

KENYA ICT BOARD
Connected Kenya
Master Plan 2017



KENYA:

WORKING TOWARDS A SOCIETY
BUILT ON KNOWLEDGE

Inclusion. Innovation. Beyond Broadband.

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By 2017

Every individual connected.

Kenya is Africa's ICT Hub.

A society built on knowledge.

Public services for all.



Cabinet Secretary's Statement

Access to information is a basic human right that every citizen should have and every Government is obliged to deliver. It is vital for the efficient delivery of public and private sector product and services, which are responsive to the needs of citizens and businesses as well as capacity creation.

For a variety of reasons (economic and policy), developing countries like Kenya are less equipped to take advantage of the potential in ICT to stimulate growth, and are likely to fall behind advanced economies. This plan is therefore not designed in isolation, given that there is evidence from developed countries that investment in ICT facilitates economic growth by increasing productivity. As the Kenya government ensures an enabling ICT environment and regulatory framework, this plan aims at stimulating the setup of ICT-related businesses to enhance employment creation.

At the heart of this document is a strategic intent to develop a technology neutral robust ICT sector that will enhance economic growth through creation of businesses and hence employment. In the execution of this plan, Kenya will become an ICT hub for the region, improve the lives of her citizens and see significant ICT-led economic growth in line with Vision 2030. This Plan aims at building and promoting an environment where more service sector businesses are created and are able to thrive through leveraging on ICT.

ICT offers key benefits that make life simpler and more convenient for citizens and businesses and provides channels to collaborate and share information, which in turn enables innovation.

The government while guiding budgets will ensure that projects deliver the value they promise towards attainment of the objectives of this Master Plan. Achievements will underlie the Government's commitment in enhancing transparency, ensuring greater accountability to the public as well as opening up new opportunities for local entrepreneurs.



Dr. Fred Okengo
Cabinet Secretary
for Information,
Communication &
Technology

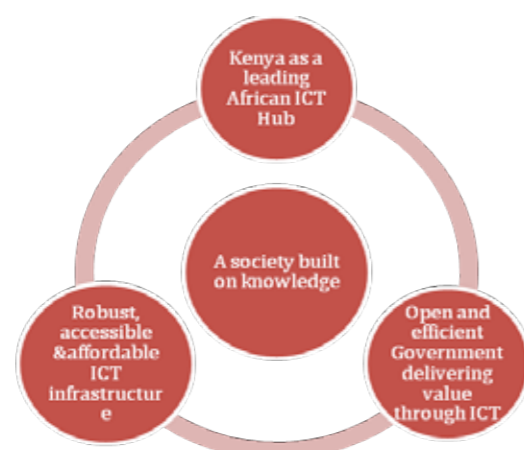
Foreword

PERMANENT SECRETARY IN THE MINISTRY OF INFORMATION AND COMMUNICATION



Dr. Bitange Ndemo
Permanent Secretary,
Ministry of Information
and Communications

The Master Plan is focused on driving real economic growth. The Ministry of Information and Communication will take a three-pronged approach in the execution of this plan, which recognizes government projects that deliver citizen's needs, the need to strengthen industry through ICT and encouragement of the creation of ICT businesses.



Kenya's ICT Master Plan aspires to position Kenya as a regional leader in ICT while delivering the latest and most robust infrastructure.

Technology neutrality, adoption of internationally benchmarked open standards, transparency and accountability are all key to the success of this Master Plan. Further, the Ministry is diligently working on standardizing business processes and the development of sub-plans to allow for the delivery of

innovative public services within government.

We are strengthening governance and increasing engagement with government and with Private Sector to remove barriers that would impede execution. This plan centers on the needs of the citizen to ensure all efforts are designed to address those needs and truly deliver a society built on knowledge.

There are challenges anticipated in enabling the realization of ICT as an integral component of Vision 2030. This plan has therefore, been designed with interventions that are specific to both Social and Economic Pillars. The initiatives in this plan have been mainstreamed with the objectives of Vision 2030 given that the government acknowledges that the future of our economy depends on developing a skillful and knowledgeable human capital.

For Kenya to achieve full benefits of ICT, the plan has set seven key intervention areas under the vision 2030 social pillar namely: Education and Training, Health Sector, Water and Sanitation, Environment, Housing and Urbanization, Gender, Youth and Vulnerable groups, Social Equity and Poverty Reduction. In addition, there would be six key areas of intervention under the vision 2030 economic pillar. These are: Tourism, Agriculture, Wholesale and Retail Trade, Manufacturing, Business Process Outsourcing and Financial Services.

The Project Team

The development of the Connected Kenya 2017 Master Plan has been a year long process driven by the Government of Kenya through the Ministry of Information and Communication.

In developing this plan, our ambition was to produce a simple document which every citizen would understand while committing to clear deliverables over the next 5-years. The deliverables are key to achieving our outlined vision, which centers on growing the economy through infusion of ICT and knowledge into all our Vision 2030 pillars. The projected economic growth is largely pegged to enhanced citizen value.

The Master Plan has been a collaborative effort across key public and private sector representatives who offered their support. These included government agencies, private sector, learning institutions, media industry, individuals and telecommunications operators. Extensive benchmarking was done with other economies that have taken great strides to articulate, develop and implement their ICT Master Plans.

Earlier drafts of the plan were validated globally and a local citizen engagement was carried out and feedback incorporated. This plan is a living document, which will be reviewed annually to assess progress and realignment to the priorities of the day.

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List of Abbreviations

AVU:	Africa Virtual University
BPO:	Business Process Outsourcing
CCK:	Communication Commission of Kenya
CEO:	Chief Executive Officer
GDP:	Gross Domestic Product
IBM:	International Business Machine
R&D:	Research and Development
ICT:	Information Communication Technology
ID card:	Identification Card
IT:	Information Technology
ITES	Information Technology Enabled Services
NHIS:	National Health Information System
NOFBI:	National Optic Fiber Backbone Infrastructure
PPPs:	Public-Private-Partnerships
RFID:	Radio-frequency identification
SENet:	Schools Education Network
SME:	Small and Medium Enterprises
STI:	Science, Technology and Innovation
TRIC:	Technology Research and Integration Centers
USD:	United States Dollar
WCIT:	World Conference on International Telecommunications



1. Introduction

Science, Technology and Innovation (STI) are core pillars of Vision 2030. Kenya, through this Masterplan, intends to provide an ICT focus to attainment of Vision 2030 through ICT policies and initiatives. Currently, the ICT sector employs over 100,000 people and grew at an average of nearly 20% per year from 1999-2009. The ICT sector contributed to 14% of the country's GDP growth between 2000 and 2009 (*World Bank -Kenya Economic Update December 2010 Edition*). Currently, 9 out of 10 Kenyans have access to a mobile phone. This positions ICT as a key catalyst for economic and GDP growth.

This 5-year reiterative Master Plan, determines priorities and key initiatives to be undertaken across the Vision 2030 socio-economic pillars. Vision 2030 Pillars to be addressed are:

Social Pillar

This pillar will specifically dwell on seven priority areas, namely;

- Education and Training
- The Health Sector
- Water and Sanitation
- The Environment
- Housing and Urbanization
- Gender, Youth and Vulnerable groups
- Social Equity and Poverty Reduction

Economic Pillar

Under the economic pillar, there is also seven key intervention areas i.e.

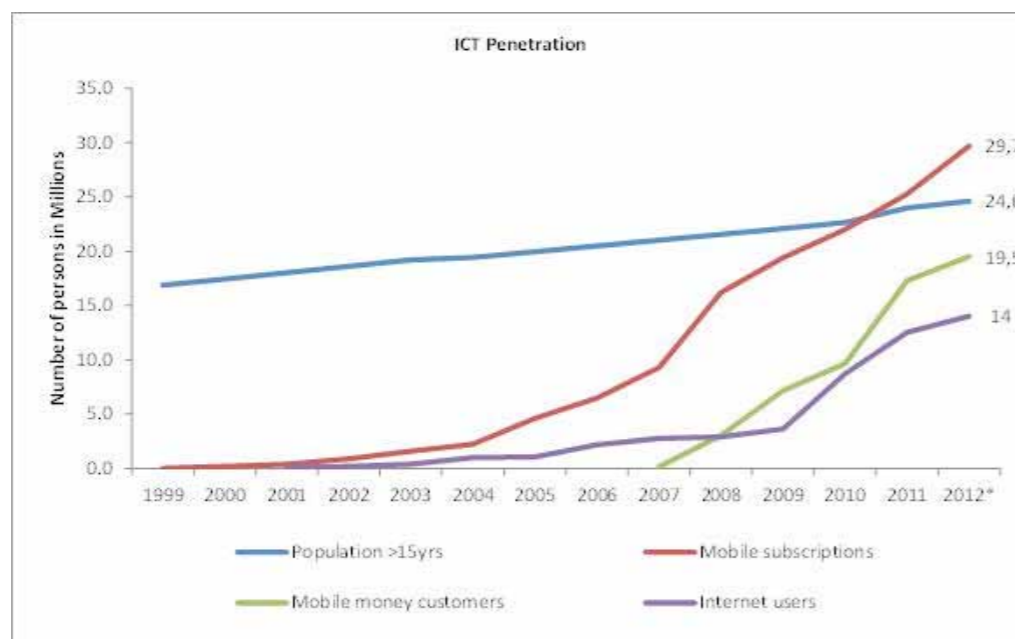
- Tourism
- Agriculture
- Wholesale and Retail Trade
- Manufacturing
- Business Process Outsourcing
- Financial Services

2. Background

Kenya is currently in an ICT boom, which is steering economic growth across multiple industry sectors. The success of the ICT industry has been propagated by importation and retail interventions of equipment and services, rollout of the National Optic Fiber Backbone Infrastructure and four undersea cables, implementation of high-speed networks by Telecommunications Operators, establishment of policy frameworks and regulation of the ICT sector, among others.

Kenya has successfully delivered efficient and well-regulated communication infrastructure and continuously pursue technologies that will further enhance penetration of ICT in Kenya. In recent times, the lowering of interconnection and communication costs has resulted in easier access to communication networks by the majority of citizens. The *CCK Quarterly Sector Statistics Report Quarter 1 of 2011/2012*¹ indicated a growth to 26.4 million mobile phone subscribers. The number of Internet users increased to 14.3 million from 12.53 million in the previous period.

