency to oversee re-organization of the data processing facilities with data capture units in various ministries/departments.

The advent of microcomputers in the 1980s brought about changes in the structure of data processing in the Kenya government. With technology now driving information systems from centralization towards distributed systems, the government created the Microcomputer Information Systems Department (MISD) within the Ministry of Finance to oversee implementation and coordination of microcomputer based distributed information systems. In 2000 GCS and MISD were merged into one unit known as the Government Information Technology Services (GITS), with an expanded mandate to coordinate and monitor procurement of ICT goods and services, to develop a unified civil service ICT infrastructure, and to develop the required ICT human capacity for sustainable ICT development and support in the civil service.

In 2003 the Cabinet approved the formation of the ICT Scheme of Service and the Cabinet Affairs Office, Office of the President, was given the authority to manage the Scheme. In 2004 the Government approved the formation of the Directorate of e-Government (DeG) with the mandate to manage the Scheme and oversee conceptualization, design and implementation of information technology activities in the civil service, effectively taking over the mandate carried out by GITS. However, the GITS Department in Treasury continued to operate semi-independent of DeG, though its staff was under the ICT Scheme of service managed by DeG.

In the meantime, the Ministry of Information, Communication and Technology, charged with the responsibility of policy formulation of all matters ICT in the Government, established under its Ministry, the Kenya ICT Board in 2007. ICT Board was mandated to provide the following functions: promote Kenya as an ICT hub, advise the government on all relevant matters pertaining to the development and promotion of ICT industries in the country and provide the government and other stakeholders with skills, capacity and funding for implementation of ICT projects and to coordinate management of ICT projects.

The establishment of the three ICT agencies - GITS, DeG and KICTB - has seen tremendous development in the ICT landscape in Kenya. In the last ten years, ICT has become a key agent in the transforming the way the government delivers services to the public, and there is a lot of expectation that it will play a crucial role in achieving the Government agenda.

However, there have been serious concerns about the duplicating roles as well as lack of coordination among the three agencies and in 2013, the government, through Presidential Executive Order, transferred GITS and DeG from Treasury and Cabinet Affairs respectively to the Ministry of Information, Communication and Technology (MoICT). Soon thereafter, a new agency, the Kenya ICT Authority, was established as a parastatal under MoICT to take over the functions previously performed by GITS, DeG and KICTB.

1.4 Functions of ICTA

The functions of the ICT Authority as in the Legal Notice No. 198 are:

- Set and enforce ICT standards and guidelines for human resource, infrastructure, processes, systems and technology for the public office and public service;
- Deploy and manage all ICT staff in the public service;
- Facilitate and regulate the design, implementation and use of ICTs in the public service;
- Promote ICT literacy and capacity;
- Promote e-Government services;

- Facilitate optimal electronic form, electronic record and equipment use in the public service;
- Promote ICT innovation and enterprise;
- Establish, develop and maintain secure ICT infrastructure and systems;
- Supervise the design, development and implementation of critical ICT projects across the public service; and
- Implement and manage the Kenya National Spatial Data initiative

1.5 Role of ICTA in the Development Agenda

The Information, Communication and Technology Authority derives its mandate of establishing, developing and maintaining secure ICT infrastructure and systems for efficient and effective public services delivery as well as promote the deployment and use of ICT in Kenya from the legal notice no.198 amendment order 2013. ICTA will play a critical role, both at the national and county government's level, in achievement of the developmental objectives in the plan period. Key among them as stipulated in section 3 of the gazette notice build capacity and promote use of ICT among the Government public officers and its citizen. The Authority will also promote the deployment and use of ICT in Kenya through the counties with a view of inducing healthy competition among the counties that have direct benefits to economic growth, employment creation, poverty reduction and transfer of knowledge.

1.6 Rationale for the Strategic Plan

The Kenya ICT Authority was established as a parastatal under MoICT to take over the functions previously performed by GITS, DeG and KICTB. It was therefore necessary to draw a new plan as it takes up its new mandate. The new strategic plan is also expected to realign ICTA strategic direction to the second medium term plan (MTP II), the latest changes in the operating environment and the critical need to effectively promote and facilitate investments in the ICT sector as well as build capacity and promote ICT use among Government staff and citizens. The Kenya constitution 2010 and the new government structure (National and county governments) make it necessary for change in strategy in growing investments in ICT sector as well as promoting its use among its citizens.

The strategic plan is being developed against a backdrop of positive strides in the country.

These include Kenya being a leader in innovation particularly in the field of ICT and the emergency of strong middle class in Kenya. These developments are expected to have a positive impact on the investment environment. Furthermore, regional integration and multilateral trading arrangements have contributed to increased use of ICT and creation of opportunities for investments within the sector. Kenya enjoys a bigger market share in the region with over 30% and 50% of exports going to EAC and COMESA respectively. ICTA will build upon these opportunities, amongst others, to support growth of new investments in ICT.

1.7 Methodology

The process of developing this strategic plan involved the review of the legal notice that established the Authority and what the previous three constituent organizations were doing. It also entailed a review of other key documents, including strategic plans from MDAs, economic surveys, constitution of Kenya 2010, various acts of parliament, Vision 2030, political party manifestos, and topical reports (e.g. World bank reports on doing business, ITU reports, benchmarking study tour reports).

A committee appointed from key personnel from the three previous organizations that formed the ICT Authority did the development of this strategic plan. They consulted widely in the Authority and held two key workshops (see Annex 1). Towards the end, one of the members of the Board of Directors facilitated the final workshop and assisted the committee to prepare this plan. The draft strategic plan was presented to the Board of Directors in September 2014 (see Annex 1). It was again presented to the Board for approval in November 2014.

The ICTA strategic plan for the period 2013-2017, therefore sets out the strategy the Authority will implement in order to realize most aspects of the National ICT Master Plan. The next chapter presents the vision, mission and core values of the Authority. Chapter three analyses both the internal and external environments and identifies the strengths, weaknesses, opportunities and threats. The following chapter describes the strategy in terms of strategic objectives, strategies and expected outcomes for each of the five strategic themes identified from the situational analysis in Chapter three. The final chapter outlines how the strategy will be implemented. This includes the budget and schedule of the prioritized strategic initiatives to be implemented, resource mobilization, implementation plan, monitoring and evaluation, organizational structure, project management, the risks and the mitigation strategies.

CHAPTER 2: VISION, MISSION AND CORE VALUES

2.1 Vision

The vision of the ICT Master Plan is:
Kenya as a regional ICT hub and a globally competitive digital economy

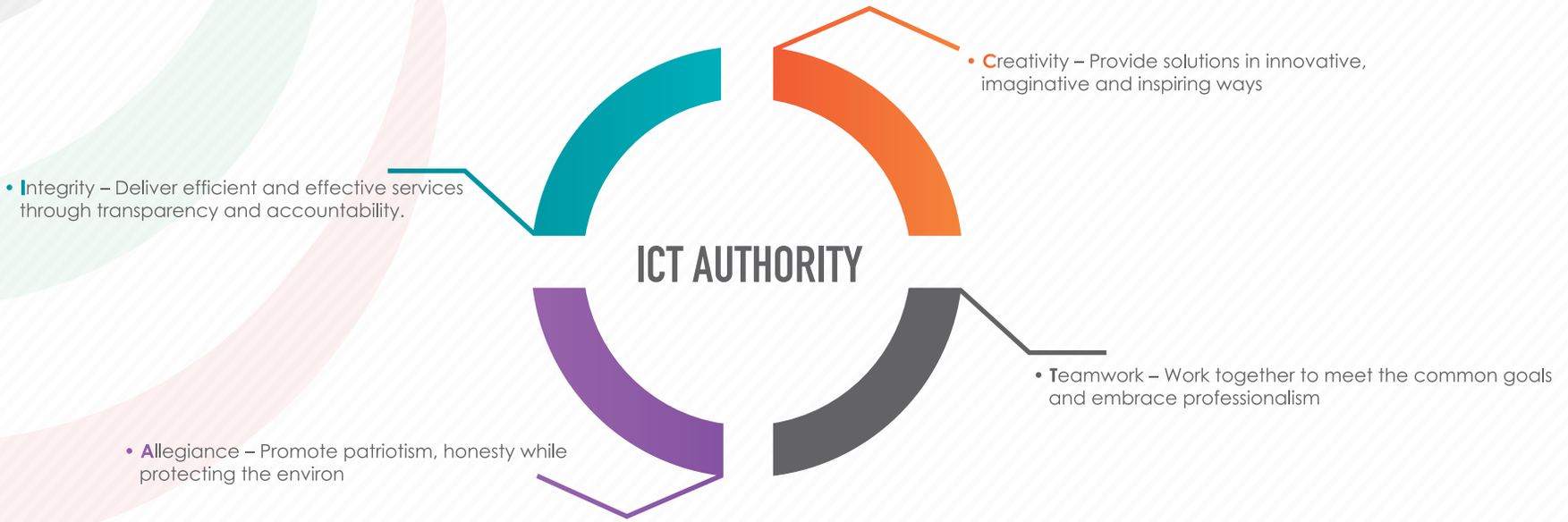
The ICTA vision is:
Be the leader in transforming Kenya into a regional ICT hub and a globally competitive digital economy

2.2 Mission

The ICTA mission is:
To champion and harness ICT for efficient and effective public service delivery, wealth creation and well-being of Kenyans

2.3 Core Values

ICTA will be guided by the following core values:



CHAPTER 3: SITUATIONAL ANALYSIS

Internal and external environmental analysis is critical in understanding the conditions within which organizations operate. These conditions can either be facilitating or hindering the organizations towards excellence performance. Strategic environmental analysis provides an appreciation of the capabilities of an organization and the external factors that affect it. The analysis help identify the strengths, weaknesses, opportunities and threats (SWOT), that provide a good indication of what the future strategies will be.

3.1 External Environmental Analysis

The Political, Economic, Socio-cultural, Technological, Environmental and Legal (PESTEL) model was applied in review of the external environment, as outlined below.

3.1.1 Political Environment

One of the most popular aspects of our new constitution is devolution. The Kenya Constitution 2010 gives rise to a devolved structure of government and hence new distinct governance structures at the national and county levels. Both levels of government are distinct and inter-dependent and shall conduct their mutual relations on the basis of consultations and cooperation. One of the key opportunities is that County Governments are supportive of ICT. In addition, the continued push for devolved service delivery within government is likely to open up many new centers for computing across the country.

Following the peaceful elections held on 4th March 2013: Kenya's annual GDP growth projections of over 5% (although supposed to be 10% under Kenya Vision 2030) are more feasible according to Kenya economic update 2013 by the World Bank. However, according to the April 2013 monthly bulletin by the Ministry of Finance, Kenya is faced with major challenges of domestic debt that now stands at over a trillion shillings. Meeting the expenditure needs of the Government's ambitious development agenda will therefore be an uphill task. The devolved government structure presents an additional challenge with respect to raising adequate revenues to support development and recurrent expenditures. Other development challenges include clamor for higher pay, high wage bill, incessant insecurity incidences, current account deficits, high-energy cost and infrastructural constraints, among others.

Further, free education at primary and secondary levels will result in a workforce ready for tertiary level education in ICT that could provide a higher talent base. There is need for planning for better uptake of the workforce. The laptop initiative for primary schools is likely to present opportunities for delivering e-government services.

3.1.2 Economic Environment

Business process outsourcing (BPO) was identified as a key economic sector under the economic pillar of Vision 2030 in the first MTP. According to a recent study (Graham and Waema, 2014), although the country has been moderately successful in attracting foreign BPO firms to Kenya, the focus on international BPO work has not succeeded as originally envisioned and Kenya has not been able to build a positive and successful brand around the BPO sub-sector. There are three possible explanations why BPO has failed to realize the gains envisioned:

- The strategy for BPO focused on the international market before developing local clients, including Government. This lack of focus on development of a local outsourcing industry to grow the local BPOs and ITES companies and give them the capacity to deliver on larger projects was fatal to developing depth in the industry and spurring large-scale companies.
- In the low-end BPO space, Kenya will never be able to compete with the economies of scale that India or the Philippines offer. It will, however, be able to occupy certain strategically useful niches like impact sourcing (ibid.).
- In the intervening period, there have been changes to the global BPO and Outsourcing industry, which has rendered the traditional BPO market that Kenya had been focusing on less attractive. For instance, global outsourcings contracts are increasingly larger in scale and bundled i.e. they include various services e.g. IT support, help desk and contact centers. Also due to the competitiveness of the global outsourcing market, the deals also have smaller margins.

The lessons learned from these challenges were well captured in the National Master Plan for the re-engineered ITES sector to be successful. Although the low-end BPO work will continue to provide much needed jobs, the high-end IT outsourcing work will contribute to both value capture and skills development in Kenya (ibid.). Effectively, ITES offers opportunities to develop ICT businesses and contribute to GDP.

The following are other opportunities in the economic environment:

- Rapid internet penetration and growth of smart phones, making internet and smart phones viable platforms to delivery e-government services;
- Rapidly growing middle class, which constitutes a ready customer of e-government services;
- Kenya's experience in ICT infrastructure and capacity building, which can be exploited;
- The growing East African region, creating business opportunities for Kenyan ICT firms; and
- The sound economic growth in Kenya and increasing interest from foreign investors, including foreign ICT investment.

As a threat, Kenya could face increased competition from neighbouring countries that embrace ICT for development, including Uganda, Tanzania and Rwanda.

3.1.3 Socio-cultural Environment

Socially, Kenya has a very young population with majority aged between 15 and 35 years. The youth comprise 60% of the country's unemployed, which poses a real threat to social stability if not properly addressed. More people with ICT qualifications are entering the job market. It is estimated that over 2,000 graduates of ICT programmes come to the job market every year and another 50,000 with general ICT skills. With this production of skilled labour, Kenya is beginning to develop a critical mass of skilled labour to support the growth of ICT industries. This, combined with the high Internet and mobile penetration, creates opportunities for outsourcing, tele working and e-commerce.

The young people are conversant with ICT opportunities and seek them out for communication, entertainment and for commercial transactions. The laptop project will create substantial technology oriented development and creation of jobs/ opportunities which will lead to technology driven employment. At the same time, the recent intervention by government to avail Ksh. 6 billion to the youth through the uwezo fund presents an opportunity for the youth to be involved in ICT businesses.

The relationship between Kenyans locally and those in the Diaspora has increased the importance of online communication. In addition, the growing urbanization within counties will spur demand for ICT.

