DEPARTMENT OF TELECOMMUNICATIONS AND POSTAL SERVICES

NO. 343 **07 APRIL 2017**

ELECTRONIC COMMUNICATIONS AND TRANSACTIONS ACT, 2002 (ACT NO.25 OF 2002)

NATIONAL e-STRATEGY

I, Siyabonga Cyprian Cwele, Minister of Telecommunications and Postal Services, hereby publish the proposed National e-Strategy in terms of Section 5(3) of the Electronic Communications and Transaction Act, 2002 (ACT NO.25 of 2002).

Interested persons are invited to provide written comments on the proposed Strategy and Roadmap, within 30 working days from the date of publication of this notice at any of the following addresses:

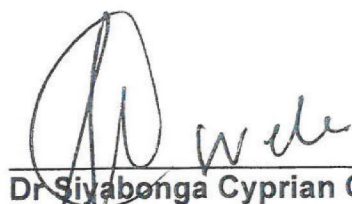Post: For Attention:
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Please note that comments received after the closing date may be disregarded. Please contact Ms Angie Mokgabudi at (012) 420 7726 for any enquiries.

Dr Siyabonga Cyprian Cwele, MP
Minister of Telecommunications and Postal Services
Date: 30/3/2017

National E-Strategy

Technology Working For the People to Build an Information and Knowledge Society

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1. A National e-Strategy to catalyse economic and social development.

1.1. Introduction

Much has been written about the potential offered by the Information and communication technologies (ICTs) in accelerating economic growth and promoting sustainable development through increased economic activity, innovation and productivity. This discussion has resulted in the centralization of the technologies as opposed to the production of people centric solutions to deal with the many problems that characterize South Africa's, (or other developing countries) challenges. Discussions on technology, in it and by itself, have been pivotal in the failure of many strategies that defined what needed to be done in those narrow technical terms.

This document departs from the notion that for any strategy to succeed it must be founded on real issues and providing real solutions with the people and their development at the center of such strategy. ICTs are not such solutions but tools to deliver services, enabling important tasks to be done better, faster at larger scale and scope, offering unlimited access and convenience.

The fundamental question posed by the development of the National e-Strategy has not been whether South Africa possesses the latest technologies or data speeds comparable to other countries but rather how can South Africa use the latest technologies and the fastest data speeds to usher in a period of sustained economic, social and political development.

The e-Strategy is linked to and contains implementation aspects of the developmental vision that is anchored in the Constitution and the National Development Plan. The Constitution contains the rights of South Africans and the obligations of the democratic state to the realization of these rights. Equality and the right of everyone to "full enjoyment" of all opportunities underpin all rights and freedom enshrined in the constitution. Importantly, the constitution imposes an obligation on government to take direct actions to redress any inequality.

The NDP outlines a national plan to build a more inclusive economy towards building a more caring inclusive society. The NDP is predicated on the use of modern tools and technologies. In particular the NDP called for " A single cohesive strategy to ensure the diffusion of ICTs in all areas of society and the economy. Like energy and transport, ICT is an enabler – it can speed up delivery, support analysis, build intelligence and create new ways to share, learn and engage"

The National E-Strategy further gives expression to the national policies and priorities that have been adopted to create conducive environment for the realization of the country's developmental goals. These policies and priorities cover many areas of human activity and are not confined to the ICT sector. The National E Strategy is not a new venture aimed at redefining the problems and making decisions on new priorities but provides a critical thinking of how all

sectors of society and the economy can collaborate in a society wide use of ICT resources to fast track implementation of priorities and decisions already taken.

Government is a critical role player in creating an enabling policy and regulatory environment. Furthermore, in many aspects of life government is the key deliverer of services that many South Africans rely on for their lives. In ICT matters government is also the biggest consumer of services. It is against this background that government role is central in two ways to the successful implementation of the National E Strategy. First government must be the model user in the integration and use of different systems and in different context to deliver services using the modern technological tools.