By December 2012, Kenya had crossed the 30 million mark by active cell phone numbers. Further to this, Kenya has reached 20 million users of mobile money and 15 million Internet users.



Source: World Bank calculations based on Communication Commission of Kenya

Figure 2.1: ICT Penetration

¹ Communication Commission of Kenya [CCK] Quarterly Sector Statistics Report 1st Quarter, July-Sept 2011/2012

A 2012 study done by Research ICT Africa, has indicated that Kenya has the lowest price for mobile service in Africa with the cost of the low-user mobile basket being just US\$1.90 for a basket of 30 calls and 100 SMS per month. This being largely driven by regulatory intervention to set a mobile termination rate which is the lowest in Africa at 1.44 shillings (1.68 US cents) per minute (*Communications Commission of Kenya, 2010*).

Kenya has been an African voice in advocating for a free Internet and free access to information. This has been demonstrated by the role it plays during the WCIT-12 stakeholders' engagements on Free Internet. In July 2011, the Kenyan Government launched the Open Data Initiative to offer transparency and open development dialogue between citizens and the public sector. This, by extension, increased demand for ICT access and services and promoted the creation of further products and services e.g. "I paid a Bribe 2025" which was launched in May 2012 to expose and curb corruption. With regards to cyber crime, Kenya loses Kshs 3 billion (\$36 million) to cyber crime annually, or 0.05 percent of its economy. To this end, CCK has created the National Cyber Security Framework & National Computer Incident Response Team to handle cyber security issues.

Over the years, Kenya has been home to multiple African Regional hubs including, IBM's first African Research lab, Nokia's Africa Headquarters, Google's First Sub-Saharan Africa office (outside of South Africa), etc. The Africa Virtual University also headquartered in Kenya with a regional office in Dakar, Senegal and founded in 1997, is a Pan African Intergovernmental Organization whose aim is to significantly increase access to quality higher education and training through the innovative use of Information and Communication Technologies. The AVU has graduated 43,000 students across Africa and established a wide-ranging network of Open Distance and eLearning institutions in over 30 countries in Sub-Saharan Africa since its inception. Further to this, Kenya has seen most of its higher education institutions becoming leaders in ICT adoption, e.g. Strathmore and University of Nairobi who have created world-class innovation hubs. This serves as a demonstration to Kenya's commitment to apply ICTs to economic development through infusion into academia.

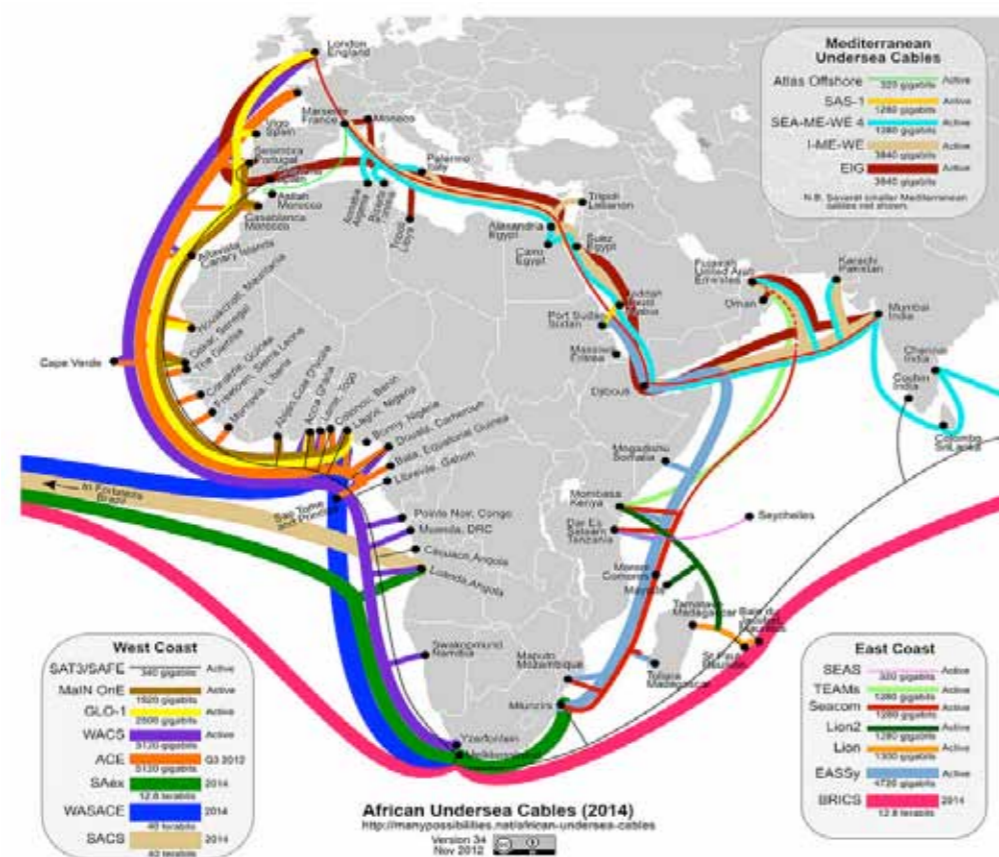
In 2010, Kenya embarked on its first bold attempt at developing a Technology City at Konza that hopes to attract increased foreign direct investment into ICT and will keep Kenya at the technological edge and ensure it becomes the true hub of Africa. Konza City will promote Business Process Outsourcing and ITES where companies such as DDD Kenya, Kencall and Horizon are making inroads.

Kenya alongside 5 other countries is leading Africa in the Digital Broadcasting Migration, which will enable frequency spectrum for advancement. With a target of adding 200 new broadcasters, Kenya will have achieved its quest for having a pluralistic and diversified broadcast environment. Kenya is developing its Creative Industry to accelerate production of local content for global consumption.

Kenya has been among Africa's finest in ICT innovation with M-PESA leading the pack through financial inclusion. The recent explosion of local ICT development clusters such as ilab, ihub, nailab and infoDev's mlabs in Kenya has set the stage for innovation of applications and information services such as Drumnet, mFarm, Ushahidi, etc.

Kenya is aggressively driving the automation of Government services through e-Government and this includes providing government shared services, the Citizen Portal and the national single window. The single window has already begun to show benefits e.g. Customs Automation through integration between SIMBA and the KWATOS PCS at Mombasa, which has been completed and has led to the establishment of Kentrade whose responsibility will be the development of the National Single Window.

Internet access is a key driver for the ICT revolution. Kenya has four undersea cables providing connectivity to the global digital world namely: TEAMS, EASSy, Lion-2 and SEACOM. A fifth undersea fibre optic cable is set to land in Kenya, doubling the country's Internet capacity. Once the fifth cable is laid, Kenya's bandwidth capacity will increase to more than 15 terabytes per second (TBps). Currently, Kenya's four undersea cables cumulatively provide the country with a capacity of about 8.56 TBps.



Source: <http://manypossibilities.net/african-undersea-cables/>
 Figure 2.2: Africa Undersea Cables



3. Vision

Kenya becomes Africa’s most globally respected knowledge economy. This will entail the following:

Every citizen connected.

Every citizen, resident, home, business and institution will be connected through a countrywide robust, accessible and affordable ICT infrastructure.

Kenya is Africa’s ICT Hub.

Kenya will become the leading ICT HUB in Africa attracting leading global players and generating globally respected local entrepreneurship and innovation.

Public services for all.

Public Services will be available to all citizens and businesses through ICT and ICT will enable a truly integrated, open and efficient Government delivering meaningful value to citizens.

A society built on knowledge.

Kenya will be a Knowledge Based Society. All Kenyans will be able to use ICT to improve their knowledge, businesses and livelihood. ICT will be the greatest enabler of Kenya’s economic growth.

The Connected Kenya Master Plan vision centers on three key intervention priorities. These are Digital Inclusion, ICT Innovation and Access Beyond Broadband. A brief on each of the three are as follows:

Digital Inclusion.

In Quarter 1 2011/12, only 14.06% of Kenya’s population had access to the Internet. Citizen Inclusion is about ensuring that 100% of Kenya’s population can access the information they require through the use of ICT, whether through mobile or fixed connectivity

ICT Innovation.

Kenya has historically not positioned herself as an invention economy but the advent of services like M-PESA and Ushahidi, among other ICT innovations has catapulted Kenya into a globally recognized ICT innovator. Innovation hubs and inclusion of ICT into the academia are driving the development of capacity to encourage creation of new products and services. Innovation is a key input into Kenya’s ICT evolution towards a Digital Economy.

Access beyond Broadband.

Kenya has successfully rolled out fixed and mobile data networks. The challenge ahead is making them relevant through establishing strong and well-integrated ecosystems that provide a 360o transaction ability to citizens. ICT will bridge organizations, businesses, government agencies, communities and individuals to tell a single story seamlessly. Further to this, ICT will enable learning environments for development of talent to realize the Connected Kenya Master Plan vision.

The Connected Kenya Master Plan vision centres on three key intervention priorities: Digital Inclusion, ICT Innovation and Access Beyond Broadband.



4. Connected Kenya Master Plan

As the rest of the world economies evolve from taking measures towards e-readiness to establishing themselves as Digital Economies, Kenya has been aggressively developing its ICT sector to remain globally relevant and improve the lives of Kenyans. The Connected Kenya Master Plan will deliver key initiatives, which include positioning Kenya as a global ICT hub, leveraging on ICT as an engine of growth and enhancing the quality of life.