3.1.4 Technological Environment

Operators in the private sector have been aggressive in rolling out their own national ICT infrastructure. In particular, the mobile and data sub-sector has resulted in extensive and aggressive deployment of infrastructure in most parts of the country by the competing telecommunications businesses (Orange Telkom, Safaricom, Airtel and Essar). In addition, large data infrastructure operators, including Jamii Telecom, Liquid Telcom, Access Kenya Group, Wananchi Group, Kenya Education Network (KENET), MTN, Internet Solutions, amongst others are developing their own broadband infrastructure. Infrastructure deployment by many operators has resulted in competition leading to a relative reduction of tariffs and increased use of mobile phones and Internet.

Kenya has been among the finest ICT innovators in Africa with mobile money transfer services, leading to increased financial inclusion. The recent explosion of local ICT development groups such as iLab, iHub, Nailab, University of Nairobi's C4DLab and infoDev's mlabs in Kenya has set the stage for innovation of applications and information services such as Drumnet, mFarm and Ushahidi. Kenya has been home to multiple African Regional hubs such as IBM's first African Research lab, Nokia's Africa Headquarters and Google's first Sub-Saharan Africa office (outside of South Africa). Although the Government has been providing seed funding through the Tandaa grants, it is not clear what the impacts these grants have had on start-up ICT companies. At the same time, many high-tech start-up companies have a very high failure rate, with many never transiting to commercialization.

The following are other opportunities afforded by the technology environment outside ICTA:

- The increasing speed and affordability of bandwidth and the increasing Internet penetration (at 50% via a computer and 96% through mobile telephone) creating greater opportunities for all to access government services.
- More advanced, available and affordable technology making it easier for end-users.
- Clouding computing service providing opportunities for delivery of software as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS) over the internet. This is creating opportunities for Government to outsource services and realize savings, ability to scale outsourced services in response to demand (agility), speed of access and better quality of service provision.
- Bring your own devices could reduce the pressure and cost of availing computing facilities to the end users.

The key threats associated with technological developments include increased cyber security challenges associated with cloud computing and bring your own devices, lack of an appropriate legislation to deal with emerging technologies and concepts such as cloud computing and procurement challenges associated with massive scaling of outsourced services. Other threats include:

- Limited coverage of national fibre infrastructure and limited internet penetration in the rural areas;
- High cost of last mile connectivity and
- Inadequate and high cost power infrastructure;

3.1.5 Environmental Environment

The energy crisis poses a threat to the development of ICTs. There is therefore need to step up generate more power that is more affordable to support economic growth, including ICT investment and rollout. In addition, electronic waste (e-waste) poses another threat, especially if the laptop initiative is implemented without a carefully thought out e-waste strategy.

3.1.6 Legal Environment

Although there is some legislation governing the ICT sector, specifically the Kenya Communications (Amendment) Act of 2009 and the Kenya Information and Communication (Amendment) Act of 2013, there are still gaps. For example, privacy legislation that considers collection, accuracy, storage, use, third party disclosure, security and right of access to the information does not exist. The Data Protection Bill has been the subject of discussion in the ICT sector for many years. There is need to review this bill and fast track its presentation to the National Assembly and its subsequent enactment. Another example is the lack of legislation to facilitate access, promote routine and systematic information disclosure and provide for the protection of persons who release information of public interest in good faith. In this connection, there is need to review the Freedom of Information Bill, which has been in draft form for too many years, and to fast track its presentation to the National Assembly and its subsequent enactment.

In addition, there is need to review the existing legal framework and develop a comprehensive cyber security law. It is also necessary to review the legal order that established the ICT Authority to develop comprehensive e-government legislation and to review the Public Procurement Act to make it easier to procure and scale cloud services.

3.1.7 Summary of Opportunities and Threats

The summary of external appraisal is shown in Table 3.1 in form of opportunities and threats.

Table 3.1: Summary of Opportunities and Threats

Opportunities	Threats
■ Potential for further partnerships for Government Enterprise Architecture through CSR	■ Under-prioritization of the ICT Sector in the allocation of resources, coupled with the high competition for exchequer funding
■ National Government digital agenda and County Governments support for ICT	■ Uncoordinated projects that are silos and do not exploit synergies
■ Growing national and regional demand for ICTs and increased demand for online services	■ Inadequate awareness of the role of ICT in senior positions in all arms of national and county governments
■ Attention due to frequent cyber attacks offers opportunities to enhance information security	■ Increased cyber insecurity in ICT systems and hence lack of confidence in most Government circles.
■ ITES offers opportunities to develop ICT businesses and contribute to improved GDP	■ Poor investment climate, including insecurity, high energy costs, corruption, ease of doing business and huge domestic debt
■ Increased donor funding of ICT projects	■ Threat of parallel ICT structures in Government
■ Kenya is recognised as a regional ICT hub	■ Increased preference for private sector ICT infrastructure and advisory services due to dissatisfaction with internal ICT services.
■ High literacy levels, thus increased capacities of citizens to use ICTs	■ Huge resistance to change in both Government and public
■ Increasing mobile phone and internet penetration	■ Cloud computing providing opportunities for Government to outsource services and realize benefits of cost savings, ability to scale in response to demand (agility), speed of access and better quality of service provision
■ The existence of ICT innovation hubs in the country, providing opportunities for development of ICT businesses	■ Inadequate legal framework to exploit emerging technologies (e.g. cloud computing), address data/information privacy and confidentiality issues, cyber security, etc.

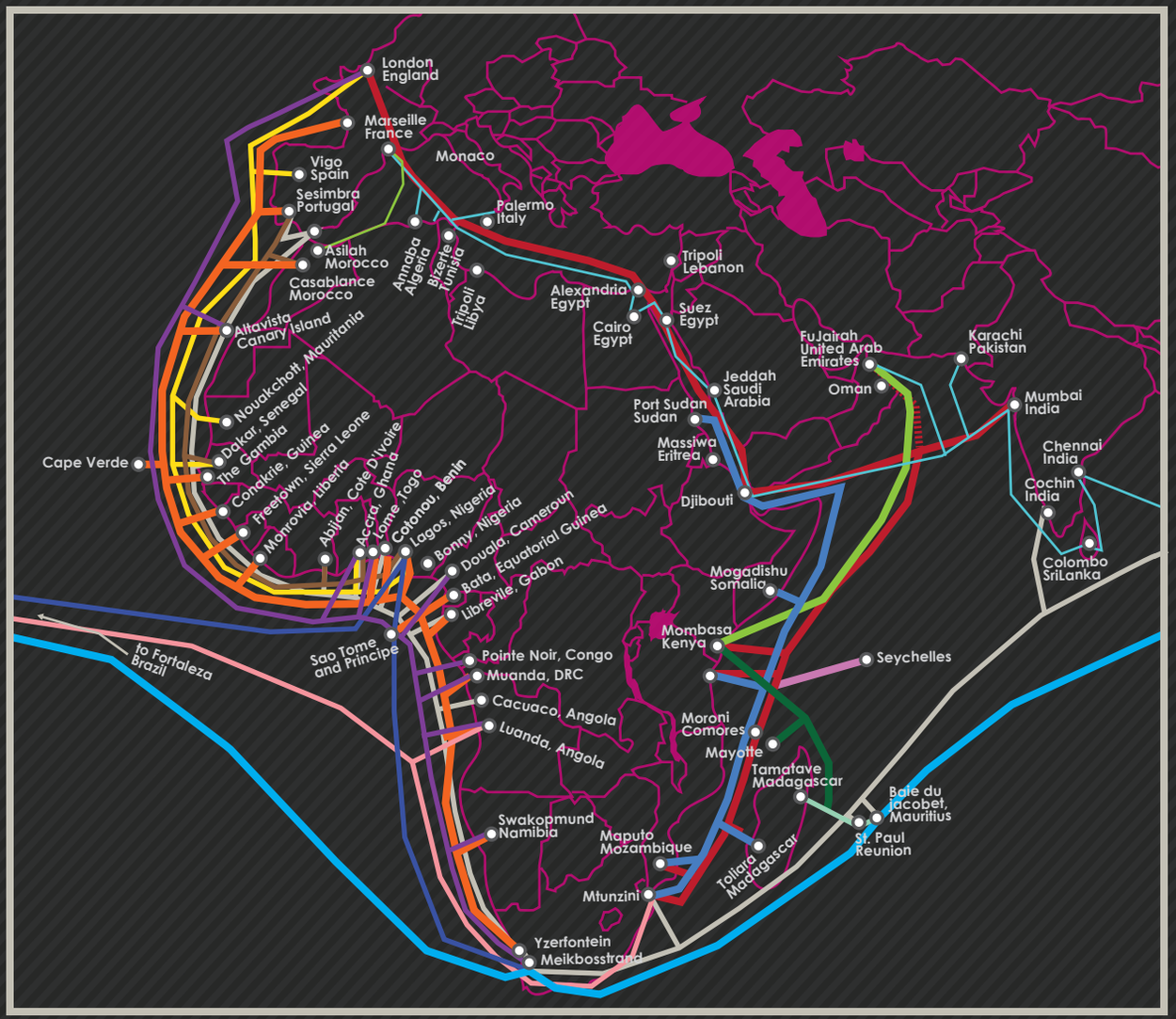
3.2 Internal Environmental Analysis

3.2.1 ICT Infrastructure

Kenya like the rest of the East African countries relied solely on satellite for Internet connectivity and international communication until mid 2009. However, the country is connected to the international broadband highway through the SEACOM, TEAMS, EASSY, and LION undersea fibre cables as shown in Figure 3.1.

CREATING ICT OPPORTUNITIES TO THE CITIZEN

Figure 3.1: Undersea Fibre Cables in Africa



AFRICAN UNDERSEA CABLES(2014)
http://manypossbilities.net/african-undersea-cables
Version 33
Mar 2012

WEST COAST

SAT3/SAFE	340 GIGABITS	ACTIVE
MAIN OnE	1920 GIGABITS	ACTIVE
GLO -1	2500 GIGABITS	ACTIVE
WACS	5120 GIGABITS	Q2 2012
ACE	5120 GIGABITS	Q3 2012
SAex	12.8 TERABITS	2014
WASACE	40 TERABITS	2014

EAST COAST

SEAS	32O GIGABITS	Q3 2012
TEAMS	1280 GIGABITS	ACTIVE
SEACOM	1280 GIGABITS	ACTIVE
LION2	1280 GIGABITS	ACTIVE
LION	1300 GIGABITS	ACTIVE
EASSY	4420 GIGABITS	ACTIVE
BRICS	12.8 TERABITS	2014

Source: manypossibilities.net/african-undersea-cables

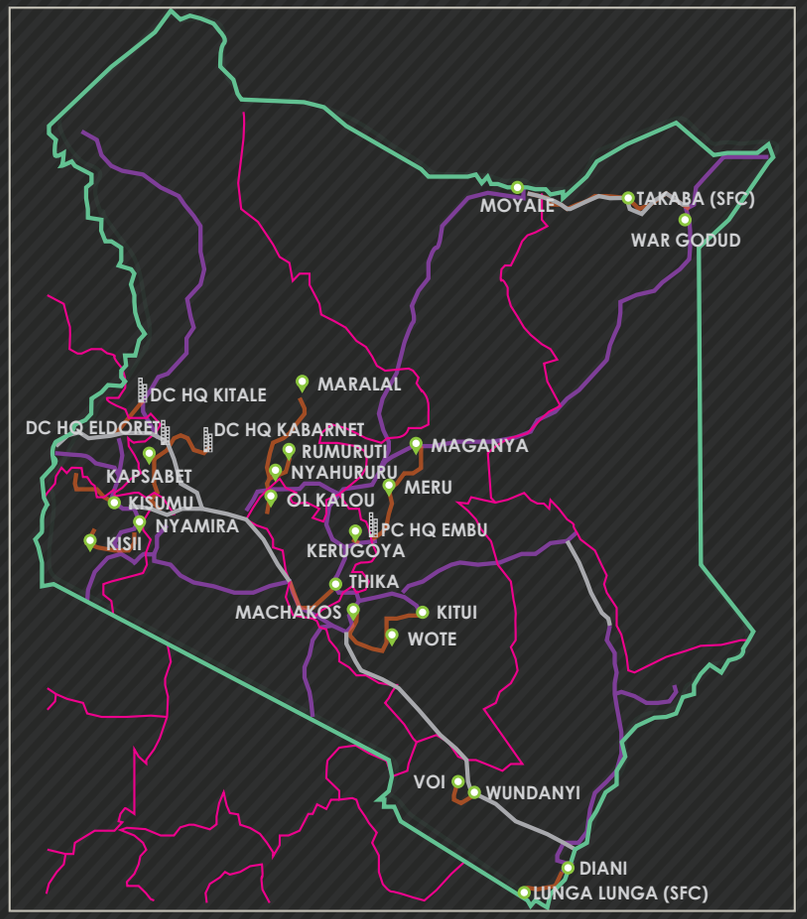


Figure 3.2: NOFBI Diagram

NOFBI Phase 1

NOFBI Phase 2 (On going)