The National e-Strategy contains an e-government strategy that will define the parameters and forward-looking strategies for the use of the ICTs in a government wide environment to deliver different services. Secondly government must create the necessary environment for the different societal and economic sectors to grow using the ICTs. There are a number of recently adopted policies that facilitate such outcomes that will be referenced in this document in order to provide a link to other programmes of government that are critical to the success of the National E Strategy

The E-Strategy document appreciates the role of the ICTs as enabler and facilitator for socio-economic development. The technologies, systems and infrastructure must be widely available and accessible to every South African and everywhere in South Africa for this role to be fulfilled. The E Strategy is therefore also premised on the resolution of all the intricate blockages and hurdles that prevent universal infrastructure deployment and therefore access to the different platforms and services. The National Integrated ICT Policy, adopted by Cabinet in October 2016 incorporates many principles and policies that address the underlying problems in the provision of affordable and relevant ICT services. The E Strategy document incorporates the major pillars of the National Integrated ICT Policy and gives concrete expression to its implementation.

Since the advent of global networks that cannot be controlled from one jurisdiction, there has been a rise in the number of crimes and threats on these platforms. This requires all countries to do their share to secure these networks that though global in nature but are critical for the different nation states to deliver services and ensure effective democratic expression and participation in individual countries. These measures to counter what is now commonly referred to as cyber crimes and cyber threats is critical to safeguard national mission critical systems, utilities and infrastructure. More importantly these measures are invaluable to win public confidence and trust that they can share personal information in a secure and safe environment and therefore their increasing use of the modern communication technologies. The E Strategy addresses the key issues to secure the Internet and the cyber world while also outlining how government will mobilize the population to be aware of these threats and how to defend themselves against them.

One aspect that will facilitate and involve all South Africans in the global economy will be electronic commerce that will allow South Africans to offer their skills, produce and products beyond their immediate environments. E Commerce will increasingly also enable South Africa to trade on an equitable basis with other countries and jurisdiction in a globally competitive environment dependent on digital access to goods, secure transactions and delivery. The E Strategy outlines the critical steps to build South African capacity on e-commerce addressing both the infrastructure and legal frameworks that will create the enabling environment.

The vision of an inclusive digital information and knowledge society will not be realized without the South African population possessing the necessary skills and abilities to use the ICTS in their daily lives and to manufacture, design and produce technologies that are relevant to their circumstance. The E strategy addresses the two aspects of creating the necessary knowledge base and skills for participation. These include the mass skilling of South Africans and the generation of necessary ICT knowledge and skills for daily use. The second aspects will address the production of skilled scientists, practitioners and business managers to produce South African products that though addressing South African needs can compete favorably in international markets.

Lastly, without the people there can be no effective movement and transition towards the digital information and knowledge society. Effective participation through out the different phases of the transition to the future will also ensure the deployment of relevant technologies to solve real problems. The e-Strategy outlines the institutional mechanisms that bind and involve different spheres and departments of government while offering platforms and mechanisms for effective grass root participation. The institutional mechanisms will outline roles and responsibilities of the different role players. It will also provide for co-ordination mechanisms in order to ensure effective planning, implementation and monitoring of the various governmental, sectoral and societal programmes.

An effective e-Strategy will require a whole of government approach and collaboration between various sectors of the economy and sectors. The e-Strategy provides for the development of the sectoral strategies linked to priorities identified by the different sectors. It is in this regard a whole of society approach influenced and dictated by the issues, priorities and challenges of different sectors.

The adoption of the National e-Strategy could not have come at a better time. World discussions are currently focused on the evolution of the different technologies and their convergence to usher in the 4th Industrial Revolution. According to the World Economic Forum (WEF), defines the Fourth Industrial Revolution as a process in which new technologies and approaches are merging the physical, digital and biological worlds in ways that will fundamentally transform humankind. The 4th Industrial revolution has therefore been described as epoch making changes to the way the world functions, produces goods, and use them to sustain itself.

South Africa has the potential to accelerate social and economic transformation especially when considering the emerging Fourth (4th) Industrial Revolution. The revolution will benefit many industries including manufacturing, transportation, energy, tourism, government, healthcare, education, sports and entertainment etc. The 4th Industrial Revolution has also many potential pitfalls and problems associated with rising inequality, mass unemployment and the replacement of human capital with automated machines and robots that must be mitigated. The National e Strategy provides a platform for South Africans to integrate technology in their lives in a manner that is beneficial to society as a whole.