The key objectives Connected Kenya Master Plan will meet include:

- Driving creativity and enabling innovation among businesses and individuals
- Connecting businesses, individuals and communities and giving them the ability to harness resources and capabilities across geographies through Digital Inclusion
- Becoming the conduit for Kenya to be an exporter of Technological Innovation

In meeting the Master Plan objectives, Connected Kenya Master Plan will drive the following focal areas:

- Formulation of Policy for the Development of ICT Infrastructure
- Promotion of Equity in the Provision of ICT in Kenya
- Development of Film and Information Content towards the Creative Economy
- Contribution to making Kenya a Middle Level Economy through IT Enabled Services
- Improvement of Universal Access to ICT Services
- Facilitation of Development of Skilled Human Resources for the ICT Sector
- Dissemination of information to the public
- Partnering with established and fledgling ICT companies to promote a culture of ICT and the adoption of ICT nationally
- Promote the adoption of ICT in Government for the efficient provision of services to the public
- Use of ICT to increase the confidence of the public in Government by enabling transparency and accountability in all areas of Government
- Working with all stakeholders including legislators to promote a legislative and regulatory framework that is conducive to the adoption and development of ICT

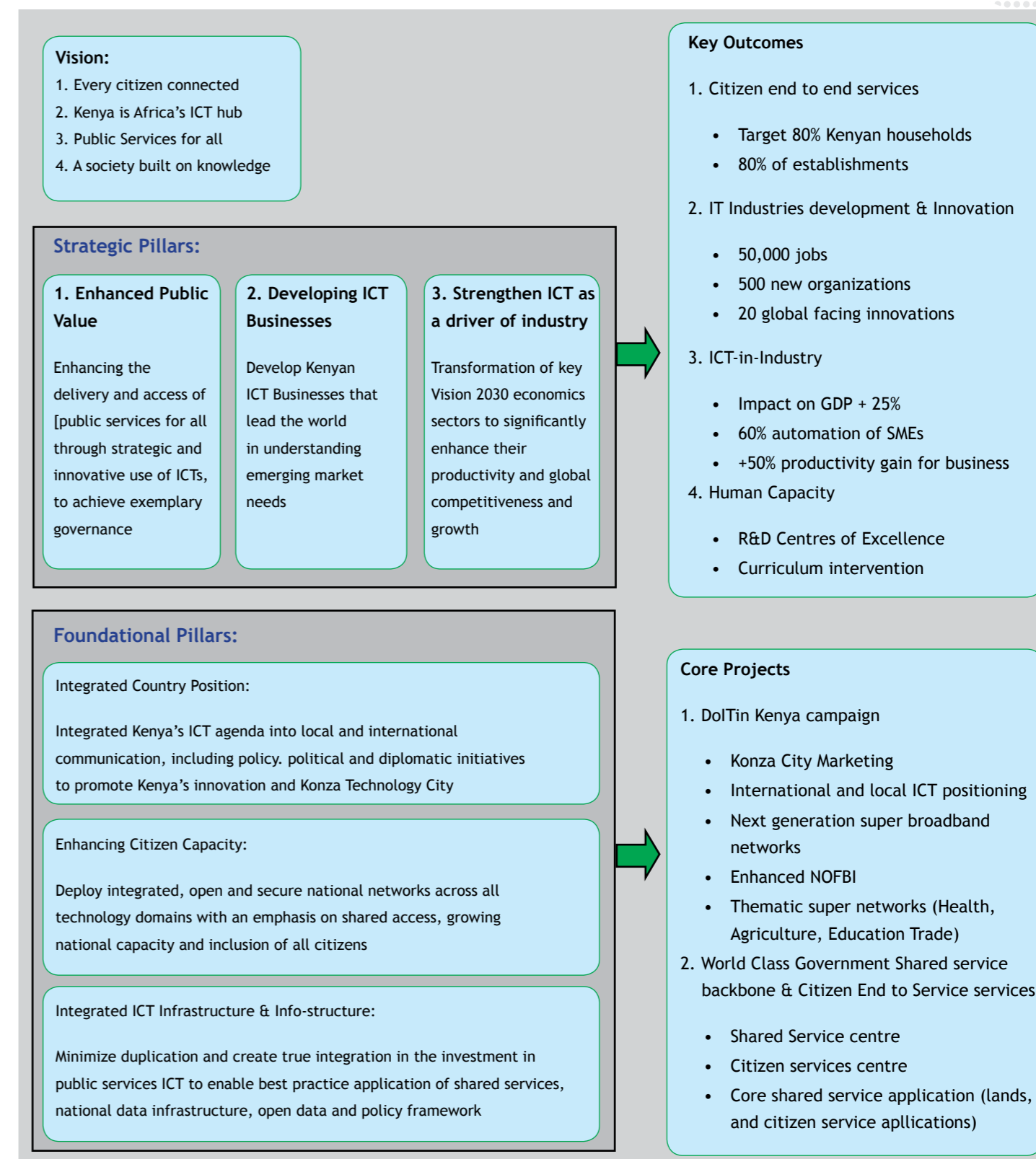


Figure 3.1: The Master Plan Implementation Pillars

5. Delivering The Master Plan

The Connected Kenya Master Plan will be delivered through Strategic and Foundational Pillars. The strategic pillars will align the efforts towards meeting the Vision 2030 objectives while the foundational pillars will create platforms upon which the strategic pillars can be executed.

The strategic pillars are:

- Strengthen ICT as a driver of industry
- Value
- Development of ICT businesses

The Foundational Pillars are:

- Integrated Country Positioning
- Enhanced Citizen Capacity
- Integrated ICT infrastructure and infostructure

Strategic Pillars Overview

The strategic pillars will address the following identified areas.

Strengthen ICT as a driver for industry

This pillar will concentrate on:

- Agriculture
- Trade
- Manufacturing
- Tourism and Hospitality
- Financial Services
- Transportation & logistics
- Retail, local and international trade
- The creative economy

Enhanced Public Value

This pillar will focus on:

- Health
- Education
- Gender, Youth and Vulnerable Groups
- Poverty Reduction

Development of ICT businesses

This pillar will address:


- Technology Innovation
- Konza technology City

- BPO/ITES and ICT Industry
- Digital Economy Development
- Centers of Excellence

Prioritizing the Strategic Pillar initiatives

An assessment was done to determine the priority of actions in the sectors. The priorities were determined by a value assessment exercise based on ability to reduce costs, improved outcomes, value to society and enhancing citizen experience. The results of the assessment is given in figure 4.1

Value assessment based on ability to reduce costs, improve outcomes, value to society and enhancing citizen experience



	Digital Inclusion	Innovation	Citizen Experience	Societal Value	Contribute to GDP	Enabler	Total
Health	●	●	●	●	●	●	24
Education	●	●	●	●	●	●	24
Agriculture	●	●	●	●	●	○	22
Retail/Wholesale Trade	○	●	●	●	●	○	20
Water Sanitation	○	○	○	○	○	○	7
Environment	○	○	○	○	○	○	6
Housing/Urban Development	●	○	○	○	●	○	14
Gender/Youth	●	●	○	○	●	○	17
Poverty Reduction/Social Equity	●	○	○	○	●	○	16
Tourism	○	○	○	○	●	●	16
Manufacturing	○	○	○	○	●	○	11
BPO	○	○	○	○	●	○	13
Financial Services	○	○	○	○	●	○	12

Figure 4.1: Priority Value Assessment

The assessment revealed that high priority needs to be accorded to health and education more than other sectors as they have high chance of reducing costs, increase value to society and enhancing citizen experience. Education and training should incorporate ICT and skills that use or relate to ICT so a generation conversant with technology and an ability to compete on the world stage is cultivated. Agriculture and retail/wholesale trade followed closely.

The Strategic Pillars will align the efforts towards meeting the Vision 2030 objectives, while the Foundational pillars will create platforms upon which the strategic pillars can be executed.

6. Strategic Pillars Initiatives

Strengthen ICT as a driver for industry

This pillar will focus on the use of ICT to transform key economic sectors, to enhance their competitiveness and build a well-connected society. Specifically the pillar will address ICT adoption and evolution in tourism & hospitality, transportation & logistics, financial services, retail, local and international trade, the creative economy and manufacturing industries. The following are the initiatives for strengthening ICT as a driver for the industry:

a. Financial Services

Programs in the Financial Services sector aim to transform Kenya into a trusted gateway and an innovative hub to East Africa for financial services through ICT. They will promote the use of secure ICT for front-end fulfillment of wealth management services. Initiatives will enable straight-through online processing, automated insurance and enhanced banking systems which will increase the demand for networking, business continuity and security services. The initiatives details are given in table 5.1.

Table 5.1: Financial Services

Action	Description	Outcome(s)
Champion the enactment of eTransactions law	The e-Transaction legislation will bring in legal certainty of e-Commerce and e-Business and therefore ensure full participation. This will also ensure all required standards are considered in the regulatory process	An all-encompassing eTransaction law
Protect Country Critical ICT	Create regulation policies and incentives to protect National Critical ICT infrastructure (Government, Utilities, Finance, Telco, strategic sectors and companies).	
Build trust on electronic transactions	<p>Promote the development of data security and data privacy laws, policies and standards for adoption across the Government of Kenya and private sector</p> <p>Create awareness on the safety and security of commercial online transactions including trade and livelihood. Encourage the use of eservices for both the public and private sectors</p> <p>Promote the development of affordable e-services</p> <p>Promote adoption and localization of global e-services</p>	<p>Universal standards for handling of data to boost confidence in using data intensive technology and services</p> <p>Increased awareness on availability, safety and access to e-services.</p> <p>Comfort of citizens conducting business online.</p> <p>Availability of robust, easy to access and use e-services across all sectors</p>