Source: National broadband strategy

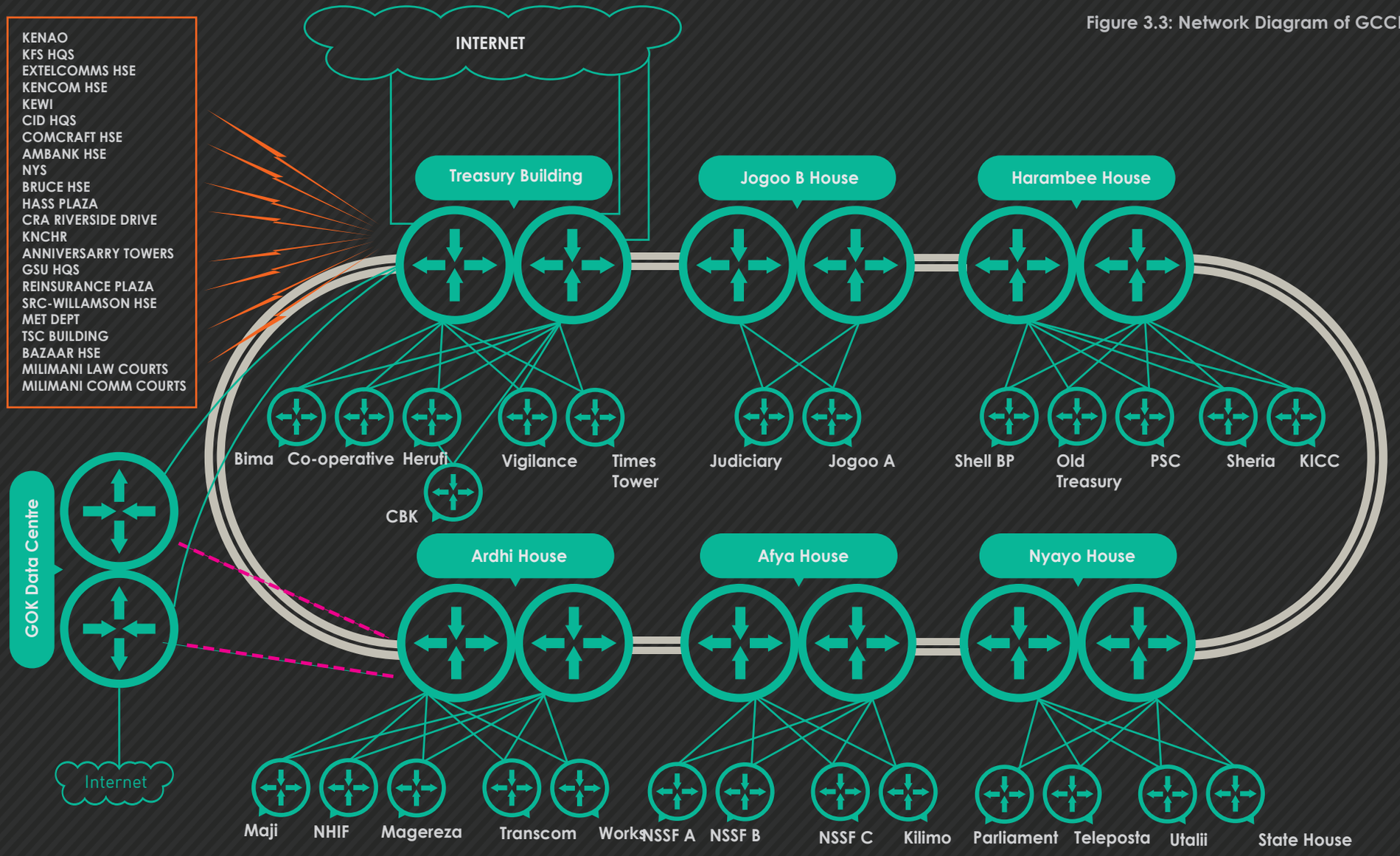
Most major towns in Kenya are connected through the National Optic Fibre Backbone Infrastructure (NOFBI). Figure 3.2 shows both the existing NOFBI phase 1 links and the on-going phase two implementation to build additional links to enhance redundancy in order to extend fibre capacity to all parts of the country. At the same time, the ICT State Department is discussing with the stakeholders a framework to develop a wireless broadband network.

The Government has also developed a Government Common Core Network (GCCN). This is meant to serve as a shared and secure interoperable Government-wide ICT architecture. The system will not only integrate work processes and information flows, but also improve inter-ministerial sharing of databases and exchange of information to eliminate duplication and redundancies, improve public access to Government services and ensure responsiveness in reporting, monitoring and evaluation (Kenya e-Government Master Plan, 2013). Figure 3.3 shows the network diagram of GCCN in Nairobi.

In addition, the Government developed the tier-2 Government Data Center (GDC) infrastructure to ensure security of Government data and applications. At the same time, bandwidth support to Government offices has been growing steadily.

The Government through the National Treasury is implementing a disaster recovery facility for data and systems as part of the business continuity plan. This will ensure that the Government services continue to be provided even in case of any disaster at the primary sites. This facility will also offer cloud computing services to both the national and county Governments.

Figure 3.3: Network Diagram of GCCN

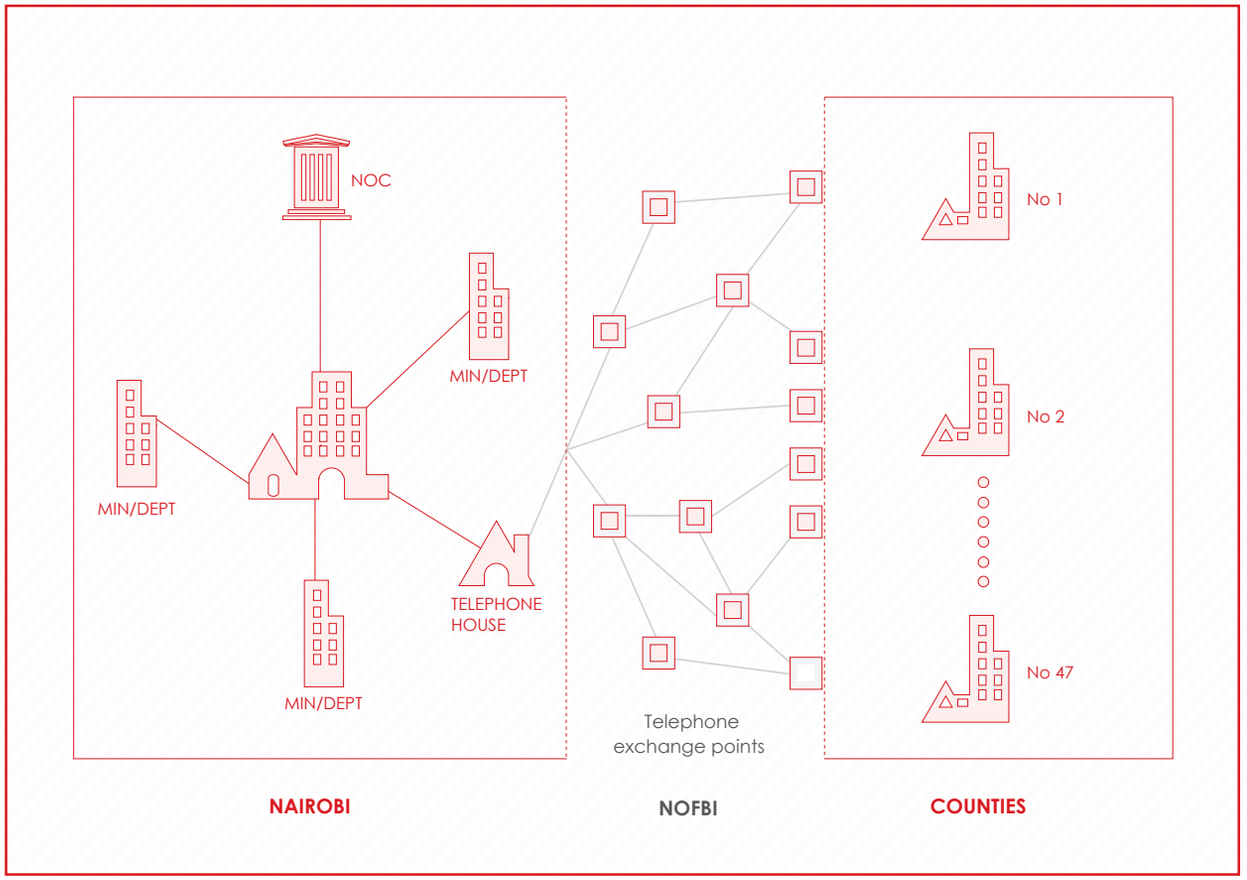


Source: GCCN project 2014

Although most County Governments have not yet started developing their ICT infrastructure, NOFBI can be used to connect the National Government to the County Governments and interconnect the latter to share data and information, as shown in the envisioned connectivity between NOFBI and GCCN (see Figure 3.4).

Although the Government has invested significantly in ICT infrastructure, there are key weaknesses that include a government data centre which is not fully operational but with very limited budget provision for recurrent expenditure to support the infrastructure.

Figure 3.4: NOFBI and GCCN County Connectivity



Source: County connectivity project, 2014

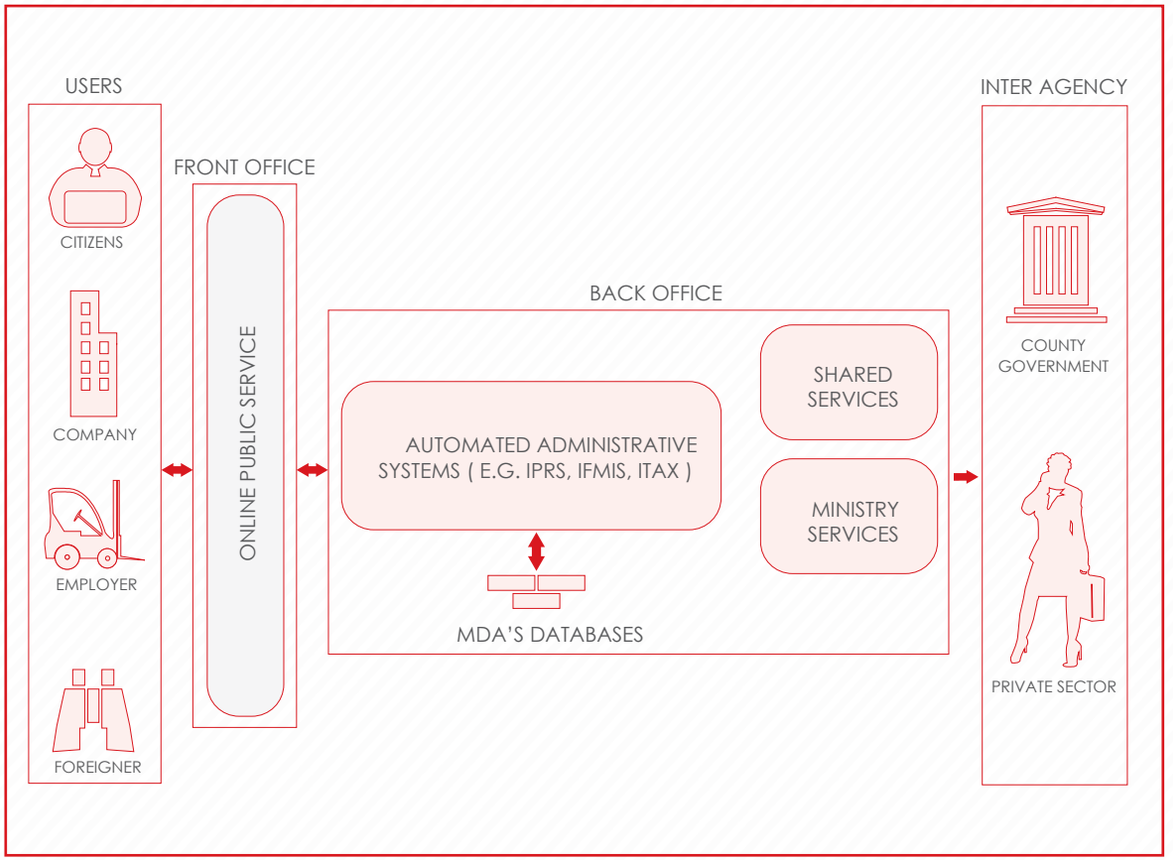
3.2.2 E-Government Services

Currently, data and information is created and stored in disparate data formats and media, with the bulk being paper based. As a result, such information is difficult to access electronically. In most instances, each Ministry Department and Agency (MDA) has its own data set concerning a similar entity. For example, when a citizen visits a hospital, the hospital stores the medical information, which is not available to another hospital. This is critical especially during emergencies, which can even lead to loss of life. The scenario is replicated across various sectors resulting in fragmented data sets, duplication of effort, wasted resources and inconsistent data. Similarly, there is lack of data linkages between various data sets in instances where the need for cross-reference is required for a service to be completed. For example, when a citizen is applying for utilities such as electricity or water, there is a need to provide KRA PIN number, which would be made easily available if the two data sets were linked via a data sharing mechanism.

Citizens are also obligated to reproduce documentation of personal information, which is already in the custody of other Government agencies. On the other hand, the Government does not benefit from intelligence information that other public agencies have, for various enforcement programs. A key threat is that some MDAs have legislation that may limit the sharing of data across Government.

The Government has however implemented some electronic systems in various State Departments and other state-owned institutions. These systems include national tax, immigration information, legal information, integrated financial management and education. Most of these systems are found in the National Treasury, Kenya Revenue Authority, and Ministry of the Interior. In addition, information is manually exchanged by and between departments and institutions using fax, e-mail and electronic media. These systems provide partial electronic services to citizens and businesses through Government portals. Figure 3.5 shows a generic e-Government model that would need to be implemented.

Figure 3.5: Generic Model of e-Government



Source: Authors, 2014

County Governments are taking ICT as an important tool for delivering services to citizens and businesses. There are few electronic governance systems. The existing systems focus on revenue collection based on Local Authorities Integrated Financial and Operations Management System (LAIFOMS). This is the system used by the local authorities that preceded the creation of County Governments. Most County Governments at this level have began developing County ICT Master Plans, which need to be aligned to the National ICT Master Plan. At the ministry level, all departments have been mandated to use IFMIS.

The following are weaknesses associated with e-government services:

- Low automation levels of business processes, which are threatening effective service delivery against the increasing high demand for efficiency in Government.
- Public data and information is stored in silos and disparate non-standard formats that are difficult to access.
- Silo provision of government services by government agencies that are not citizen centric.
- Limited capacities for counties to roll out e-government services.

3.2.3 ICT Human Capital

While the Government has been investing heavily in the ICT infrastructure, there has been little investment in the human resources required to design, develop and operate this infrastructure and the associated e-applications. With the increasing sophistication of ICT and its applications, high-end skills are required but their unavailability represents a key weakness in ICTA to fulfil its mandate. Specifically, the following are the human capacity weaknesses within ICTA:

- Lack of project management, engineering and information systems capacity required for procurement services to the Government and public institutions.
- Lack of advanced ICT and engineering project management capacity for large projects envisaged by the Master Plan.
- Lack of capacity for information systems professionals required to operate the information systems and networks. This is in the area of ERP deployment, network engineering and administration, data center support engineers and cyber security administrators.

3.2.4 Summary of Strengths and Weaknesses

Table 3.2 shows a summary of the internal environment analysis in terms of strengths and weaknesses.