2. Why an E- Strategy

The country's growth and development priorities are expressed in the National Development Plan (NDP), which offers a 2030 vision that articulates the desired destination the country aspires to reach and the role that different sectors of society are supposed to play in reaching the desired goal. The NDP, mandates government to develop a National e-Strategy, which will underpin the development of an inclusive Information Society and Knowledge Economy.

The Electronic Communications and Transaction Act of 2002 provides for the development of a South African National ICT Strategy. Such a national strategy has up to date not been developed and instead various sectors have developed and implemented their sector strategies covering individual requirements of a given policy area ranging from health, education, public administration, taxation, transport, local government etc. The approach has resulted in some successful use of ICTs to deliver services but at the same has resulted in duplicated efforts and a largely uncoordinated and poorly aligned approach to service delivery. Gaps can also be identified with regard to coordination strategy, strengthening of the institutional arrangements, infrastructure availability and accessibility, insufficient network security.

The process for the development and implementation of the National e-strategy by its very nature multi-sectoral, trans-disciplinary and highly complex. Therefore, it attempts to consider all sectors and define priority areas for implementation. This National e-Strategy recognizes that some entities both public and private sectors might have developed their own e-Strategies. In this regard the National e-Strategy seeks to assist and support such initiatives, while persuading all sectors to consider implementing nationally prioritised e-strategy programmes and initiatives.

The National e-Strategy is an appropriate, comprehensive, futuristic and sustainable document because it has developed its Vision taking tune from the National Development Plan 2030 and primarily from the Constitution of the country, which demands quality of life for all South Africans.

The National e-Strategy is developed to articulate the vision for the development of an inclusive information society and knowledge economy for the country that is based on the needs of the citizens, business and public

sector, providing a wide range of services required for effective economic and social participation.

3. Vision and Mission of the National e-Strategy

3.1. Vision

Making Technology Work for South African citizens and building a digital future for all

South Africa possesses the latest technological know how and have extensive innovative ICT technologies and systems deployed in some pockets of national life. The overall task is to harness the existing technological base and direct it to providing solutions to the critical societal challenges and problems. Technology must be harnessed to serve the people and help offer solutions to real needs.

3.2. Mission

To develop a people centric caring knowledge based society, transforming the South African society and the economy based on access and utilization of modern information communications technologies

4. STRATEGIC OBJECTIVES

The 6 strategic objectives of the National e-Strategy in the short to medium term are to:

➢ Developing and implementing a comprehensive e- government strategy
➢ Develop and implement E-strategy Sectoral Plans
➢ Fast tracking the roll-out of broadband infrastructure to build smart digital communities
➢ Developing a Cybersecurity programme to safeguard the networks, platforms, mission critical systems
➢ Developing frameworks for e-commerce, m-transactions and electronic payments
➢ Increasing the contributions of ICTs in the national economy and supporting SMMEs, South African software and hardware businesses

4.1. Strategic objectives and Key activities and outcomes

4.1.1. Developing a comprehensive e-government strategy

Government has adopted many policies that acknowledge the primary role government must play to bring about a situation in which the modern communications technologies are widely disseminated and used to deliver services.

- ➢ **The 1998 Report of the Presidential Review Commission on the Reform and Transformation of the Public Service** highlighted both the role to be played by the ICTs and the need for the integration of the various initiatives underway within the public sector at the time.
- ➢ **Parliament** approved the Electronic Communications and Transactions Act with a key objective of developing an all-encompassing e-strategy.
- ➢ The **Centre for Public Service Innovation** together with the **Department of Public Service and Administration** and the **State Information Technology Agency** published a study in 2003 highlighting the need for government to coordinate and consolidate various functions in order to give citizens access to government.
- ➢ **Government** launched the Batho Pele Gateway in 2004 as a publicly accessible central government portal.
- ➢ **Government** in 2007 adopted the National Information Society and Development Plan.
- ➢ **Cabinet** approved South Africa Connect Broadband Plan that provided for the broadband connective of all public offices and institutions.
- ➢ **Cabinet** approved the National Cybersecurity Policy Framework in 2012 to ensure a focussed and an all-embracing safety and security response in respect of the cybersecurity environment. To that end the Cybercrime and Cybersecurity Bill will be tabled in Parliament in 2017.
- ➢ **Parliament** approved the Public Administration and Management act in 2014 mandating the use of ICTs to develop and enhance the delivery of services.
- ➢ **Cabinet** approved the Integrated ICT White Paper in 2015 identifying demand-side measures to enable the uptake of e-government services.