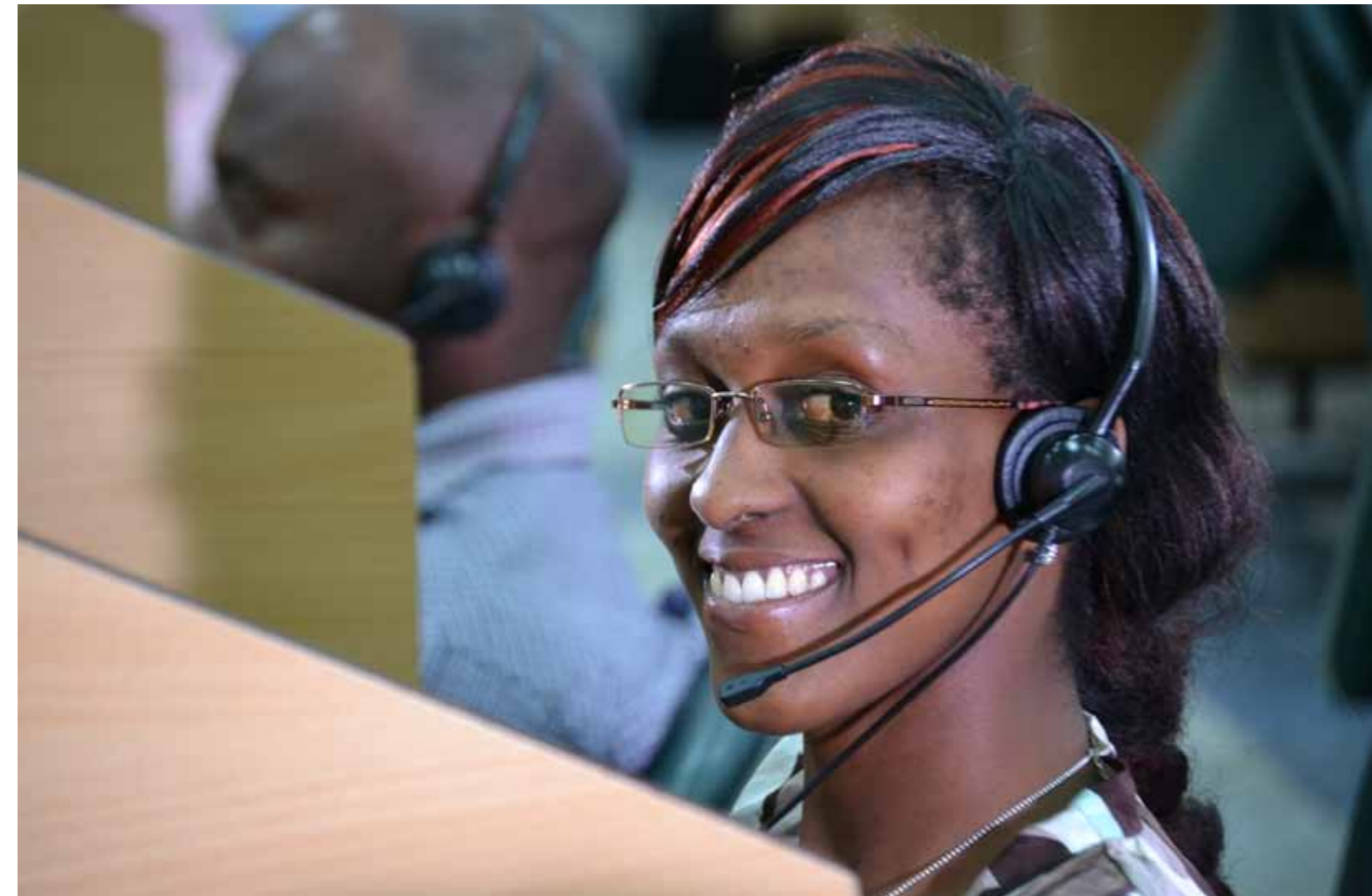
Promote awareness on cyber security	Both financial and non-financial institutions need high awareness of the need for secure online systems.	Secure online environment for online business
	<p>This will ensure a secure online environment for conducting business and other economic activities.</p> <p>Encourage the use of security standards such as ISO27000 while designing, building and deploying IT systems.</p> <p>Drive awareness of cyber crimes, especially among children</p> <p>Champion legislation protecting citizens against cyber criminals</p>	<p>Robust and secure IT systems</p> <p>Citizen protection against cyber crime</p> <p>Citizen awareness of cyber security for transactions and communication</p>
Promote near field	<p>The mobile phone is becoming the defacto medium for electronic payments and transactions in the country. Technology neutral solutions will be encouraged to extend convenience and enrich technology experience to citizens.</p> <p>As Kenya moves towards becoming a knowledgeable society and economy, collection, creation processing, consumption and sharing of information is key. The ability to securely store information that can be easily shared or accessed by authorised parties will be essential. Adoption of secure Cloud technology will enable this development</p>	<p>e-transactions at the retail level across all sectors</p> <p>Richer technology experience for citizens</p> <p>Fast progress toward a knowledge society and economy</p>
Promote automated and mobile insurance services	Drive sector adoption of micro and wide micro and mobile insurance services	Availability of sector-insurance services
Promote the adoption of secure cloud technology	As Kenya moves towards becoming a knowledge society and economy, collection, creation processing, consumption and sharing of information is key. The ability to securely store information that can be easily shared or accessed by authorised parties will be essential. Adoption of secure Cloud technology will enable this development	Fast progress toward a knowledge society and economy

b. Tourism and Hospitality

ICT will be used to improve the experience of visitors to Kenya before, during and after their trip, and enhance the growth and competitiveness of the Tourism and Hospitality sector. The main focus will be the Digital Concierge Program. This will allow visitors to access personalized, location-based information and carry out transactions on-demand, anytime, and anywhere. See table 5.2.

Table 5.2: Tourism and Hospitality

Action	Description	Outcome(s)
Facilitate the development of a digital concierge programme	Accelerate the development of informational, transactional, location based and mobile commerce services by solution providers through common reusable content and functionalities	Consolidated platforms for multiple services Affordable access to information services Ability to transact online affordably
Develop Digital Resort Access Cards	Development of digital access cards to national resorts e.g. National Parks, Museums, etc	Universal Digital Access Cards
Facilitate networks for innovation of tourism innovation and destinations	Work with responsible ministries, agencies and other stakeholders to generate new innovative products and services through the use of ICT and broadband infrastructure to reach new markets and deliver exceptional tourist experience.	Creation of new products and services Creation of new markets for Kenyan tourist products and services Stakeholder collaboration
Facilitate the use of ICT to promote and enhance the touristic offer	Assist the responsible Ministry and agencies to take full advantage of the available ICT and broadband, infrastructure to promote, enhance and animate the Kenya touristic offer including the use of analytics and business intelligence solutions	Business intelligence on tourism trends Efficiency in Ministry and Agencies
Promote m-Tourism	Promote the development of an m-Tourism subsector that will utilize the momentum gained by the mobile industry. This may include the development of mobile applications, games and services for the sector	Opening up of new opportunities Extending the mobile ecosystem



c. Manufacturing

ICT is a key enabler for the manufacturing sector. It is transforming the global manufacturing arena while at the same time opening up opportunities. Innovation and ICTs are transforming many sectors to anywhere, anytime platforms. In the manufacturing sector, the focus will be design anywhere, make anywhere, and sell anywhere. For more details on actions and output, see table 5.3.

Table 5.3: Manufacturing

Action	Description	Outcome(s)
Facilitate the automation of the manufacturing value chain	Automation within the manufacturing industry and especially its value chain will lead to efficiency which brings a host of benefits including lower cost of production and hence competitiveness at the local, regional and international markets.	Efficient value chain Increased competitiveness Lower prices for citizens
Create awareness on remote sensing and RFID in manufacturing	Use of RFID and other such technologies in the manufacturing sector increase the logistical and supply chain efficiencies including but not limited to of product inventory, delivery and tracking.	Quick product to market turn around Supply chain efficiencies
Promote manufacturing intelligence	Knowing what to produce and when is the next generation manufacturing trend that avoids waste and increases return on investment. This involves analyzing consumer trends and habits through analytics and business intelligence tools.	Reduced waste through optimal production Healthy manufacturing sector
Promote green manufacturing	Sustainable manufacturing means a sustainable economy and a sustainable country. Together with the responsible ministries, promote the use of green sustainable technologies and energy sources.	Sustainable manufacturing



d. Transport and Logistics

Kenya is the transport and logistics hub of East Africa and as such, programs in the Logistics sector will focus on using ICT to entrench Kenya's position as a high-value hub and a supply chain nerve center. The actions and outcome for the initiatives in transport and logistics are given in table 5.4.

Initiatives include: Setting up a Trade Exchange - a platform for all trade documentation and new value-added services for the trading and logistics ecosystem. Consolidation of the supply chain systems of logistics service providers with related government agencies and trade information systems

Table 54: Transport and Logistics

Action	Description	Outcome(s)
Facilitate setting up of an online trade exchange portal	Together with responsible ministries and other stakeholders, the setting up of an online trade exchange portal will provide the much-needed centralized information on trade, (including products) and encourage buying and selling of commodities and services online.	Development of eCommerce and eBusiness Information and knowledge sharing
Facilitate the development of a national logistics and transport network	In collaboration with the responsible Ministry and other stakeholders develop a national online transport and logistics network that will provide a one stop shop for standardized logics and supply chain services.	Standardized logistics procedures Transparency in service delivery
Facilitate the development of a Trade Information Management System	Assist the responsible Ministry to develop a Trade Management Information System that captures statistics on trade, products and services, regulation, trade facilitation information and data for effective decision making.	Informed trade decision making Ease of access to trade information
Promote the concept of Intelligent Cargo (iCargo)	Together with the responsible Ministry and other stakeholders facilitate and promote Intelligent Cargo handling at all national ports including the ports of Mombasa, Nairobi, Eldoret and Kisumu.	Efficiency at the Ports Increased trade flows
	These are an integral part of the regional trade hub. Intelligent Cargo management will increase the efficiency of cargo handling and increase the trade volumes and flows at the ports.	

e. Energy

The high-tech sector has developed at extraordinary speed over the last couple of decades, at a scale far beyond early predictions. This development has also come with a growing energy need. The initiatives here are meant to promote innovative use of energy, adoption of green and sustainable energy sources. Table 5.5 shows the initiatives actions and expected output for the energy sector initiatives.

Table 5.5: Energy

Action	Description	Outcome(s)
Promote the use of alternative energy (Green ICT)	Together with the responsible Ministry encourage the use of alternative sustainable energy to power ICT use and deployment.	Green ICT
Promote the development of Energy Efficient ICT Solutions	Encourage ICT practitioners, device manufacturers, system designers and developers to develop energy efficient solutions in line with sustainable ICT.	Sustainable Efficient Systems Green ICT
Promote the use of ICT in energy consumption	Through the responsible Ministry and Agencies, encourage the use of ICT and smart grid to improve and increase reliability, efficiency and sustainability of electricity and other forms of distributed energy.	Efficient Energy Distribution Reliable Power



f. Creative Industry

Digital content has been identified as a critical enabler for rapid up take of technology. Availability of local and relevant digital content and services contributes to an increased use of ICT infrastructure.