Table 3.2: Summary of Strengths and Weaknesses

Strengths	Weaknesses
■ Supportive and knowledgeable Board of Directors	■ Formation of ICTA under legal notice (resulting in weak legal status)
■ Good relationship with ECM in counties that can fast-track the implementation	■ Inadequate technical capacity for enterprise systems and ICT infrastructure design and support in both ICTA and County Governments ■ Over reliance on consultants
■ Some staff with requisite qualifications and experience	■ Inadequate capacity to retain skilled staff that impact on service delivery
■ Existence of a National Broadband Strategy and ICT Master Plan, providing a clear national ICT roadmap	■ Lack of an enforcement structure for cyber crimes
■ ICTA experience from past infrastructure and capacity projects	■ Lack of integrated or coordinated information infrastructure
■ Significant investment in national infrastructure and systems (IFMIS, IPRS, Huduma portal, NOFBI, TEAMS, GCCN, CCP & Govt data center)	■ Insufficient exchequer funding, especially for recurrent expenditure to support the ICT infrastructure
■ ICTA track record in project management	■ Over dependence on donor resources for capital investment
■ Huge revenue generation capacity of ICTA, e.g. through commercializing standards and guidelines	■ Legacy of previous institutions, making it difficult to have a uniform culture
	■ Many staff on acting appointments
	■ Restrictive revenue generation capacity
	■ Fairly obsolete infrastructure and systems (e.g. IPPD)

CHAPTER 4: THE STRATEGY

The strategy adopted a thematic approach that consists of the identified themes, associated strategic objectives, strategies and expected outcomes. The strategic ICT themes are the key issues that the Authority needs to address in order to improve its performance over the plan period. The themes, which are derived from the situational analysis presented in chapter 3, drive the strategy and will therefore significantly help overcome the challenges and improve the performance of the Authority.

4.1 Strategic Themes

Table 4.1 shows five strategic themes that were identified for action, the sub-themes, their alignment with the National ICT Master Plan and the ICTA functions in the Legal Notice.

Table 4.1: Alignment of strategic themes with the National ICT Master Plan and the Legal Notice

Strategic themes	Sub-themes	Alignment with the National ICT Master Plan and the Legal Notice
1. Shared services	■ ICT infrastructure ■ Information infrastructure	■ ICT and information infrastructure foundations in the ICT Master Plan ■ E-Government services pillar in the ICT Master Plan
2. ICT innovations & enterprises	■ Institutional and legal framework to promote ICT industry ■ ITES market development	■ Developing ICT businesses pillar in the ICT Master Plan
3. Information security	■ Network infrastructure ■ Applications ■ Human resources ■ Legal & institutional framework	■ Legal notice ■ Aspects in ICT Master Plan
4. ICT human capital	■ ICTA technical capacity ■ Public sector digital literacy ■ ICT Leadership and management ■ Citizen digital literacy & skills development	■ ICT human capital & workforce development foundation in the ICT Master Plan
5. ICT Governance	■ Oversight ■ Project management office (PMO) ■ Govt enterprise architecture (GEA) ■ Standards & guidelines	■ Governance framework in the ICT Master Plan ■ Legal notice for standards and guidelines

In the following sections, the strategy for each of the themes is developed in terms of strategic objectives, strategies and expected outcomes.

4.2 Shared Services

Although there is significant investment in both ICT and information infrastructures, there are however several key challenges. There is need to improve their design and to enhance their integration, coverage, reliability and availability. There is also need to replace obsolete infrastructure components, develop business continuity and disaster recovery plans, enforce service level agreements and benchmark with best practices. In the case of information infrastructure, there is need for, integration and enforcement of best practice standards in business systems acquisition and implementation, review of development platforms and software licensing schemes, enhancement of systems security and to manage change during systems implementation.

It is important to take advantage of the increasing demand for broadband connectivity and online services, increasing Internet penetration and availability of more advanced and affordable infrastructure technology to offer better e-government services. There are also opportunities to outsource managed services, such as infrastructure as a service, software as a service and platform as a service. The key benefits include cost savings, ability to scale in response to demand (agility), speed of access and better quality of service provision. There is therefore need to review the existing ICT and information infrastructures to solve current challenges and take advantage of cloud computing to offer acceptable quality of public service. It is also necessary to develop adequate human capacity to manage shared infrastructure services.

The strategic objective of this theme will therefore be:

Strategic objective O1: To facilitate efficient and effective delivery of government online services using a suitable combination of private and public cloud computing offerings

ICTA will pursue the following set of strategies in order to achieve the above objectives.

S1.1 Develop and implement shared services standards, guidelines and policies that promote data and information sharing culture

S1.2 Develop and implement a public service cloud computing strategy

S1.3 Enhance/develop reliable shared ICT infrastructure

S1.4 Enhance or develop reliable shared ICT information infrastructure

S1.5 Manage Flagship Projects in the National ICT Master Plan

S1.6 Promote and facilitate open access and affordable broadband

S1.7 Create appropriate legal framework to facilitate sharing of data, infrastructure, services and systems

Pursuing the above strategic objective and strategies will realize the following outcomes:

Oc 1.1 Improved quality of government online service

Oc 1.2 Improved collaboration and renewed public value

Oc 1.3 Scalable IT architecture and improved delivery of e-government services

Oc 1.4 Internal efficiency and cost effectiveness

4.3 ICT Innovations and Enterprises

In Kenya the growth of ICT innovations and enterprises is critical for the development of the ICT sector. The following are some of the positive factors that are accelerating this realization: the existence of a law governing ICTs, Government's prioritization of ICT as a key development agenda, the creation of the ICT Authority, the implementation of a national fibre backbone, the widespread availability of broadband, the existence of a National Broadband Strategy and the National ICT Masterplan. For this to be fully realized, there is need to improve the investment climate (e.g. Government providing tax holidays to investors and lowering the cost of doing business), review the policy and legal frameworks and develop human capacity in ICT legal issues. It is also necessary to ensure more reliable and non-cost effective infrastructure and services, improved capacity to develop ITES market in the counties and improve the reliability, adequacy and cost of energy.

ICT Authority will therefore, pursue the following strategic objective:

Strategic objective O2: To facilitate technology innovation and sustainable ICT enterprises in Kenya

ICT Authority will therefore, pursue the following strategic objective:

Strategic objective O2: To facilitate technology innovation and sustainable ICT enterprises in Kenya

The above objective will be realized by pursuing the following strategies:

S2.1 Facilitate the use of public data by the private sector

S2.2 Create programs to support commercialization of innovations

S2.3 Promote outsourcing of government ICT services

S2.4 Promote effective partnerships for local ICT companies abroad

S2.5 Enhance capacity of local firms to undertake outsourced work

S2.6 Market the local ITES industry

The pursuit of the above strategic objective and strategies will result in the following outcomes:

Oc 2.1 Additional ICT companies established

Oc 2.2 Increased capacity of existing ICT companies

Oc 2.3 Additional 2% contribution to GDP (as a result of Oc 2.1 and Oc 2.2)

4.4 Information Security

As a consequence of frequent cyber attacks, the security of the government ICT network has become increasingly visible. The establishment of functions in charge of security, standards and project management office (PMO) in the ICT Authority structure has also bolstered the role of information security. However, there is need to strengthen the structure for more effective coordination across MDAs, to put in place a more comprehensive cyber security legislation, to develop security standards and to develop adequate skills and capacity in information security. It is necessary therefore to improve network design and infrastructure set-up and management, eradicate unlicensed and counterfeited software, develop adequate network infrastructure support skills and provide adequate budgetary provisions for business continuity.

It is crucial to take advantage of the following opportunities; centralised management of security due to frequent cyber attacks, stakeholder collaboration, the nascent community of security expertise in the country and revenue generation potential through information security consultancy.

The strategic objective for this theme is therefore:

Strategic objective O3: To ensure highly robust and trusted Government information systems

The following strategies will be pursued to achieve the above strategic objective:

S3.1 Develop and adopt information security standards and guidelines

S3.2 Implement the national cyber security Masterplan and strategy

S3.3 Strengthen the information security function within ICTA

S3.4 Develop a comprehensive ICT asset register including classification and document handling methodology

S3.5 Implement public key infrastructure (PKI)

S3.6 Develop a risk assessment programme

S3.7 Undertake periodic risk assessment on government information infrastructure

The outcomes to be achieved with the above strategic objective and strategies are:

Oc 3.1 Effective coordination of information security activities across government

Oc 3.2 Improved confidentiality, integrity, availability and accountability of Government services

4.5 ICT Human Capital

Although the ICT Authority has some ICT capacity and experience in ICT infrastructure, it requires to attract and retain more qualified staff in all thematic areas of this strategic plan in order to deliver and obtain additional exchequer funding to fulfill its mandate in ICT capacity building. The Authority also requires to develop managerial and leadership capacity in order to effectively provide ICT services to the public service, enhance the appreciation of the strategic role of ICT in public service leadership levels, create an appropriate organizational structure to manage ICT staff across the entire public service and enhance the motivation and productivity of its staff.

The Authority is geared to taking advantage of the digital agenda from the National leadership (Executive), the support and knowledge of the Board of Directors, the good relationship with County Executives, the legal mandate to promote ICT literacy and capacity in public service. The Authority is also geared to exploiting the opportunities presented by increasing demand for ICTs for effective governance in the growing National and County Governments. This is in line with the constitutional requirement for an efficient government, to provide information to the public and the youth who are conversant with ICT opportunities.

The ICT Authority will pursue the following strategic objective:

Strategic objective O5: To develop ICT skills and managerial and leadership capacity to transform public sector for efficient and effective service delivery and sustainable national development

The Authority will implement the following set of strategies to achieve the objective:

S4.1 Build and strengthen the technical, management and leadership capacity of ICTA

S4.2 Equip strategic leaders in public service with appropriate ICT leadership skills and understanding of the role of ICT

S4.3 Develop and sustain the ICT capacity of the public sector workforce to effectively exploit ICT infrastructure and systems

S4.4 Collaborate with academia and ICT industry to develop structured ICT training geared towards building high-end skills technical expertise, competencies and experience required to implement flagship ICT projects

The outcomes of pursuing the above strategic objective and strategies are:

Oc 4.1 Increased access to public services

Oc 4.2 Successful resourcing and implementation of ICT projects

Oc 4.3 Improved reliability of electronic public services

Oc 4.4 Increased ICT investment in Kenya

4.6 ICT Governance

The ICT governance theme has four sub-themes:

- The Oversight Committee envisioned in the National ICT Master Plan. This committee provides oversight for the flagship ICT projects, receives status M&E reports from the Inter-ministerial Project Steering Committee and resolves inter-ministerial conflicts and challenges in flagship ICT projects.
- The Government Enterprise Architecture, (GEA). These are the documents that define the overall vision, strategy, plan, architecture and implementation methodology. Although GEA is not mentioned in the ICT Master Plan, it is critical for ICT Authority to execute its mandate.
- The Project Management Office (PMO), which is the body that manages the execution of projects in conformance with the GEA.
- The standards, the documents that define the approved processes, data structures, technology requirements and human capacity requirements for Government ICT.

The ICT Authority has a cohort of well-qualified ICT staff with potential to perform GEA functions. It also has many staff members trained in project management, some track record in project management and a fledgling PMO framework. However, in order to contribute to the success of this pillar, it is necessary to implement a fully functional project management office, a common project management methodology and tools, complete and relevant standards and build staff competences in all the four areas of this pillar. It is also critical to operationalize the governance structures defined in the National ICT Master Plan, take advantage of the Jubilee digital agenda, exploit the potential for partnerships to develop GEA through CSR, fully implement ICTA's mandate with respect to development of standards and guidelines and influence the county governments with respect to both GEA and standards.

The strategic objective that would address the issues in this strategic theme is:

Strategic objective O5: To ensure that Government ICT projects are cost–effective, integrated and aligned with national objectives

This objective will be achieved by pursuing the following strategies:

S5.1 Adopt and operationalize the national ICT governance framework for the selection, implementation and evaluation of public ICT projects

S5.2 Design and operationalize a Government Enterprise Architecture

S5.3 Design and operationalize a Government ICT Project Management Office

S5.4 Develop, disseminate and enforce ICT standards for infrastructure services, systems and human capacity

The pursuit of the above strategic objective and strategies will realize the following outcomes:

Oc 5.1 Increased completion rate of Government ICT projects

Oc 5.2 Improved efficiency of public service delivery

Oc 5.3 Improved Kenya's e-Government ranking in the world by at least 15 places

Oc 5.4 Increased transparent access to critical Government services by citizens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CHAPTER 5: STRATEGIC INITIATIVES

The priority strategic initiatives or projects to be implemented during the plan period are shown in Table 5.1. The project activities are shown in Annex 2.

Table 5.1 Priority Strategic Initiatives or Projects

Projects	Sub-projects	Project Objectives
1. Shared services		
1.1 Policies, standards and guidelines	Initiating the development of relevant policy documents	■ Provide the policy direction in the deployment of shared services
	Development of ICT infrastructure standards and guidelines	■ Facilitate the design and implementation of a uniform ICT infrastructure.
	Develop and document standard system development life cycle for government projects	■ Facilitate development and implementation of uniform government information systems.
	Develop and document standard requirements for GOK software procurement	■ Guide the procurement of Government software
1.2 Government broadband infrastructure	GCCN Phase II	■ Improve the efficiency and effectiveness of the provision of e-government online services and lower the cost of transactions
	CCP Phase II	■ Provide broadband access to the unserved areas to facilitate access to government services
	NOFBI Phase II	■ Extend the existing fiber backhaul to the unserved areas to facilitate access to broadband
1.3 Business continuity program	Government Data Center (GDC) upgrade	■ Facilitate efficient and effective delivery of e-government services through the provision of reliable processing and storage facilities
	Business continuity	■ Facilitate the continued provision of e-government services after a disaster
	NOC implementation	■ Enable quick diagnosis of infrastructure issues proactively
1.4 Persons data hub	Transport information management system (TIMS)	■ Eliminate fraud/corruption within the road transport sector ■ Improve efficiency and effectiveness in resources utilization ■ Provide single window single source of truth on road transport data ■ Improve on compliance to traffic rules and enforcement ■ Improve access and security to information ■ Integration of all existing heterogeneous databases from the various Transport stakeholders into one Central Data Repository (CDS) ■ Provide access to shared transport data both through the internet and mobile technologies