The supply of creative and digital content and services is dependent on a robust value chain that cuts across the Creative Industry. As examples, developing digital services for education and health requires skills in animation, storytelling, audio and software development; e-Commerce requires product development, packaging and marketing; film and TV require fashion, creative writing, sound engineering and set design. Thus, to ensure a healthy supply of creative and digital content and services, the Creative Industry must be strengthened as a whole.

During the IBM SCS study on the Creative Industry commission by the Ministry of Information and Communication in September 2012, it was noted that some sectors in the industry demonstrate high levels of innovation and thriving economic activity. Examples included creative businesses from the New Media, Publishing and the Visual Arts.

It was also noted that some sectors experience a number of challenges which include but not limited to: lack of recognition, inadequate government policy for the sector, gaps in education and training, limited general business and marketing skills, challenges in managing intellectual property rights and limited usage of new technologies.

Kenya’s revised Constitution recognizes the value of the creative industries to Kenyan society. In particular it notes, “Every person has the right to freedom of expression, which includes the right of freedom of artistic creativity”.

Anchored in this solid foundation and in line with Vision 2030, which emphasizes the “intensification of innovation in priority sectors”, Kenya’s creative economy has a real opportunity to double both GDP contribution and employment growth in the next five years.

Creative Industry Sectors include:

Culture

- Cultural sites
- Cultural expression and assets

Arts

- Visual arts
- Performing arts
- Music

Media

- Film
- Photography
- Television

Services

- Software
- Design and Communications
- Architecture

The actions and outcome for the initiatives in creative industry are given in table 5.6.

Table 5.6 Creative Industry

Action	Description	Outcome(s)
Promote supply of creative and digital local content	Support the establishment of a Centre of Excellence for Trade and Research in Creative Industry	Creative sector contributes 10% of GDP
	Develop and avail IT infrastructure specifically for creative industry including cloud shared services	
Adopt a holistic approach to the Creative Industry	Raise profile of Creative Industry	Increase talent pool in creative industry by 70%
	Set up a National Award for Arts, Humanities Innovation and Technology	
	Increase trade opportunities for Creative Industry	

Development of ICT businesses:

This pillar will focus on developing a globally competitive information and communication industry as the foundation of a smart nation. Included in this pillar will be the establishment of smart parks, smart infrastructure, smart platforms, centers of excellence and commercial incentives that will attract foreign direct investment, and create employment. Initiatives to partner with global leaders in ICT will also be pursued to ensure the benefit of world-class innovation. Government should also establish the right legal and policy frameworks to support the development of this sector, in areas such as Intellectual Property Protection Rights, Privacy, Data Protection, Public Private Partnerships, etc.

The following are the planned initiatives for development of ICT businesses:

a. Technology Innovation

Technology innovation aims to develop a creative and innovative ICT sector for the country. This shall entail creation of appropriate policies and infrastructure necessary to foster creativity and innovation at all levels. Table 5.7 gives an illustration of actions and expected output of the initiatives.

Table 5.7: Technology Innovation

Action	Description	Outcome(s)
Develop science and Technology Parks	Champion the development of science and technology parks that will provide the thrust for innovation, economic transformation, attract foreign direct investment and position the country as science and technology giant	Economic transformation Foreign direct investment Innovation
Develop software and hardware development standards	Champion the development of software and hardware development standards to prepare local developers with necessary skills and increase their competitiveness at the global stage. Partner with established global ICT leaders for knowledge share	Software development standards
		Hardware manufacturing standards Competitive skills

Promote Intellectual Property Rights (IPR) to safeguard innovation	To safeguard the innovation, together with responsible state agencies, Champion the enforcement of intellectual property rights in the country, create awareness among stakeholders and protect the creative industry.	Increased awareness on IPR Protect innovation
Recognize and Reward ICT innovators	Together with other industry stakeholders, champion the creation of mentors and role models by recognizing and rewarding ICT innovators through public acknowledgements and awards.	Mentors programme
Establish Centers of Excellence	Champion the establishment of centres of Excellence to exhibit the use and adoption of ICT in different industries, sectors and fields. This is meant to showcase the possibilities of technology.	Centers of Excellence





b. Konza Technology City

The Konza Technology City Project whose vision is to be a sustainable, world-class technology hub and a major economic driver for the nation, with a vibrant mix of businesses, workers, residents, and urban amenities; positions well with Vision 2030 under the Economic Pillar as it focuses on:

- Creation of jobs
- Increase in GDP
- Increase in Kenya's competitiveness
- Higher quality of life

Konza focuses on empowering the following key sectors:

- Financial Services
- Manufacturing & Distribution
- Telecom/IT
- Agriculture
- Healthcare
- Education
- Public Admin

Some incentives are proposed in the Konza project to encourage ICT investment and growth. These include:

- Corporate income tax exemption
- Stamp duty exemption
- Employment-based grants
- Tax policy to encourage headquarters establishment
- Duty-free import of raw materials for business purposes
- Accelerated depreciation policy
- Expedited company incorporation
- One-stop shop for Licensing, Taxation, and other assistance

- Single window clearance
- Foreign ownership and employment
- Unrestricted Service Provider licenses for ICT companies
- Designation of internet as a utility

Further details about Konza are in table 5.8.

Table 5.8: Konza Technology City

Action	Description	Outcome (s)
Identify priority sectors, assesses competitiveness and maps companies to value chain	Develop a 4-stage process for: <ul style="list-style-type: none"> • Prioritizing sectors • Defining enablers for competitiveness • Identifying ICT opportunities across the value chain • Mapping companies against the set criteria 	Commitment from key investors
Developing incentives for investment	Creating a portfolio of incentives to attract ideal investors	A great ecosystem of investors across key sectors who are able to contribute to the attainment of the Konza vision
Implementation of the Konza Technology City Project	<ul style="list-style-type: none"> • Empower enabling sectors, e.g. Financial, Health, Education, etc • Deploy infrastructure • Deploy reliable telecommunication services • Implement high-class shared amenities, e.g. roads, sanitation, etc 	Deliver Africa's number 1 technology city

c. BPO/ITES and the ICT Industry

Having been identified as a flagship project in Vision 2030, BPO and IT enabled services presents a tremendous opportunity for the country if leveraged well. This area will explore and execute key strategies to unlock this potential. Strategies will be guided by Market Development, Talent Development and Investment Attraction Parameters. A detailed outlook is presented in Table 5.9 below.

Table 5.9: BPO/ITES and the ICT Industry

Action	Description	Outcome (S)
Develop a market for BPO/ITES both locally and Internationally	Create BPO opportunities and proactively market Kenya abroad as a BPO/ITES destination	Delivery of BPO services locally and internationally
Develop and Implement National BPO/ITES strategy	Development of a Techno-city for promoting BPO/ITES, IT Tourism and Employment creation	Fully operational Technocity offering employment, entrepreneurship and ICT export opportunities
Develop National BPO/ITES standards	BPO/ITES standards are necessary to ensure credibility of the industry and fair trade	A formalized and regulated BPO/ITES industry
Develop and implement a National ICT R&D strategy	The ICT R&D strategy will include development of well resourced incubation centers, and a comprehensive, consolidated value chain between developers and the market. Partnership with global ICT leaders and investors will be instrumental.	An influx for local innovations into the market through the existence of a supported value chain

d. Digital Economy Development

This is a key input in propelling economic growth and has been proven to create employment and improve income levels. It is essential in ensuring that ICT is incorporated into the economic growth plans. It will include focusing on the growth of SMEs, and home offices, which have a significant contribution to the economy. Below is a tabular display of action and outcome within the digital economy development

Table 5.10: Digital Economy Development

Action	Description	Outcome (S)
Increase enterprises - SMEs and SMMEs - online participation	Creation of secure online trading capabilities, secure IT cloud applications and mobile malls and payment gateways. Champion development of policies and laws that engender data privacy and data security to encourage and enhance online participation.	Seamless sales fulfillment and affordable operational tools for SMMEs
Encourage and Promote Telecommuting	Promotion of technology neutral and reliable internet solutions to enable home offices, entertainment and home learning	Increased online access for telecommuters Increased localized learning tools





Enhanced Public Value

This pillar will focus on enhancement of the quality of life for all Kenyans through affordable, accessible and available secure ICT. We aim to attain +90% inclusion of Kenyan society to public services, cater to the needs of persons living with disabilities, information and knowledge through secure ICT, taking into account the right to privacy and the sensitive nature of certain personal information.

The plan will allow for ubiquitous solutions for centralized service delivery. For example, the national ID card would be able to be used for voting, to get healthcare, get pension, implement security, etc. Centralized security, traffic and transport control, and centralized registries, e.g. Land and property, utilities, health, insurance, and education will ensure collaborative processes to support citizen value.

It will also drive public sector initiatives including, Digital Inclusion, Human Capacity Development, Security and Citizen Engagement. The initiatives for enhancing public value are:

a. Connected Health

ICT adoption in the health sector will focus on enhancing health service provision for Kenyans and Africa as a whole. This will ensure faster service delivery for all. Health systems have to balance tensions between key principles that include:

- Equity
- Universality
- Affordability
- Quality

- Access

As an example, affordability requires operational efficiencies and lower cost and easier payments. However, how are these to be made universally available in ways that deliver high quality services to everyone? It is in resolving these tensions that ICT has a key, and innovative, role to play.