Projects	Sub-projects	Project Objectives
	National physical addressing system	■ Facilitate ease location of establishment and buildings
1.6 National spatial data infrastructure (NSDI)	None	■ Facilitate the efficient processing of land records
1.7 Open data single window	None	■ Provide a mechanism to view and download government data for the intended purposes
1.8 Other shared services – applications	Government Unified Messaging system (GUMS)	■ Reduce the cost of communication within MCDAs and increase the efficiency in communication by providing voice and video inter-connectivity between MCDAs
	Web hosting	■ Increase the efficiency in the access to the websites
	Citizens portals	■ Provide a one stop page(s) to access online government services
	Enterprise software/ database licenses	■ Reduce the cost of yearly license payments by the government
	Help desk system	■ Provide a mechanism to channel requests for shared services users to enhance efficiency and accountability
1.9 Smart counties programme	None	■ Assist County Governments in planning and implementing ICT projects (ICT roadmaps and rollout of key applications)
1.10 Government shared services centre	None	■ Establish a Shared Services Centre for the delivery of ICT services within the Government
1.11 Promotion of e-Government services	None	■ Sensitize the public on the open data and the possible opportunities
1.12 Legal framework	e-Government, Data Protection, Freedom of Information and Cyber Security legislations	■ Initiate the replacement of the Legal Order No. 198 with a comprehensive e-Government legislation ■ Initiate the review of the Data Protection and Freedom of Information Bills ■ Initiate the review of the existing Cyber Security legislative provisions to create a comprehensive Cyber Security law

Projects	Sub-projects	Project Objectives
2. ICT Innovations and Enterprises		
2.1 Capacity of existing local ICT firmss	Classification of existing local ICT firms	■ Classify and categorize local ICT firms capable of undertaking ITES opportunities
	Capacity of local ICT firms to undertake outsourced work	■ Enhance capacity of local firms to undertake outsourcing work
	Use of public data by local ICT firms to innovate	■ Facilitate the use of public data by the local private sector firms to make commercial products
2.2 Scaling up ICT innovations	None	■ Support the commercialization of ICT innovations
2.3 Outsourcing of government ICT services	None	■ Promote outsourcing of government ICT services to local ICT firms
2.4 International trade by local ICT firms	None	■ Promote effective partnerships for local ICT companies abroad
2.5 Kenya News Agency project	None	■ Digitization KNA assets (photos) within the library and provide these for purchase through an e-Commerce portal
2.6 IBM Research Agenda Project	None	■ Provide training and mentoring to Kenyan Resident Scientists ■ Grant the Government with non-exclusive, fully paid, and non-transferable license to use the technology developed in the IBM Laboratory solely for purposes of deployment in an ICT Transformation Project or for a Government agency's deployment
3. Information Security		
3.1 Information Security Framework	None	■ Create coherent information security standards and guidelines
3.2 Information security function strengthening	None	■ Strengthening the IS function in ICTA to reduce turn-around time to information incidents and increase systems availability ■ Establish a computer emergency/incident response team (Government CIRT)
3.3 Information security capacity	None	■ Create broad awareness and understanding of information security for management staff ■ Train operational and user staff on information security

Projects	Sub-projects	Project Objectives
3.4 ICT infrastructure appraisal and asset register	None	■ Carry out ICT infrastructure appraisal and establish a comprehensive and updated ICT asset register
3.5 Cyber Security Master Plan and Strategy implementation	None	■ Implement the Cyber Security Master Plan and Strategy to ensure IS coordination and industry growth
3.6 Risk management	None	■ Proactively identify risks and implement attendant mitigations
4. ICT Human Capital		
4.1 Technical capacity development programme for ICTA	None	■ Develop the skills & capacity of technical staff at ICT Authority in order to transform the operations of government
4.2 Public service Capacity building programme	Strategic leaders	■ Equip strategic leaders with appropriate ICT leadership skills with deep understanding of the business environment so as to provide cutting-edge solutions and accelerate the implementation of ICT projects
	End-users	■ Build the capacity of public servants to make productive use of the available technology and infrastructure to deliver timely, affordable and effective services to citizens
	Change management program	■ Implement a change management program to reduce resistance to adoption and use of ICT
4.3 High-end ICT professionals	Structured training, internship and mentorship programme for ICT graduates	■ Facilitate structured training, internship and mentorship programme and build the next generation of globally competitive ICT, talents that will transform Kenya through world-class service delivery
	Institution to accredit ICT training and certify ICT professionals	■ Establish an institution to accredit ICT institutions and certify ICT professionals
4.4 Citizens capacity building programme	ICT skills database	■ Develop a national skills workforce system to capture and provide a single point repository on skills availability in the country that industry can access and engage with Citizens on employment
	Digital literacy for citizens	■ Provide an enabling through ICT training for citizens to effectively access & use Government services
	e-resource centres in counties	■ Establish e-resource centres in counties

Projects	Sub-projects	Project Objectives
5. ICT Governance		
5.1 Development of the Governance Roadmap	None	■ Plan and strategize in preparation for the formation of the relevant offices and execution of the programmes
5.2 Establishment of the Project Oversight Secretariat at ICTA	None	■ Ensure that Government ICT projects are championed at the highest levels of the Government and aligned with national objectives
5.3 Establishment and operationalization of the GEA Management office	None	■ Set up a GEA management office to optimize the inter-dependencies and relationships among government operations and the underlying ICT infrastructure and applications that support these operations in government agencies
5.4 Design, set up and operationalize a Government ICT Project Management office	None	■ Institutionalize a coordinated approach to execution of ICT projects in Public Service
5.5 Develop, disseminate and enforce ICT standards for infrastructure services, systems and human capacity	None	■ Ensure that the GoK can cost-effectively and conveniently integrate and share its ICT infrastructure, equipment, applications and processes and that ICTs developed or procured by GoK are robust, fit-for-purpose, upgradable, durable and give value for money

CHAPTER 6: STRATEGY IMPLEMENTATION

6.1 Projects Budget and Schedule

Table 6.1 Shows the financial implications of the selected strategic initiatives/projects to be implemented over the plan period. It also shows the schedule of the initiatives/projects.

Key: Amount is in Kenya Shillings, Budget estimate in Millions

PROJECTS	SUB - PROJECTS	BUDGET	2013/14	2014/15	2015/16	2016/17	2017/18
1. Shared Services							
1.1 Policies, standards and guidelines	Initiating the development of relevant policy documents	0.5					
	Development of ICT infrastructure standards and guidelines	5.0					
	Develop and document standard system development life cycle for government projects	5.0					
	Develop and document standard requirements for GOK software procurement	5.0					
1.2 Government broadband infrastructures	GCCN Phase II	800.0					
	CCP Phase II	1,200.0					
	NOFBI Phase II	105.0					

PROJECTS	SUB - PROJECTS	BUDGET	2013/14	2014/15	2015/16	2016/17	2017/18
1.3 Business continuity programs	Government Data Center (GDC) upgrade	200.0					
	Business continuity	2.0					
	NOC implementation	109.0					
1.4 Persons data hub	Persons Digital National Master Database.	500.0					
	Civil Registry Division (CRD) automation	50.0					
	E-registries/Digitization	380.0					
	Integration Middleware/Master Data Management (MDM)	1,000.0					
1.5 Assets data hubs	Transport Information Management System (TIMS	10.0					
	Business continuityNational Physical Addressing System	50.0					

PROJECTS	SUB - PROJECTS	BUDGET	2013/14	2014/15	2015/16	2016/17	2017/18
1.6 National Spatial Data Infrastructure (NSDI)	None	500.0					
1.7 Open data single window)	None	100.0					
1.8 Other shared services – applications	Government Unified Messaging System (GUMS)	419.0					
	Web Hosting	50.0					
	Citizens Portals	200.0					
	Enterprise software/database licenses	600.0					
	Help desk system	50.0					

PROJECTS	SUB - PROJECTS	BUDGET	2013/14	2014/15	2015/16	2016/17	2017/18
1.9 Smart counties programme	None	500.0					
1.10 Government shared services centre	None	500.0					
1.11 Promotion of e-Government servicess	None	20.0					
1.12 Legal framework	e-Government, Data Protection, Freedom of Information and Cyber Security legislations	20.0					
Sub-total 1		7,380.5					

PROJECTS	SUB - PROJECTS	BUDGET	2013/14	2014/15	2015/16	2016/17	2017/18
2. ICT Innovations and Enterprises							
2.1 Capacity of existing local ICT firms	Classification of existing local ICT firms	5.0					
	Capacity of local ICT firms to undertake outsourced work	120.0					
	Use of public data by local ICT firms to innovate	100.0					
2.2 Scaling up ICT innovations	None	95.0					
2.3 Outsourcing of government ICT services	None	30.0					
2.4 International trade by local ICT firms	None	20.0					
2.5 Kenya News Agency projects	None	304.5					
2.6 IBM Research Agenda Project	None	860.0					
Sub-total 2		1,534.5					

PROJECTS	SUB - PROJECTS	BUDGET	2013/14	2014/15	2015/16	2016/17	2017/18
3. Information Security							
3.1 Information Security Framework	None	10.0					
3.2 Strengthening Information security function	None	125.0					
3.3 Information security capacity	None	6,200.0					
3.4 ICT infrastructure appraisal and asset register	None	154.0					
3.5 Cyber Security Master Plan & Strategy implementation	None	142.0					
3.6 Risk management	None	100.0					
Sub-total 3		6,731.0					

PROJECTS	SUB - PROJECTS	BUDGET	2013/14	2014/15	2015/16	2016/17	2017/18
4. ICT Human Capital							
4.1 ICTA Technical capacity development programme	None	**400.0**					
4.2 Public service capacity building programme	National Govt Strategic leaders training	**165.0**					
	County Govt strategic leaders training	**120.0**					
	End-user training	**360.0**					
	Change management program	**250.0**					
4.3 High-end ICT professionals	ICT graduates Structured training, internship and mentorship programme	**500.0**					
	Institution to accredit ICT training and certify ICT professionals	**100.0**					
4.4 Public ICT literacy programme	ICT skills database	**150.0**					
	Digital literacy program for citizens	**210.0**					
	e-resource Centres within Counties	**470.0**					
Sub-total 4		**2,725.0**					

PROJECTS	SUB - PROJECTS	BUDGET	2013/14	2014/15	2015/16	2016/17	2017/18
5. ICT Governance							
5.1 Development of the Governance Roadmap	None	12.0					
5.2 Establishment of the Project Oversight Secretariat at ICTA	None	70.0					
5.3 Establishment & operationalization of the GEA Management office	None	500.0					
5.4 Design, set up and operationalize a Government ICT Project Management office	None	1,500.0					
5.5 Develop, disseminate and enforce ICT standards for infrastructure services, systems and human capacity	None	300.0					
Sub-total 5		2,382.0					
Total		20,752.5					

6.2 Resource Mobilization

6.2.1 ICT Budget Domains

ICT budgets will be at three levels as indicated below:

- Centralized shared services. For sourcing, implementation and management of shared services, the budgets should be under the ICT Authority. In return, ICT Authority will be required to provide clear SLAs to all the entities using the shared services. These services include: communications connectivity (LANs, WANs, Backbone links (fibre, wireless, etc.); data centres and servers; software licenses (such as Oracle, Microsoft, DMS, etc.); and computing devices (at a later stage to leverage on economies of scale and framework contracting).
- Ministry-specific business systems. For specific business systems in the different Ministries, the functional aspects of the system will belong to the specific Ministry. ICT Authority will work with the Ministry to deliver the required functionality to ensure seamless integration and interoperability. Common items like the data centre, database platforms etc., will leverage on the shared services and will be provisioned accordingly. The budgets for the specific functional systems will remain with the Ministries who will work closely with the ICT Authority as outlined in the Project Governance structure in the National ICT Master Plan.
- Common ICT items. The budget for the common use items, like desktops and consumables, will be left with the Ministries. ICTA will create standards and guidelines to streamline the procurement of these items. Use of framework contracting will be introduced to ease and streamline this component as well.

6.2.2 Government Funding

20.75b Kenya shillings will be required over the five years. The projects meet the criterion of being core poverty interventions, a factor that is consistent with the objectives of Kenya Vision 2030, MTP2 for 2013-2017 and MDGs as emphasized in Treasury Circular ES 1/03 of November 25, 2008. Past exchequer allocation to ICT has been very low, with most of the funding coming from donor funds. The Government resource allocation to ICT should be increased for national development. It is not prudent to continue with over-reliance on donor funding for the strategic issues of ICT.

6.2.3 Public Private Sector Partnership

The Public-Private Sector Partnership concept has been stretched to incorporate people-focused benefits that make it very attractive as a funding source for ICTA projects. For this reason, the Authority's relationships with the private sector, both within and outside the country, will be fully exploited to raise a huge proportion of the funding required. In this connection, ICTA intends to exploit the National PPP strategy to raise funds from national, regional and global Private Sector.

6.2.4 Donors and Development Partners

ICTA, as an initial step will re-engineer its business processes to stabilize its absorption rate of the World Bank Funds. Programme funding proposals will in addition be sent to relevant donors, through the Grants Division of ICTA. It is hoped these efforts will raise a significant proportion of the budget. To support these efforts, partnerships and collaboration with corporations such as Cisco, HP, Microsoft, Google Kenya, Acer and Intel will be established. Also earmarked for partnerships and collaboration are local corporations such as Safaricom, Jamii Telecom, Air Tel Kenya, Kenya Data Network and Telkom Kenya, among others.

ICTA will market its strategy and projects to a variety of bilateral and multilateral donors that currently support projects in Kenya in order to achieve its funding requirements. These donors include the Delegation of the European Commission to Kenya, Europe AID, European Investment Bank (EIB), Austrian Development Agency (ADA), Belgium Technical Cooperation (BTC), Canadian International Development Agency (CIDA), African Development Bank, Agence Francaise Development, Danish International Development Agency, Department for International Development (DfID), Global Environment Facility, Japan International Cooperation Agency, Nordic Development Fund, Norwegian Agency for Development Cooperation, Partnership for Economic Governance and Reform, Saudi Fund for Development, Swedish International Development Agency, UNDP, UNIDO, USAID and World Bank.

Prudent use of mobilized resources is essential for ICTA to "realize more with the same if not less". In this regard, the Authority has adopted cost saving as a metric in its performance management framework. Therefore, in ICTA results-based monitoring and evaluation system, focus will move towards improving productivity while funds used to increase output will strengthen resource mobilization efforts.

6.3 Implementation Plan

6.3.1 Implementation Matrix

An implementation matrix has been developed based on the strategy in Chapter 4 and the strategic initiatives in Chapter 5. This is shown in Annex 3. It shows the outcomes, performance indicators for each outcome, targets to be achieved over the plan period and the persons/offices responsible for achieving these targets.

This strategic plan will deliver expected results through the various activities to be done to ensure successful execution.

6.3.2 Internal Consistency

Successful strategic plan implementation requires congruence between the various internal dimensions of an organization. Key among these are structure, systems, processes, style (leadership), skilled staff and shared values. These need to be aligned to support the implementation of the strategic plan.