The strategic objectives to be addressed by a connected health system include:

- Having all health facilities connected
 - Connectivity on physical infrastructure
 - Connectivity on data
 - A connected citizen who needs to make good decisions, having better treatment at affordable cost

- Connected health workers to make better decisions
- For Kenyans to feel that the National Healthcare system is more inclusive
- People-centric healthcare system
- Empowering healthcare workers to be more knowledgeable
- Framework for national information sharing
 - Patient has a right to information in his file
 - Development of standards & architecture (which may take long)
 - Information collection infrastructure to enable collaboration and knowledge sharing
 - Capacity/skills sharing and building
- Capacity building of health workers and ICT specialists
- Policy development so that data is available to the national information system - healthcare information must be accessible to all citizens wherever it is required
- Policy framework on who accesses what information (access controls)
- Global data standardization
- Data to be collected to aid in the enrichment of national health management system
- Unique identity system for patients, healthcare practitioners and facilities
- Develop a national policy for connected health
- PPP engagement model

The conceptual framework then has the patient (person/community) at the focus of attention, with the objective of developing ICT that enables them to make better informed decisions about their healthcare. This suggests that the **patient** has:

- A right to see information held about them - patient records belong to the patient (though may be held by the health system). A corollary of this is that there must be good information governance to ensure:
 - Confidentiality and security
 - Identity management
 - Data origination and integrity

- Access control
 - Agreed standards for records management, including
 - Standards for Clinical Summaries
 - Data definitions
 - Clinical coding of data
 - Information about services available from different providers
 - Services available (e.g. Government, Faith, Private)
 - Costs
 - Performance
- The ICT to deliver the information they need to take these decisions where and when appropriate. This may include:
 - Mobile and other personal ICT devices
 - Community centres where information is available online, and perhaps some services provided
 - TV and radio

Proposed architecture of a connected health system is

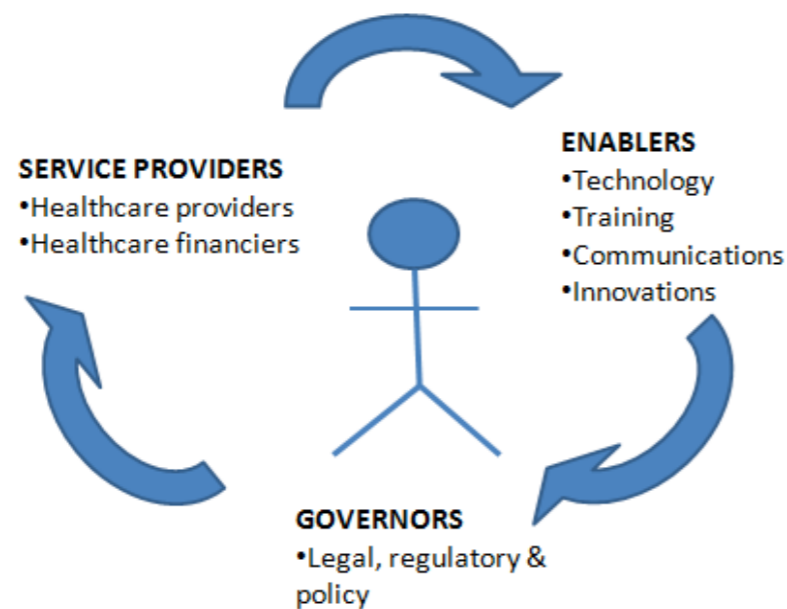


Figure 5.1: Proposed architecture of connected health system

The actions and expected outcomes are given in table 5.11.

Table 5.11 Connected Health

Action	Description	Outcome(s)
Establish a National Medical Information Management System	Together with the responsible ministry facilitate the development and implementation of a National Health Information System (NHIS) Medical Information Systems consolidating medical records across all service providers and empowering practitioners with patient history, utilizing secure Cloud technology and observing individual rights to privacy in accordance with The Constitution	A working Health Information Management System Availability of medical records across all service providers which give patients choices, ---0lower costs and access barriers to health care
Develop and Implement a Telehealth/ Telemedicine Strategy	Together with the responsible Ministry facilitate the design, development and implementation of a Telehealth/ Telemedicine Strategy Telemedicine is required to ensure that patients in remote and hard to reach areas are able to receive high levels of medical treatment through interaction with specialists even when located in different geographic locations Develop solutions for dissemination of health messages on preventable illnesses, non communicable diseases etc. Create platforms for knowledge sharing and collaboration on new findings and directions on global health	Telemedicine Strategy Adoption of Telemedicine in the health sector Telemedicine centers in remote areas Access to medical practitioners to serve remote areas remotely
Promote mHealth	Encourage the medical industry to leverage on telecommunications services to disseminate health information and services. Monitor counterfeit drugs through mobile technology	Mobile Health Applications Counterfeit drug control services Medical information availability to citizens Availability of medical services through Mobile centres and dispensaries
Ensure connectivity to Public hospitals, medical centers		

b. Connected Education

Education is the foundation of knowledge for all. ICT within the education sector will ensure connectivity for all students by providing virtual classrooms to enable learning through online participation. The details of actions and outcome are given in table 5.12.

Table 5.12: Connected Education

Action	Description	Outcome(s)
Provide connectivity to schools and colleges to encourage eLearning	<p>Provision of access to academic centres</p> <p>Establish a National Education Network for Schools</p> <p>Design programmes and projects to equip schools and colleges in all counties with reliable connectivity to encourage eLearning and other forms of online education content delivery</p>	<p>Connected academic centres</p> <p>Uptake of eLearning</p>
Promote the use of virtual classrooms to improve quality of education	<p>Development of virtual classrooms by academic institutions</p> <p>In collaboration with the responsible Ministry promote the use of virtual classrooms in primary and secondary schools to improve the quality of education and enhance the learning experience of students</p>	<p>Availability of virtual classrooms</p> <p>Availability of remote tutors</p> <p>Availability of online training resources</p> <p>Improved quality of education</p> <p>Enhanced learning experience and therefore better results</p>
Develop an education content strategy	<p>Together with the Ministry responsible and other stakeholders design and develop a digital education content development strategy for eLearning purposes for primary and secondary schools.</p> <p>Promoting the development of digital curriculum resources across all academic levels</p> <p>Development of online Computer Aided Testing for schools</p> <p>Encourage the use of ICT for adult and child literacy</p>	<p>Digital curriculum content to every student</p> <p>Access to online resources for national assessments and results</p>

Encourage the use of ICT for adult and child literacy	Facilitate the introduction of safe ICT in adult and child literacy programmes as a way of encouraging their online participation	Increase online participation by adults Improved quality of life
Establish a National Education Network for Schools	Together with the responsible Ministry and other stakeholders design and develop a national schools education network, a network similar to or as part of the Kenya Education Network (KENET)	National Schools Education Network (SENet)

Table 5.13: Centers of Excellence

Action	Description	Outcome(s)
Establish technology research and integration centres (TRIC)	Focus on research, development, and deployment of efficient and affordable technologies	Local R&D Centres with adoptable solutions 47 Technology Adoption and Integration Centers
Establish Technology Project Implementation Methodology for local SMEs	Develop tools for SMEs to use to implement projects and make them readily available	Improved quality of products and services and efficient use of business tools through project management training and resources for SMEs
Establish Permanent Demo Centers	Develop training centres for SMEs on business skills through Digital Villages	Digital Villages spread country-wide with SME business skills training centres

b. Connected Agriculture

Kenya is an agricultural country. Adoption of ICT will facilitate access to information for improving production among farmers. Through this, Kenya will increase her exports to other countries while reducing imports and increasing food security. Information regarding the descriptions of the actions and outcome respect to connected agriculture are indicated in table 5.14.

Table 5.14: Connected Agriculture

Action	Description	Outcome (S)
Facilitate Access to information for farmers	Development of reliable internet connectivity to the farmer	Connected and ICT savvy farmers
Through appropriate ICT	(Reliable internet connectivity to the farmer)	Affordable connectivity for farmers
Provide connectivity to Co-operative societies to encourage collaboration	Development of collaboration tools for organized groups in the agricultural industry	Social networks and collaboration tools
Develop a National network and portal of agriculture best practices for dissemination of agro education	Development of information hubs for the agricultural industry	Online agricultural information from local public and private sector sources
There is also room to enable an ecosystem of ISVs developing services for farmers		

c. Youth, Gender and Vulnerable Groups

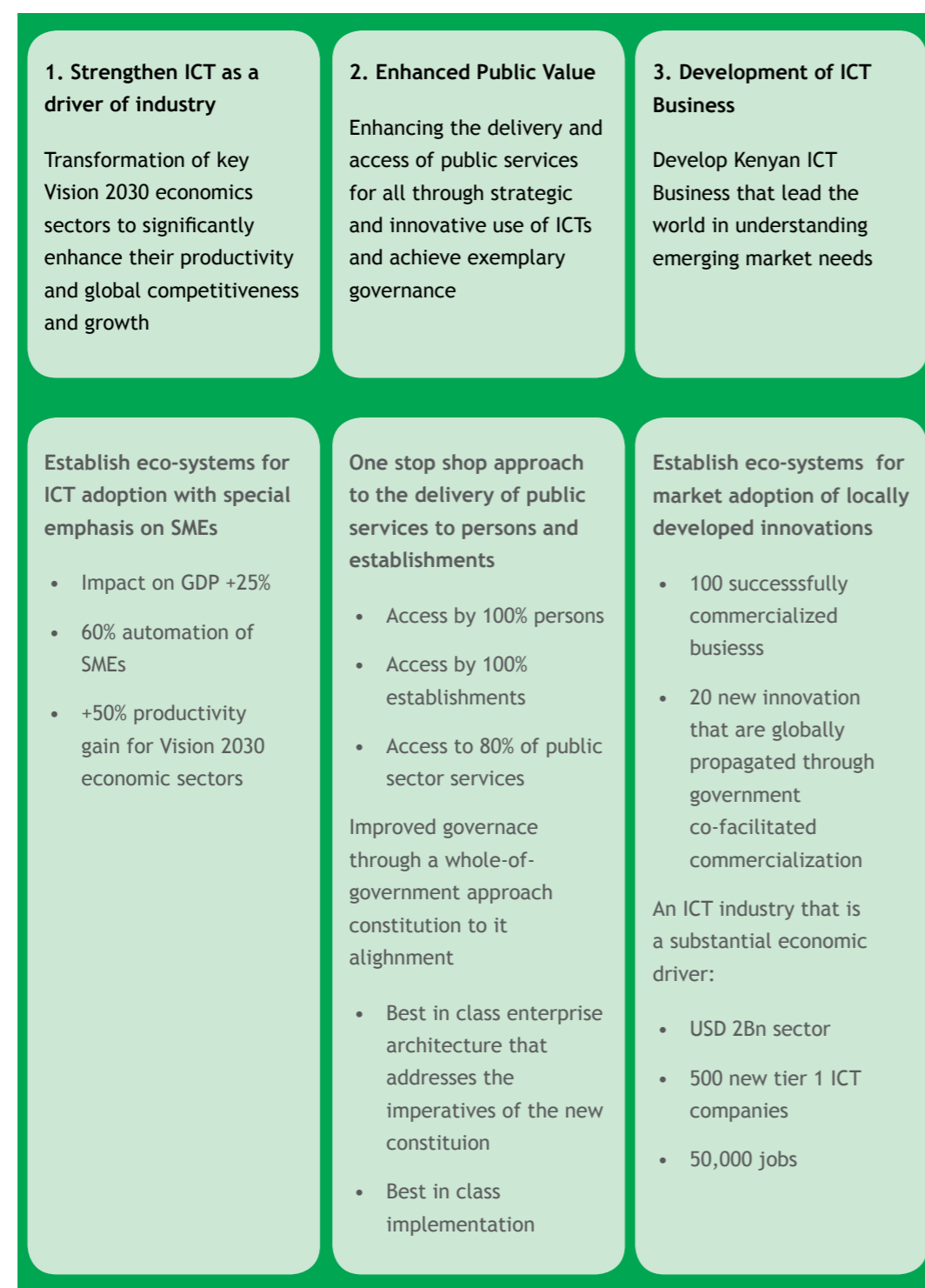
Kenya's population consists of youth. Additionally, gender and vulnerable groups initiatives are top of the national agenda. Increasing ICT literacy among these groups will encourage inclusion. The actions for the youth, gender and vulnerable groups' empowerment initiatives are given in table 5.15 below.

Table 5.15: Youth, Gender and Vulnerable Groups

Action	Description	Outcome (S)
Provide connectivity to youth academic centers e.g. polytechnics across the country	Provision of reliable internet connectivity to organizations that serve the youth	Affordable connectivity in youth service organizations
Establish community ICT access centers across the country	Leverage on Digital Villages to run access for youth to ICT services Creation of relevant compelling content	Youth centric services and information in digital villages
Increase IT literacy among the youth and vulnerable groups	Run training and awareness initiatives addressing the youth	IT savvy youth
Ensure access to information and promote online participation by vulnerable groups	Complement youth empowerment initiatives by making relevant information and opportunities accessible and available to the youth	Increase employment levels among the youth through ICT opportunities
Partner with established global ICT leaders and investors	Promote digital initiatives that promote employment and entrepreneurship among the youth	

In summary, the Connected Kenya Master Plan will be delivered through two pillars as mentioned earlier: strategic pillars that will align the efforts of the Master Plan towards meeting the Vision 2030 objectives and foundational pillars that will create platforms upon which the strategic pillars can depend and be executed. These pillars will be the drivers of the master plan to the achievement of the objectives. The summary of the strategic pillars overview is given in figure 5.2 below.

Figure 5.2: Strategic Pillar Overview



7. FOUNDATIONAL PILLARS OVERVIEW

The foundational pillars form the platforms upon which the strategic pillars be executed. This will consist of integrated ICT infrastructure, info-structure and country positioning and enhanced citizen capacity.

Integrated ICT infrastructure & Info-structure

This pillar will ensure public services are readily available through consolidated portals in an affordable way. Further, it will ensure that citizens receive the support and training needed to navigate through these services electronically.

The success of this Master Plan is dependent on a world-class infrastructure and info structure, which is the focus of this pillar. To build a reliable, high quality, secure, next generation ICT infrastructure and achieve countrywide connectivity. Develop last mile solutions to the citizen taking into consideration emerging trends and technologies. A tabular presentation of this pillar is table 5.16.

Table 5.16: Integrated ICT infrastructure & Info-structure

Action	Description	Outcome(s)
Roll out a National Next Generation Broadband Network	The rollout of a Next Generation Nationwide Broadband and Wireless Networks as the cornerstone for achieving the Connected Kenya Master Plan as it connects Government agencies, businesses, schools, hospitals and homes. By 2030, 100% of all sectors must have countrywide connectivity.	Provision of countrywide last mile connectivity solutions
Establish a National cloud computing platform for use by both private and public sector	Establishment of a national cloud environment for local businesses to offer Software as a Service to citizens and customers.	Centralized affordable cloud services
Develop a national framework for ICT Security	Establish common minimum standards for ICT security	Security awareness initiatives
Develop a national framework for Information Security	Develop and share best practices on the protection of data and information in both public and private sector.	Data protection and security awareness initiatives

Integrated Country Positioning

The Integrated Country Positioning Pillar will address:

- Local ICT Communication initiatives
- Global ICT Positioning for Kenya

This pillar will focus on promoting Kenya as a globally competitive ICT economy with the aim of positioning Kenya as:

- One of the top 3 ICT nations by revenue in Africa.
- A regional ICT hub,
- Number one in ICT innovation in Africa by levels of commercialization.

In addition to these, it aims to increase the revenue base of local ICT sector fivefold through Innovation and BPO/ITES Industries.

Table 5.17: Integrated Country Positioning

Action	Description	Outcome (s)
Develop strategy a positioning	The positioning strategy will include promoting Kenya abroad as an ICT destination and establishing PPPs to deliver the Master plan objectives	Established PPPs for delivering the Master plan Execution of the ICT marketing plan abroad

Enhanced Citizen Capacity

The Citizen Inclusion Pillar will address:

- Connectivity
- Access

This pillar will focus on delivery of public services to citizens through secure ICT platforms and citizen portals in a seamless, consolidated and affordable way. Table 5.18 presents the actions and the outcomes expected from this pillar.

Table 5.18: Enhancing Citizen Capacity

Action	Description	Outcome (s)
Develop a shared services strategy	This will enable public service providers to work closely together to share information as relevant to citizens and ensure seamless and secure access and storage of records Citizens will be able to access public services through electronic means cost effectively with the observance of their right to privacy	Establish citizen portals Establish public services shared platforms

The delivery of the Connected Kenya Master Plan will be based on strategic and foundational pillars as explained earlier. The Master Plan will launch key initiatives and projects that will ensure the implementation of the Master Plan and hence achieving of the objectives.

The summary of the master plan with its key delivery pillars as well as the expected output of initiatives and major projects are illustrated in figure 5.3.



8. Facilitation

The Facilitation Pillar will be responsible for programme management and execution of initiatives.

This pillar will seek to establish the programme management office that will act as a consolidation point for all initiatives and manage the programme charter. It will also carry out global benchmarking of Connected Kenya Master Plan initiatives, identifying strategic partners who will ensure timely and world-class execution of the Connected Kenya Master plan objectives, track and advise on Kenya's positioning against other global economies.

Table 6.1: Facilitation

Action	Description
Master plan coordination and tracking	The Programme Management Office will ensure targeted projects are executed efficiently.
Identifying and recruiting partners	The <i>Connected Kenya Master Plan</i> is a heavily dependent on partnerships. This facilitation role will, therefore include engaging with relevant public and private sector partners and bring them on board on specific projects.
Project Management and monitoring	The implementation of this master plan will be treated as a project with timelines and milestones. The Facilitation role will therefore include that of managing the scope, resources and time as defined in the master plan.
Research	This action will lay the groundwork that will fuel creativity and innovation by providing the necessary platform that supports local research and development, enterprise and talent development through incubation.
Benchmarking	The <i>Connected Kenya Master Plan's</i> performance will be benchmarked against global indices and from which lessons may be drawn to improve the delivery of the Master Plan.



9.0 Financing

Achieving the Connected Kenya Master Plan vision of establishing a robust and countrywide high-speed ICT infrastructure, harnessing ICT for economic transformation, people engagement, empowerment and creation of a smart nation will require the mobilization of significant financial resources and technical skills and capacity. In 2011, ICT spending was US\$860 million. Government of Kenya spent 0.3% on IT as a percentage of overall spending.

This is 20 times less than government industry average of 6.5%. This will need to increase and be reallocated based on planned priorities. Most Government ICT spending is on hardware at 65% compared to global benchmark of 18%. IT spending on staff is significantly lower at 18% as opposed to 38% for global benchmark. A variety of internal and external financing sources will need to be made available to address the different financing and technical assistance needs, both over the short- and the medium-term.

And because there are limitations in public and official development assistance financing, it is essential to mobilize additional resources from other development partners, the private sector, and the capital market. For example, capital market financing needs to be developed to support the issuance of relevant instruments (such as infrastructure bonds), which are considered to have investment grade credit rating.

The ministry through the Kenya ICT Board will come up with incentives to draw in investment in ICT and private sector financing to the infrastructure projects in the master plan. Development partners and other ministries will need to be engaged to bring in their budgetary allocations for some of the initiatives falling under their ministries or mandates.

Financing risks identified in the Master Plan execution include:

- Inadequate funding for ICT projects - currently, on average Government ICT projects are not funded enough for the duration of their useful life to keep them current and relevant and so their intended objectives are not effectively met. Projects identified will need to be well funded for initial deployment, licensing, support and maintenance. A detailed costing plan for each identified initiative will be developed as a follow-on to this plan which will center around the basic understanding that:
 - i. Software deployment budgets should grow to between 30 - 50% of software licensing budgets, while maintenance and enhancement budgets will need to increase to averages of 40% of license budgets annually from the current 5 - 10%

- ii. Infrastructure and hardware should be budgeted for in line with the identified needs in this plan

The Connected Kenya Master Plan proposes a flexible and agile Government where a key performance indicator would be to build and deliver services considering new ways and business models such as Cloud Computing.