6.3.3 Annual Work Plans

The ICT Authority should develop annual work plans, derived from the five-year implementation matrix with details of what will be done during the relevant year. Timelines are more specific (within the year) and more persons in the department (below the head of department) are assigned implementation responsibilities.

6.3.4 Annual Budgets

It will be important to maintain a link between the annual budget, annual work plan and the corporate strategic plan. Annual work plans should be completed in time to inform the relevant annual budgets and at no time should annual budgets be developed before the annual work plans.

6.3.5 Partnerships

ICTA shall use well-chosen and managed partnerships to achieve the outcomes and targets in this strategic plan. Many local and international organizations have demonstrated a keen interest in the success of ICT in Kenya and are willing to contribute ideas, skills and resources towards progress in ICT. ICTA shall therefore foster four types of partnerships:AGENDA-BASED with partners who share ICTA's determination to achieve common ICT targets;

- RESOURCE-BASED with partners who are willing to facilitate ICTA's goals by providing needed skills, technology or financial support (in the form of grants or loans);
- EXECUTION-BASED with partners who undertake to directly work together with ICTA to implement a programme or project;
- PUBLICITY-BASED with partners who agree to disseminate ICT information and results in order to publicize ICT achievements and information.

ICTA expects to form these types of partnerships with a variety of stakeholders including, National Government ministries; County Executives in charge of ICTs; State Corporations; private sector; bilateral and multilateral donors and lenders; public sector ICT staff and Kenya citizens. ICTA shall therefore

- Identify and classify potential partners;
- Approach and negotiate with potential partners;
- Sign appropriate legal instruments (e.g. memoranda of understanding and contracts) with individual and grouped partners;
- Adopt best practice governance structures and operational mechanisms towards good management of partnerships;
- Regularly communicate with partners;
- Provide value within partnerships; and
- Ensure that all partnerships deliver on the agreed ICT plans and agenda for the people of Kenya.

6.3.6 Communicating the Strategic Plan

ICT Authority staff and partners will be involved in implementing this strategic plan. There is need to sensitize them on key highlights of the plan being implemented and what their roles and expectations are. This calls for communicating the strategic plan to staff and partners in various fora and using different media.

6.4 Monitoring and Evaluation

Monitoring and evaluation (M&E) helps those involved in executing the strategic plan assess the progress in line with expectations in the plan. Monitoring and evaluation of performance shall be the responsibility of those involved in the implementation of the strategic plan led by the Monitoring and Evaluation Unit of ICTA. In this regard, the ICT Authority Directorates shall carry out quarterly self-assessment of performance and provide proofs of compliance to the M&E unit. They will be expected to have the capacity to conduct self-assessment of performance and will be given the responsibility to undertake performance measurements and reporting.

6.4.1 Setting Performance Targets

At the beginning of the year, all the concerned units will set their performance targets in a schedule form, together with set timelines as part of their annual work plans as derived from the second ICT strategy. The performance framework in Table 6.2 will be used in setting the targets.

Table 6.2: Proposed Performance Framework

Table 6.2: Proposed Performance Framework

Expected results	Performance indicator	Sources of verification	Data collection methods	Date collection frequency	Responsibility	Assumptions

6.4.2 Monitoring Performance

Monitoring involves establishing indicators; setting up systems to collect information relating to these indicators as shown in the framework above; collecting and recording the information; analyzing the information; and using the information to inform day-to-day management. The key reasons for monitoring can be summarized as follows:

- To establish if performance targets have been met and necessary explanations given.
- To act as an early warning system to detect potential difficulties and help to address them during implementation; and
- To provide feedback to the next phase of implementation, reduce the cost and/or increase the efficiency of post evaluation studies.

The performance contracting guidelines will inform the contracting at all levels of the Authority, in house capacity enhancement, as well as evaluation of the targets mutually agreed upon between the contracting parties. ICTA will also develop and use a reward and sanction system to complete the circle of critical modules for performance-based management. ICTA will adopt, domesticate and apply relevant policies and regulations associated with a corporate management-by-results approach to support the implementation, monitoring and evaluation processes.

The M&E Unit will monitor the implementation of the strategic plan.

6.4.3 Performance Evaluation

Performance evaluation shall be carried out quarterly and annually in all the strategic themes. The agreed performance indicators and targets at all levels will be used for benchmarking of this evaluation. The outcome of the annual evaluation will form a basis for the following year's plan.

6.5 Organizational Structure

The Board of Directors approved ICTA organizational structure in 2014. A high-level view of this structure is shown in Figure 6.1.

Figure 6.1: High-level ICTA Organizational Structure

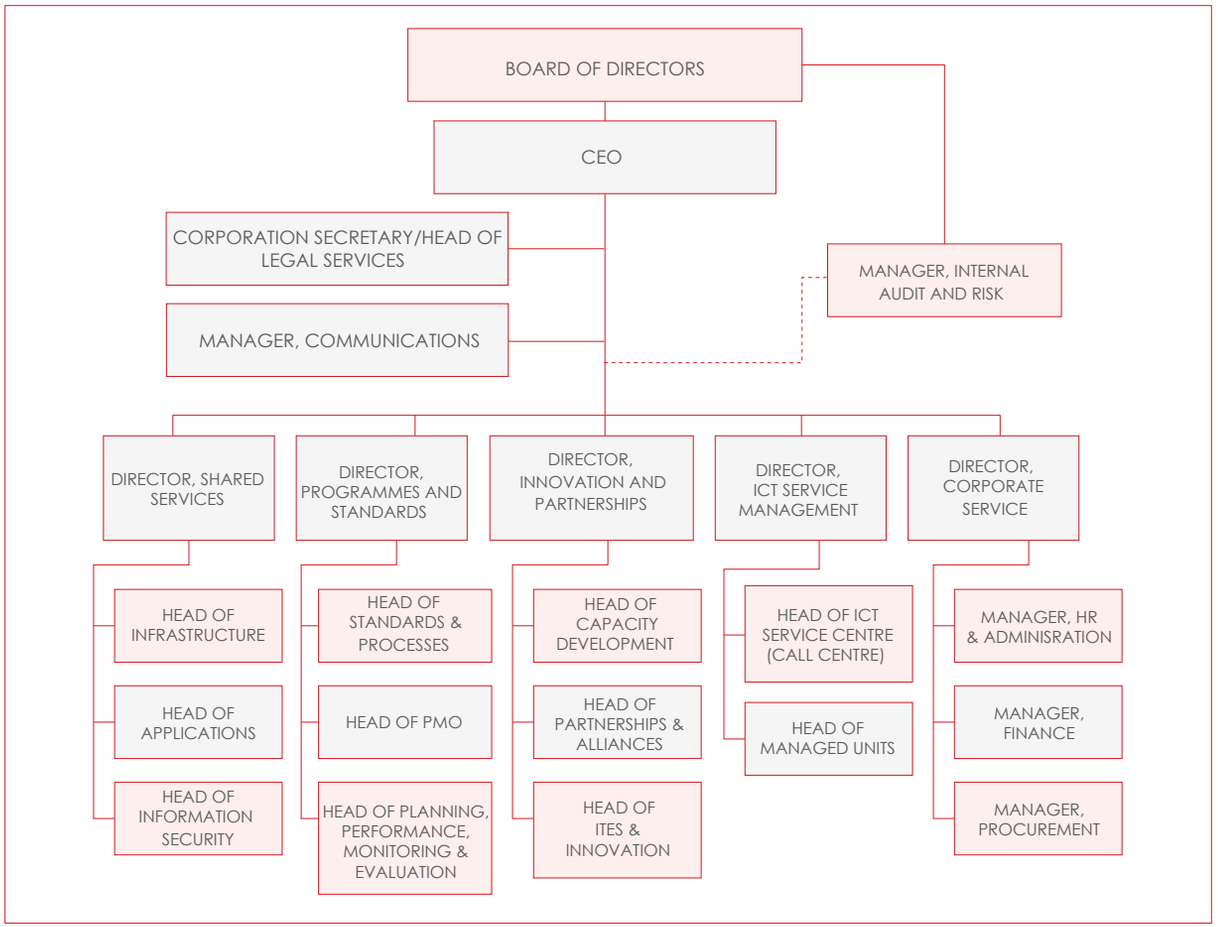
HIGH LEVEL ORGANISATION STRUCTURE

ICTA shall provide the high-end ICT professional services to the state departments, County and other organizations that shall be implementing the large flagship projects. Ministerial ICT units in each of the state departments shall carry all end-user computing and ICT operational services. These units will be headed by a Chief Information Officer (CIO), who will have a dual reporting mechanism: technically reporting to the CEO of ICTA and administratively reporting to the Principal Secretary of the relevant State Department. Although the ICT unit structure is yet to evolve, it would be ideal to have the CIO in ICTA. This will ensure that coordination with ICTA is more effective.

As defined in the National ICT Master Plan:

- ICTA Chief Executive Officer shall be a secretary to an ICT Oversight Committee that shall be chaired by the President of the Republic of Kenya.
- The ICTA CEO shall advise the President, through the Cabinet Secretary, on all ICT matters.
- The Chief Information Officers of the different State Departments in National Government shall constitute a working group under ICTA that shall be chaired by the CEO of ICTA. The working group shall scrutinize all ICT budgets and approve them.
- A working group of County Executive for ICT shall also be chaired by the CEO of ICTA and shall have the mandate to review and approve all County ICT budgets and projects and to align them to national priority areas as defined in the National ICT Master Plan.

Figure 6.1: High-level ICTA Organizational Structure



6.6 Project Management

Sound project management is an important ingredient of all successful projects. ICTA's role in project management shall be a major contribution towards ensuring that the Government of Kenya achieves its ICT targets. ICTA shall therefore ensure that all ICT projects follow a project management methodology and shall build national capacity in ICT project management. The Authority will also execute its roles in flagship ICT projects as defined in the National ICT Master Plan.

It shall be the responsibility of ICTA to monitor the progress of the ICT sector in line with the national planning documents such as the MTEP II, the National ICT Master Plan and the various programme and sector plans and roadmaps. In line with this responsibility, ICTA shall carry out regular surveys and maintain data portals to ensure that it can track the progress of projects and report the results to stakeholders in a timely fashion.

There will be three levels of coordination of ICT projects:

- **Level 1:** The Oversight Committee chaired by the President will coordinate the implementation of the National ICT Master Plan.
- **Level 2:** Large programmes (e.g. county, NSDI, e-Government) will be coordinated through the appropriate Inter-ministerial Project Steering Committee with ICTA acting as the secretariat.
- **Level 3:** ICTA shall employ internal project governance structures to ensure that its own projects are coordinated.

6.7 Risks and Mitigation Strategies

The successful execution of this strategy may be subject to a number of key risks. These risks, their levels and mitigation are outlined in Table 6.3.

Table 6.3: Risks and Mitigation Strategies

Risks	Level of Risk	Mitigation Strategies
Low staff morale and commitment	High	■ Make all appointments by February 2015 ■ Deploy the rest of the staff in appropriate National Government Ministries
Inability to attract and retain high-end ICT professionals	High	■ Make the remuneration structure competitive in order to attract and retain high-end ICT professionals
Inadequate resource allocation	High	■ Lobby Government to increase budgetary allocation to the ICT Authority, especially for Operations and Maintenance ■ Aggressively seek funding from partners and donors
Low technical capacity	High	■ Recruit from the market where there are gaps ■ Develop existing technical staff in critical areas ■ Outsource in areas where the market has better skills and can more efficiently and effectively deliver services
Non-operationalization of the project governance structure in National ICT Master Plan	High	■ Operationalize the project governance structure in National ICT Master Plan
Non-uniform culture	High	■ Implement mechanisms to create a uniform culture that is result-oriented and where there is team spirit ■ Organize regular team building activities

ANNEXES

Annex 1: Participants in the Strategic Planning Processes

A. Participants who created the initial ICTA draft strategic plan

	Name	Email address
1.	Rose Macharia	rmacharia@ict.go.ke
2.	Victor Kyalo	vkyalo@ict.go.ke
3.	Lawrence Nduva	lnduva@ict.go.ke
4.	Dr. Katherine Getao	kategetao@ict.go.ke
5.	Eunice Kariuki	eunice.kariuki@ict.go.ke
6.	John Sergon	jsergon@ict.go.ke
7.	Joshua Muiruri	jmuiruri@ict.go.ke
8.	Zilpher Owiti	zowiti@ict.go.ke
9.	Thomas Odhiambo	todhiambo@ict.go.ke
10.	Francis Mwaura	fmwaura@ict.go.ke

B. Participants of the ICTA Strategy meeting held In Mombasa Voyager Beach Hotel from 22nd to 25th September 2014

	Name	Email address
1.	Prof. Timothy Waema	waema@uonbi.ac.ke
2.	Victor Kyalo	vkyalo@ict.go.ke
3.	Lawrence Nduva	lnduva@ict.go.ke
4.	Dr. Katherine Getao	kategetao@ict.go.ke
5.	Eunice Kariuki	eunice.kariuki@ict.go.ke
6.	John Sergon	jsergon@ict.go.ke
7.	Joshua Muiruri	jmuiruri@ict.go.ke
8.	Zilpher Owiti	zowiti@ict.go.ke
9.	Thomas Odhiambo	todhiambo@ict.go.ke
10.	Francis Mwaura	fmaura@ict.go.ke
11.	Norman Mwangi	normwangi@ict.go.ke
12.	George Otieno	gotieno@ict.go.ke
13.	Mary Kerema	mkerema@ict.go.ke
14.	Evans Kahuthu	ekahuthu@ict.go.ke

C. Board Members who participated in the Board retreat to discuss the draft ICTA strategic plan held In Mombasa Voyager Beach Hotel on 25th September 2014

	Name	Designation
1.	Hon. Edwin Yinda	Chairman
2.	Eng. E. N. Waithaka	Alt Director (PS Lands)
3.	David Mugo	Director
4.	Prof. Timothy Waema	Director
5.	Prof. Elijah Omwenga	Director
6.	Ms. Bertha Dena	Director
7.	Ms. Esther Kibere	Director
8.	Ugas Mohammed	Director
9.	Charles Kairu	Alt Director (PS National Treasury)
10.	Kirimi Guantai	Alt Director (PS MoICT)
11.	Victor Kyalo	CEO

ANNEX 2: DETAILS OF PROJECTS

Projects	Sub-projects	Project Objectives
1. Shared Services		
1.1 Policies, standards and guidelines	Initiating the development of relevant policy documents	■ Initiate the drafting of the necessary policy documents ■ Participation in policy development process ■ Implementing the policy recommendations
	Development of ICT infrastructure standards and guidelines	■ Drafting of ICT infrastructure standards and guidelines documents ■ Approval of standards and guidelines ■ Communication of standards and guidelines ■ Enforcement of standards and guidelines
	Develop and document standard system development life cycle (SDLC) for government projects	■ Drafting of SDLC standards and guidelines documents ■ Approval of standards and guidelines ■ Communication of standards and guidelines ■ Enforcement of standards and guidelines
	Develop and document standard requirements for GOK software procurement	■ Drafting of guidelines for GOK software procurement ■ Approval of guidelines ■ Communication of guidelines ■ Enforcement of guidelines
1.2 Government broadband infrastructure	GCCN Phase II	■ Preparation concept paper and project charter ■ Requirements analysis ■ Network high level design ■ Compilation of tender documents ■ Sourcing of contractor ■ Implementation ■ Testing and commissioning ■ Monitoring and evaluation
	CCP Phase II	■ Final design of phase II ■ Sourcing of equipment ■ Installation of equipment ■ Testing and commissioning ■ Monitoring and evaluation
	NOFBI Phase II	■ Management of the NOFBI project

Projects	Sub-projects	Project Objectives
1. Shared Services		
1.3 Business continuity program	Government Data Center (GDC) upgrade	■ Preparation concept paper and project charter ■ Requirements analysis ■ Network high level design ■ Compilation of tender documents ■ Sourcing of contractor ■ Managing implementation ■ Testing and commissioning ■ Monitoring and evaluation
	Business continuity	■ Drafting of the business continuity plan ■ Approval of the business continuity plan ■ Implementation of the business continuity plan
	NOC implementation	■ Preparation concept paper and project charter ■ Requirements analysis ■ Network high level design ■ Compilation of tender documents ■ Sourcing of contractor ■ Implementation ■ Testing and commissioning ■ Monitoring and evaluation
1.4 Persons data hub	Digital National Master Database of Persons	■ Preparation concept paper and project charter ■ Requirements analysis ■ Systems design ■ Compilation of tender documents ■ Sourcing of contractor ■ Project management of implementation ■ Testing and commissioning ■ Monitoring and evaluation

Projects	Sub-projects	Project Objectives
1.4 Persons data hub	Civil Registry Division (CRD) automation	■ Preparation concept paper and project charter ■ Requirements analysis and Business Process Re-engineering ■ System design ■ Compilation of tender documents ■ Sourcing of contractor ■ Project management of implementation ■ Testing and commissioning ■ Monitoring and evaluation
	E-registries/Digitization	■ Preparation concept paper and project charter ■ Requirements analysis and assessment of automation levels ■ Compilation of tender documents ■ Sourcing of contractor ■ Digitization process ■ Monitoring and evaluation
	Integration Middleware/Master Data Management (MDM)	■ Preparation concept paper and project charter ■ Requirements analysis ■ Compilation of tender documents ■ Sourcing of contractor ■ Implementation of the MDM ■ Testing and commissioning ■ Monitoring and evaluation
1.5 Assets Data Hub	Transport Information Management System (TIMS)	
	National Physical Addressing System	■ Preparation concept paper and project charter ■ Requirements analysis ■ Systems design ■ Compilation of tender documents ■ Sourcing of contractor ■ Project management of implementation ■ Testing and commissioning ■ Monitoring and evaluation

Projects	Sub-projects	Project Objectives
1.6 National Spatial Data Infrastructure (NSDI)	None	■ Preparation concept paper and project charter ■ Requirements analysis ■ Systems design ■ Compilation of tender documents ■ Sourcing of contractor ■ Project management of implementation ■ Testing and commissioning ■ Monitoring and evaluation
1.7 Open Data Single Window	None	■ Enhancement of the open data portal ■ Implement a framework for continuous update of the data portal from implemented e-government applications and other sources ■ Sensitization workshops for key stakeholders
1.8 Other shared services – applications	Government Unified Messaging system (GUMS)	■ Roll out to the MDAs ■ Training and capacity building
	Web hosting	■ Determining hosting requirements ■ Upgrading software ■ Upgrading the hosting environment
	Citizens portals	■ Requirements analysis for the portals ■ Designing of the portals ■ Implementation of the portals ■ Monitoring and evaluation
	Enterprise software/ database licenses	■ Determining the number of enterprise software ■ Negotiating for the enterprises licenses
	Help desk system	■ Preparation concept paper and project charter ■ Requirements analysis ■ Compilation of tender documents ■ Sourcing of contractor ■ Implementation of the help desk ■ Testing and commissioning ■ Monitoring and evaluation

Projects	Sub-projects	Project Objectives
1.9 Smart Counties Programme	None	■ Assist in the development of ICT roadmaps in 46 county governments ■ Assist with the development and rollout of the Integrated County Management (ICM) tool that will enable Nairobi City County to manage its resources more efficiently ■ Enable Nairobi City County employees to communicate within an internally owned telecommunications infrastructure ■ Development of a transactional web portal for Nairobi City County information, support online forms and applications that will integrate to transactional and back office systems ■ Assist in the development of ICT Roadmaps, and the development and rollout of the Integrated County Management (ICM) tool for revenue collection and management and two other applications which are not covered by the IFMIS program in two county governments
1.10 Government shared services centre	None	■ To establish a Shared Services Centre for the delivery of ICT services within the Government
1.11 Promotion of e-Government services	None	■ Preparation of workshops/ seminars
1.12 Legal framework	e-Government, Data Protection, Freedom of Information and Cyber Security legislations	■ Initiating the review of the relevant bills ■ Lobbying for the enactment of the bills
2. ICT Innovations and Enterprises		
2.1 Capacity of existing local ICT firms	Classification of existing local ICT firms	■ Classify and ranking firms according to number of innovations, turnover, staff, etc. ■ Prepare a country positioning/marketing of local firms abroad
	Capacity of local ICT firms to undertake outsourced work	■ Establish a Centre of Excellence in ITES/BPO in Kenya ■ Facilitate CMMI, ISO and project management training and certification ■ Carry out SLA negotiation and management training ■ Carry out training of trainers (ToT) training ■ Carry out public procurement training

Projects	Sub-projects	Project Objectives
	Use of public data by local ICT firms to innovate	■ Classify Government data and identify what constitutes public data and commercial data ■ Ensure all GoK systems are integrated with the open data platform ■ Manage public data hubs for rapid development of free and commercial services for citizens and the public and private sectors ■ Enhance capacity of staff to manage/update the open data portal ■ Leverage on the provisions Freedom of Information Act to scale up open data uptake by private sector
2.2 Scaling up ICT innovations	None	■ Review the ST&I policy and Act ■ Develop a collaboration framework ■ Collaborate with the Kenya National Innovation Agency (KENIA), Ministry of Industrialization, private sector, etc. ■ Review the Tandaa programme and establish a sustainable fund to support start-up ICT firms
2.3 Outsourcing of government ICT services	None	■ Identify and classify government services for outsourcing ■ Develop a business case for outsourcing in government ■ Facilitate procurement of outsourcing services ■ Enforce preferential treatment for local firms participating in ICT procurement in government ■ Roll-out an awareness and communication program to local ICT firms
2.4 International trade by local ICT firms	None	■ Undertake international trade missions with local ICT firms ■ Undertake capacity development for local ICT companies in international trade
2.5 Kenya News Agency project	None	■ Digitization KNA assets (photos) within the library and provide these for purchase through an e-Commerce portal
2.6 IBM Research Agenda Project	None	■ Provide training and mentoring to Kenyan Resident Scientists ■ Grant the Government with non-exclusive, fully paid, and non-transferable license to use the technology developed in the IBM Laboratory solely for purposes of deployment in an ICT Transformation Project or for a Government agency's deployment

Projects	Sub-projects	Project Objectives
3. Information Security		
3.1 Information Security Framework	None	■ Development of IS standards and guidelines ■ Dissemination of standards and guidelines to MCDAs ■ Compliance monitoring and enforcement of IS standards and guidelines
3.2 Information security function strengthening	None	■ Review the information security structure to strengthen it and ensure it reports directly to CEO ■ Undertake an assessment of the IS capacity within MCDAs ■ Undertake recruitment and placement
3.3 Information security capacity	None	■ Develop a sensitization and awareness programme ■ Conduct training for operational and user staff ■ Conduct awareness training for management staff
3.4 ICT infrastructure appraisal and asset register	None	■ Undertake a GoK ICT infrastructure survey ■ Identify information security gaps ■ Undertake information security infrastructure upgrade ■ Create a comprehensive ICT asset register
3.5 Cyber Security Master Plan and Strategy implementation	None	■ Identify stakeholders ■ Organise stakeholder engagement forums for establishment of roles and responsibilities ■ Execute internal GoK information security programme
3.6 Risk management		■ Prepare the risk assessment framework ■ Undertake the risk assessment ■ Identify mitigations measures ■ Execute mitigation measures

Projects	Sub-projects	Project Objectives
4. ICT Human Capital		
4.1 Technical capacity development programme for ICTA	None	■ Develop a competency and training needs assessment document ■ Training & certifying staff on Network, Security, Project Management, Systems Administrators & Databases ■ Development of National E-learning platform and upload 6 courses ■ Develop a performance management system
4.2 Public service capacity building programme	Strategic leaders training	■ Conduct a training needs assessment for the public service strategic leaders ■ Prepare a training schedule ■ Train strategic leaders on ICT leadership and governance in a phased manner
	End-user training	■ Conduct a training needs assessment for the end users ■ Prepare a training schedule for public service employees ■ Roll-out public service ICT training programme in phases
	Change management program	■ Develop a change management framework & training ■ Implement the change management program
4.3 High-end ICT professionals	Structured training, internship and mentorship programme for ICT graduates	■ Plan a structured training, internship and mentorship programme for ICT graduates with private sector and universities ■ Roll-out the structured training, internship and mentorship programme for ICT graduates ■ Prepare a criteria to select an institution to accredit ICT training and certify ICT professionals ■ Establish an institution to accredit ICT training and certify ICT professionals ■ Collect data on ICT skills in Kenya ■ Develop a web based ICT skills database system ■ Create a system for continuous and sustainable update of the database
	Digital literacy for citizens	■ Establish citizens ICT training needs ■ Roll out a national citizens digital literacy programme in phases
	e-resource centres in counties	■ Establish e-Resource centers Counties

Projects	Sub-projects	Project Objectives
5. ICT Governance		
5.1 Development of the Governance Roadmap	None	■ Develop position paper and CAB memo for formation of oversight committee ■ Develop high-level strategies: GEA, PMO, Standards ■ Develop road maps: GEA, PMO, Standards ■ Research and develop position papers: GEA, PMO, Standards
5.2 Establishment of the Project Oversight Secretariat at ICTA	None	■ Development and ratification of the National ICT Governance framework ■ Set up an office for the secretariat ■ Orientation of the appointed members of the ICT Governance committee ■ Develop a calendar of events/ meetings for the secretariat ■ Develop detailed KPIs and reporting templates
5.3 Establishment and operationalization of the GEA Management office	None	■ Development / procurement of GEA Artifacts ■ Set up a GEA office ■ Appoint qualified and competent personnel to run the GEA office ■ Set and develop an ICT performance management system ■ Develop GEA processes, standards and strategies ■ Develop and Implement MCDA awareness creation programme ■ Appoint competent officers within ICTA and MDA's to be certified in GEA. ■ Carry out/ conduct the certification program
5.4 Design, set up and operationalize a Government ICT Project Management office	None	■ Establish Standards department within GEA function ■ Draft legal/policy framework ■ Develop / procure standards portal ■ Develop and implement MCDA awareness creation programme ■ Prioritize and develop / adopt ICT standards ■ Ensure that 500 MCDA officers are certified in standards in Government

ANNEX 3: IMPLEMENTATION MATRIX

A3.1 Shared Services

Outcomes	KPIs	Baselines	Targets	Targets
Improved quality of government online service	Level of satisfaction, Quality of online government services	No survey has been carried out	2013/14: - 2014/15: baseline 2015/16: 10% increase 2016/17: 30% increase 2017/18: 30% increase	■ D/Shared Services – ICTA, MOIC, MCDA
	No. of SLAs adhered to	0	2013/14: - 2014/15: 5 2015/16: 10 2016/17: 15 2017/18: 20	■ D/Shared Services
Improved collaboration and re-newed public value	Number of MCDAs using Gov-ernment infrastructure	67	2013/14: 67 2014/15: 72 2015/16: 77 2016/17: 82 2017/18: 87	■ D/Shared Services – ICTA, MCDAs
Scalable IT architecture and im-proved delivery of e-government services	Number of integrated networks	3 (GCCN, NOFBI, CCP)	2013/14: 3 2014/15: 4 2015/16: 6 2016/17: 8 2017/18: 10	■ County Governments, ICTA/ SS
	Number of fully shared platforms	2 (IFMIS, GCCN)	2013/14: 2 2014/15: 3 2015/16: 6 2016/17: 9 2017/18: 12	■ D/Shared Services –ICTA, MCDAs
Percentage of completed projects on time	10%	10%	2013/14:10% 2014/15: 20% 2015/16: 40% 2016/17: 60% 2017/18: 80%	■ D/Programs & Standards – ICTA
Internal efficiency and cost effectiveness	Number of fully integrated online government systems	1 (IFMIS)	2013/14: 1 2014/15: 2 2015/16: 4 2016/17: 6 2017/18: 8	■ D/Shared Services – ICTA, MCDAs

Outcomes	KPIs	Baselines	Targets	Targets
Internal efficiency and cost effectiveness	Number of new online end to end services	0	2013/14: 0 2014/15: 2 2015/16: 15 2016/17: 15 2017/18: 15	■ MCDAs, D/Shared Services – ICTA, Private Sector
	Increased revenue collection through online e-Government services	No survey has been carried out	2013/14: - 2014/15: baseline 2015/16: 2% increase 2016/17: 5% increase 2017/18: 5% increase Two (2) % for the first	■ MCDAs, D/Shared Services – ICTA
	Number of enterprise licensing regimes	0	2013/14: 0 2014/15: 1 2015/16: 2 2016/17: 3 2017/18: 4	■ D/Shared Services – ICTA, MCDAs