To address funding constraints, Government should consider adopting PPP models, in which private sector increasingly builds and operates the service while the Government funds on a transaction basis

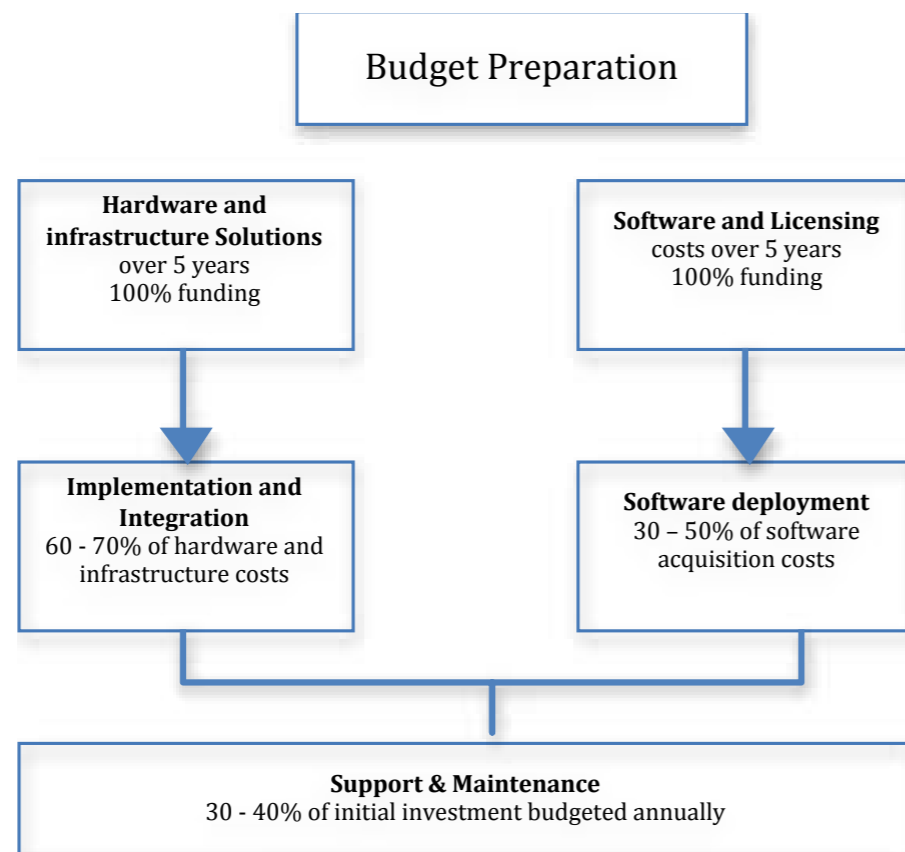


Figure 7.1

Budget Preparation

- Under-delivery of projects by selected vendors and partners.
Government will implement penalties of sub-standard delivery of ICT projects.

10. Implementation of the Master Plan

Implementation will be based on solid partnerships between the Government, international organizations, non-governmental organizations and private sector. This will include public-private-partnerships (PPPs), governmental inter-agency partnerships and partnerships between the Government and international organizations. As stated earlier on in this document, the Facilitation Pillar will work towards identifying and putting these partnerships together under the existing legal framework.

8.1. Institutional Arrangement

The *Connected Kenya Master Plan* will be delivered through the Ministry of Information and Communication with coordination and management roles performed by the Kenya ICT Board. It is expected that the Kenya ICT Board will create a permanent Connected Kenya Implementation. Coordination Office, with its head reporting to the Chief Executive Officer of the Board.

The oversight committee will include the chairpersons and secretaries of the five strategic committees, the chair and secretary of the interministerial ICT committee

Figure 8.1 shows the main participants in the implementation of The Master Plan. It also indicates the key tasks to be performed during the implementation and the goals to be achieved.

8.2. Strategic Committees

The implementation of The Master Plan will be managed jointly by five strategic committees, each representing each strategic pillar of The Master Plan. The Strategic Committees are multi-stakeholder committees with representation from government, private sector, civil society and international organizations. The committees will have a chairperson, a secretary and a minimum of three other members.

Initial Project Setup for the Operating Entity in the (start-up mode)

RECOMMENDED

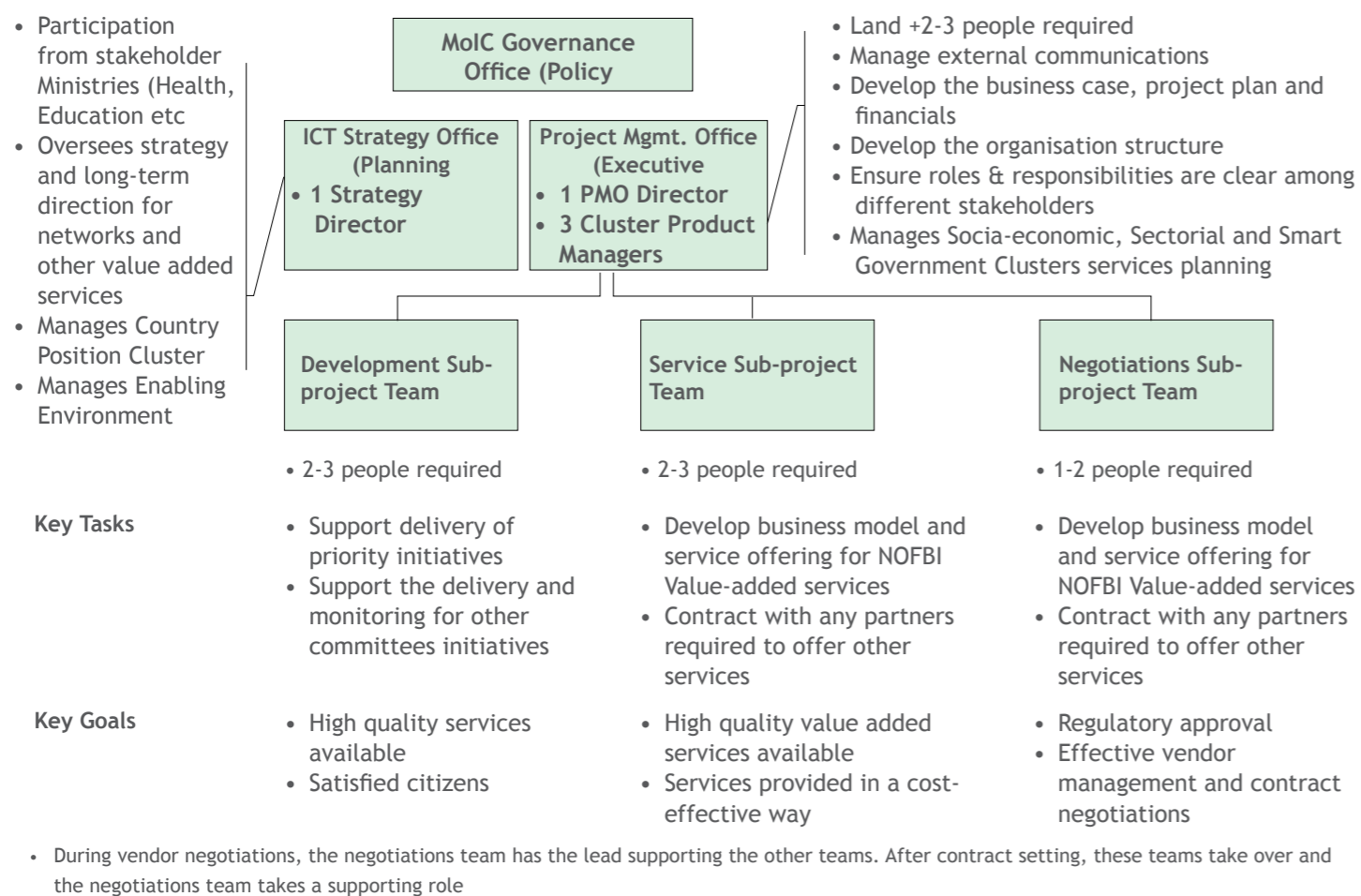


Figure 8.1: Master Plan Implementation

8.2. Tracks

The implementation of the Connected Kenya Master Plan will be managed jointly through six tracks, each representing each strategic and foundational pillar of the masterplan. The tracks are multi-stakeholder committees with representation from government, private sector, civil society and international organizations. They will have a chairperson, a secretary and a minimum of three other members.

Each track's roles will include;

- Providing leadership in implementing the pillar initiatives
- Turning the strategic pillars into operational programmes and projects
- Managing the various pillar initiatives
- Managing the pillar partnerships

- Reporting on the progress of the pillar initiatives
- Fundraising for the implementation of pillar programmes

The tracks will be required to meet at least once in a quarter.

The tracks will be:

- Enhanced public value
- Development of ICT Businesses
- Strengthen ICT as a driver of industry
- Integrated Country Positioning
- Enhanced Citizen Capacity
- Integrated ICT Infrastructure & info-structure

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Appendix I: Timeline

	Initiative	Year 1	Year 2	Year 3	Year 4	Year 5
Strategic Pillar						
Strengthen ICT as a driver for industry	Financial Services					
	Tourism & Hospitality					
	Manufacturing					
	Transport & Logistics					
	Energy					
Developing ICT business	Technology Innovation					
	BPO/ITES					
	Digital Economic Development					
	Centres of Excellence					
Enhancing Public Value	Connected Health					
	Connected Education					
	Connected Agriculture					
	Youth, Gender & Vulnerable Groups					
Foundation Pillars						
Enhancing Citizen Capacity	Connectivity					
	Access					
	Security					
Integrated Country Positioning						
Integrated ICT infrastructure & Info-structure						



Appendix Two: Timelines

	Initiative	Year 1	Year 2	Year 3	Year 4	Year 5
Strategic Pillar						
Strengthen ICT as a driver for industry	Financial Services					
	Tourism & Hospitality					
	Manufacturing					
	Transport & Logistics					
	Energy					
Developing ICT Business	Technology Innovation					
	BPO/ITES					
	Digital Economic Development					
	Centres of Excellence					
Enhancing Public Value	Connected Health					
	Connected Education					
	Connected Agriculture					
	Youth, Gender & Vulnerable Groups					
Founding Pillars						
Enhancing Citizen Capacity	Connectivity					
	Access					
	Security					
Integrated Country Positioning						
Integrated ICT infrastructure & info-structure						

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Inclusion. Innovation. Beyond Broadband.