A3.2 ICT Innovations and Enterprises

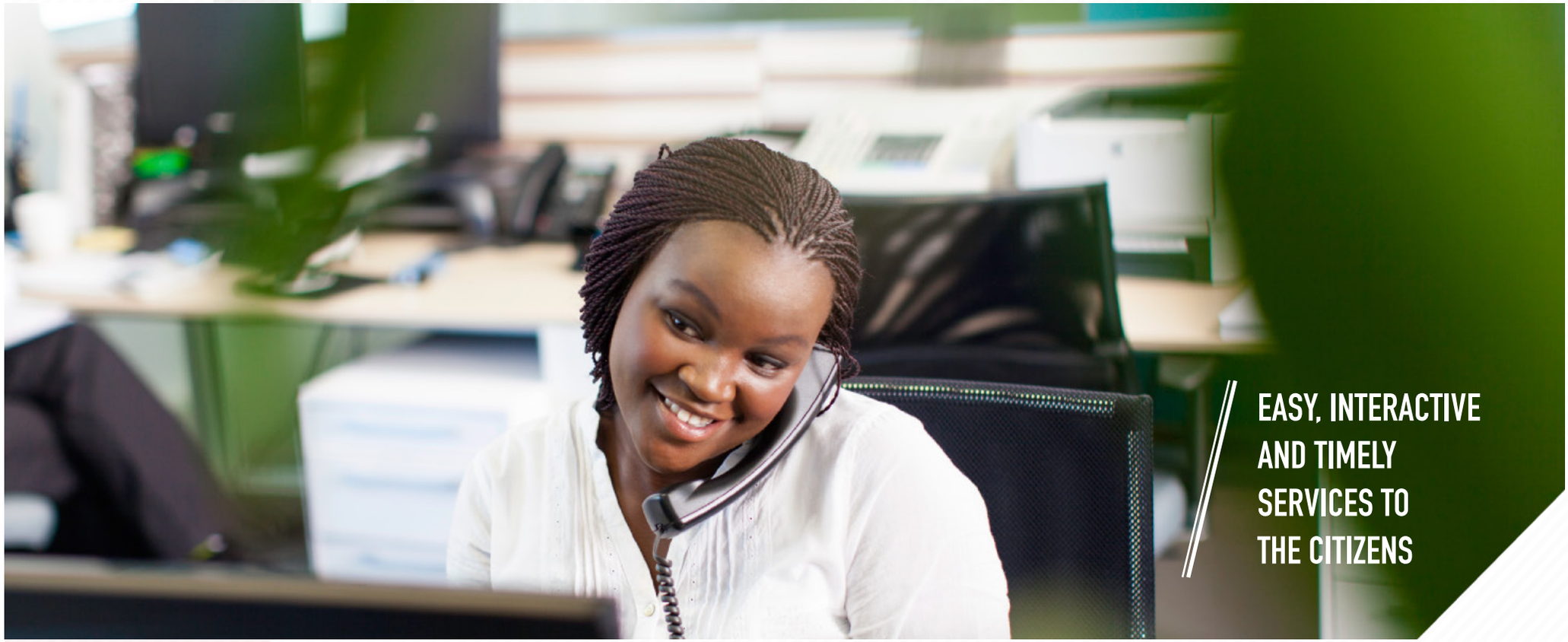
Outcomes	KPIs	Baselines	Targets	Responsibility
New companies established	Number of new ICT businesses established in Kenya	5 companies under incubation with NaiLAB	2013/14: 5 2014/15: 5 2015/16: 10 2016/17: 15 2017/18: 25	■ D/Research, Innovation & Partnerships – ICTA
	Number of successfully commercialized ICT innovations	5 projects in R&D under IBM Research Lab & 3 projects in R&D under Strathmore University	2013/14: 0 2014/15: 1 2015/16: 3 2016/17: 5 2017/18: 10	■ D/Research, Innovation & Partnerships – ICTA, PIC, MoICNG, KNBS
	Number of direct jobs created	21,073	2013/14: 21,073 2014/15: 23,000 2015/16: 25,000 2016/17: 26,000 2017/18: 27,000	■ D/Research, Innovation & Partnerships – ICTA, PIC, MoICNG, KNBS

Outcomes	KPIs	Baselines	Targets	Responsibility
Increased capacity of existing ICT companies	Number of local ICT firms certified for outsourcing work	1 organization CMMI Level 3, 6 Sigma Certification	2013/14: 2 2014/15: 0 2015/16: 1 2016/17: 2 2017/18: 4	■ D/Research, Innovation & Partnerships – ICTA, PIC, KenInvest, MoICT, MoFAIT
	Number of individuals certified for outsourcing work	43 individuals CMMI Level 3, 2 individuals with Certified Outsourcing Professional Competence, International Associate	2013/14: 50 2014/15: 10 2015/16: 20 2016/17: 40 2017/18: 40	■ D/Research, Innovation & Partnerships – ICTA, PIC, KenInvest, MoICT, MoFAIT
	Number of GoK services outsourced to local ICT companies	Digitization contracts under TCIP (Companies Registry, Kenyatta National Hospital Registry, Pumwani hospital records, Municipal Council of Kisumu Registry, and Births Registry)	2013/14: 5 2014/15: 2 2015/16: 2 2016/17: 4 2017/18:6	■ D/Research, Innovation & Partnerships – ICTA, ICTA CEO, Treasury
	Number of new international outsourcing contracts by local ICT firms	158 international contracts	2013/14: 158 2014/15: 8 2015/16: 9 2016/17: 9 2017/18: 10	■ D/Research, Innovation & Partnerships – ICTA
	Number of direct jobs created	2,000	2013/14: 21,073 2014/15: 23,000 2015/16: 25,000 2016/17: 26,000 2017/18: 27,000	■ D/Research, Innovation & Partnerships – ICTA, PIC, MoICNG, KNBS

A3.3 Information Security

Outcomes	KPIs	Baselines	Targets	Responsibility
Effective coordination of information security activities across government	Incidence response Turn-around time	5 days	2013/14: 96 hours 2014/15: 24 hours 2015/16: 12 Hours 2016/17: 4 Hours 2017/18: 2 Hours	■ Information Security Unit - ICTA, National Computer Incident Response Team Coordination Center (KE-CIRT/CC), National Cyber security Committee (NCSC)
	Information security incidents logs	N/A	2013/14: None 2014/15: weekly 2015/16: 1 Day 2016/17: Real time 2017/18: Real time	
Improved confidentiality, integrity, availability and accountability of Government services	% of Service up time	70%	2013/14: 80% 2014/15: 95% 2015/16: 99.99% 2016/17: 99.999% 2017/18: 99.9999%	■ Information Security Unit - ICTA, Shared Services, GEA, MoICT (Information Security Policies and Legal Framework)
	% of Information Leakage	20%	2013/14: 25% 2014/15: 15% 2015/16: 10% 2016/17: 5% 2017/18: 0%	
	Number of Trained IS Officers	4	2013/14: 2 2014/15: 10 2015/16: 15 2016/17: 20 2017/18: 25	
	No of users trained on IS awareness	0	2013/14: 40 2014/15: 500 2015/16: 500 2016/17: 500 2017/18: 500	
	Frequency of error	No Information	2013/14: 15% 2014/15: 5% 2015/16: 1% 2016/17: 0% 2017/18: 0%	

Outcomes	KPIs	Baselines	Targets	Responsibility
	Logs Integrity “”Access”””	N/A	2013/14: 85% 2014/15: 95% 2015/16: 99.99% 2016/17: 99.999% 2017/18: 99.9999%	



A3.4 ICT Human Capital

Outcomes	KPIs	Baselines	Targets	Responsibility
	Number of reviewed ICT curricula for Technical, Public Servants and Citizens	3	2013/14: 3	■ ICTA -Partnership & Innovation officer
	Number of vendor training partners on certification of technical teams	Partner list	2013/14: 1 document	■ ICTA -Partnership & Innovation officer
Improved reliability of electronic public services	Number of reports on competency and Training Needs Assessment (TNA)	Available Report TNA 2010 No report on Competency	2014/15: 2	■ ICTA -Partnership & Innovation officer, PSC
	Number of certified staff on Network, Security, Project Management, Systems Administration & Database Management	150	2013/14: 150 2014/15: 150 2015/16: 100 2016/17: 200 2017/18: 200	
	Number of technical eLearning portals	None	2013/14: 1	
	Number of courses on E-learning platform (courses in GEA, PMO, standards, networks & security)	3 (see http://masomo.e-government.go.ke/login/index.php)	2013/14: None 2014/15: 1 Review platform 2016/17: 3 2017/18: 3	
	Number of skills inventory and performance management systems	None	2015/16: 2	■ ICTA -Partnership & Innovation officer
Successful resourcing and implementation of ICT projects	Number of change management framework in place	None	2014/15: 1	■ ICTA-Partnership & Innovation Office, PSC, MDAs
	Number of ICT staff and end-users trained on change management (ICTA staff - on the strategic plan; end-users - on change mgnt)	None	2014/15: 200 2015/16: 200 2016/17: 300 2017/18: 300	
	No. of Senior Managers trained on ICT leadership per year	None	2014/15: 50 2015/16: 5o 2016/17: 50 2017/18: 50	■ ICTA-Partnership & Innovation Office, PSC, MDAs

Outcomes	KPIs	Baselines	Targets	Responsibility
Increased access to public services	Number of skills set document	2012 report	2015/16: 1	■ ICTA-Partnership & Innovation Office, PSC, MDAs
	% of public servants Certified on digital literacy	10%	2013/14: 5% 2016/17: 10% 2017/18: 30%	■ ICTA-Partnership & Innovation Office, PSC, MDAs
	Number of active online courses for public servants	None	2016/17: 2 2017/18: 4	■ ICTA-Partnership & Innovation Office, PSC, MDAs
	% of citizen digital literacy in every County	None	2016/17: 5% per county 2017/18: 20% per county	■ ICTA--Partnership & Innovation Office, County (ECM)
	Number of Senior Managers in Counties trained on ICT leadership	None	2014/15: 50 2015/16: 100 2016/17: 200 2017/18: 150	■ ICTA--Partnership & Innovation Office, County (ECM)
	Number of e-Resource centers established in counties	20	2015/16: 90 2016/17: 100 2017/18: 100	■ ICTA--Partnership & Innovation Office, County (ECM)
Increased ICT investment in Kenya	Number of accreditation institutions established	None	2015/16: 1	■ ICTA -Partnership & Innovation officer, Academia, Industry
	Number of web based ICT skills database system	None	2016/17: 1	
	Number of trainees who have gone through Internship & Mentorship programme	95	2013/14: 95 2014/15: 200 2015/16: 300 2016/17: 300 2017/18: 500	■ ICTA-Partnership & Innovation Office, PSC, MDAs

A3.5 ICT Governance

Outcomes	KPIs	Baselines	Targets	Responsibility
Improve Kenya's e-Government ranking in the world by at least 15 places **Increased transparent access to critical Government services by citizens**	Kenya's annual position in selected global ranking e.g. UN global e-Government Development Index; ITU ICT Development Index; WEF Networked Readiness Index; Ease of doing business ranking	119th	2013/14: 90th 2014/15: 85th 2015/16: 80th 2016/17: 75th 2017/18: 70th	■ Head/GEA ICTA in collaboration with relevant agency
	Number of online services	>20	2013/14: 25 2014/15: 50 2015/16: 100 2016/17: 150 2017/18: 200	■ ICTA -Partnership & Innovation officer
	Percentage of citizens using online services	1.2%	2013/14: 1.2% 2014/15: 5% 2015/16: 10% 2016/17: 15% 2017/18: 20%	
	Number of corruption reports at Huduma Service Centres	>20%	2013/14: 150 2014/15: 150 2015/16: 100 2016/17: 200 2017/18: 200	
	Number of technical eLearning portals	None	2013/14: 20% 2014/15: 15% 2015/16: 10% 2016/17: 5% 2017/18: 5%	
Improved efficiency of public service delivery	Proportion of GoK applications aligned to GEA framework	-	2013/14: 2% 2014/15: 15% 2015/16: 30% 2016/17: 35% 2017/18: 40%	■ Head/GEA ICTA
	Proportion of systems accessing shared data hubs	-	2013/14: 0% 2014/15: 5% 2015/16: 10% 2016/17: 15% 2017/18: 20%	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Outcomes	KPIs	Baselines	Targets	Responsibility
	Proportion of public servants using a public electronic communication / collaboration tool for internal communication	8,000 (GUMS +)	2013/14: 10,000 2014/15: 20,000 2015/16: 30,000 2016/17: 40,000 2017/18: 50,000	■ Head of Applications
	Average rating of online service by users	>10%	2013/14: 15% 2014/15: 30% 2015/16: 50% 2016/17: 60% 2017/18: 80%	
	Number of standards and guidelines developed, adopted and implemented in infrastructure, systems, services	12 partially developed but not implemented	2013/14: 1 2014/15: 4 2015/16: 6 2016/17: 8 2017/18: 12	■ Head of Standards
	Number of MCDA's awareness programmes planned and implemented	-	2013/14: 4 2014/15: 8 2015/16: 12 2016/17: 16 2017/18: 20	
	Number of MCDA's officers certified in project management	-	2013/14: 50 2014/15: 100 2015/16: 150 2016/17: 200 2017/18: 250	
	Proportion of planned laws, policies, frameworks and standards artifacts adopted and used	-	2013/14: >1 2014/15: >1 2015/16: >1 2016/17: >1 2017/18: >1	■ Head of Standards

Outcomes	KPIs	Baselines	Targets	Responsibility
Increased completion rate of Government ICT projects	Proportion of public ICT projects aligned with GEA	-	2013/14: 2% 2014/15: 15% 2015/16: 30% 2016/17: 35% 2017/18: 50%	■ Head PMO ICTA ■ PM training Institutions, Artifact consultants and suppliers
	Proportion of projects successfully completed each year (scope, budget, quality, time)	20% (Accenture)	2013/14: 20% 2014/15: 30% 2015/16: 40% 2016/17: 60% 2017/18: 80%	
	Proportion of planned PMO Artifacts successfully deployed and institutionalized	-	2013/14: 2 2014/15: 4 2015/16: 6 2016/17: 8 2017/18: 10	
	Number of project managers certified	40 (out of 80)	2013/14: 20 2014/15: 40 2015/16: 60 2016/17: 80 2017/18: 80	

ICT Authority

Telposta Towers, 12th Floor, Kenyatta Ave

P.O. Box 27150 - 00100 Nairobi, Kenya

t: + 254 202 211 960/61

Email: info@ict.go.ke or communications@ict.go.ke

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