4.1.1.1. Examples of Successful implementation

All government departments have taken steps to use the ICTS to manage their back offices and to offer services on line. The ICT use in government has matured as a result of the use of applications ranging from government web portals to electronic transactional services. The following are examples of successful delivery of e-government services:

- ➢ **SARS e-filing System** compares favorably with the best in the world in terms of tax management
- ➢ **Smart Identification Card System** rates as also amongst the best identity management systems with enhanced security features.
- ➢ **Integrated National Transport System** manages the transport sector, registrations and renewals
- ➢ SITA's Government-to-Government and Government-to-Citizen **systems including basic accounting System, Logistic Management System, National Population Register**

The government initiatives cited above and other projects initiated by different government departments have achieved much to modernize the government information infrastructure and provide over that infrastructure many of the successful e-government services and projects. The establishment of the State Information Technology Agency has also provided the necessary

organizational support for the network and information infrastructure of the public service. These successes provide a platform for the further expansion of e-government services to ensure the necessary co-ordination and planning across government that will save costs while offering citizens better services.

4.1.1.2. Persisting Challenges

Despite the successes evident in the use by government of technology to deliver service, the following challenges persists:

➤ Lack of universal access to the broadband and Internet infrastructure across the 3 tiers of government, with access heavily skewed towards urban areas. A significant number of government offices are as a result not yet connected to the high speed Internet. This infrastructure and services gap limits the access to critical service and render doing business costly for rural and semi-urban areas. This gap presents strong impediments for e-government service delivery, in particular, for government-to-citizen services.

➤ Lack of co-ordination within the 3 spheres of government, between different government departments at national level, between government and public agencies that has led to costly implementation of government ICT systems, duplication, uneven development and disparate legacy systems.

➤ Duplication of processes, databases, large-scale system incompatibilities and inefficiencies. The existing diverse applications, platforms, and databases were not designed to share information and there is no framework for the planning of e-government services that is shared by all government departments and tiers of government.

➤ Capacity constraints with regard to human resources deploying, running and administering ICT infrastructure. Many government departments express a desire to be exempted from acquiring services from the designated public service provider and as consequence opt for private providers who introduce further complications with regards to different technologies they deploy as well as government information security considerations.

➤ Fragmented institutional arrangements making planning, funding, implementation and monitoring complex and ineffective.

4.1.2. Strategic Pillars and Key interventions

The following pillars will enable government to transition from paper based, face-to-face systems into an online environment accessible to citizens on a 24-hour basis. This will entail the establishment of government wide co-ordination mechanisms, the upgrading of the government network to offer secure communication for government, the integration of different legacy systems to offer one window to government services.

The mandate and role of the State Information Agency will be reviewed. A refocus of the SITA's mandate on design-development, wholesale business models, pooling of government demand for procurement efficiencies and the development, operation and maintenance of a secure government network and applications environment. The roles of the various government departments

and agencies will also be reviewed to effectively operate within the changed landscape and to assume more responsibilities of their ICT environments while relying on SITA for cross-cutting systems.

Role definition will recognize that individual departments are responsible for service delivery, service decisions and priorities in their respective areas. In addition there is also a specific requirement that policy and standards must be maintained across the whole of the public service. The Department of Public Service and Administration role needs to be enhanced to ensure the development and maintenance of minimum standards and a coherent policy environment.

Role definition will also recognize that the development of the telecommunications, internet, postal sectors and government telecommunications and postal networks will play a fundamental role in the use of ICTs by government, business and the individual citizens. The regulation of both the public and private networks to release the e-government and e-strategy objectives will also be critical. The Department of Telecommunications and Postal Services will therefore be required to coordinate the implementation of the e-government and e-strategy.

Citizens information held by government will be secured and consolidated to provide a single view of the citizens through the establishment of Government Data Exchange to serve as a clearing-house for citizen information. The e-government strategy will outline digital identification and confirmation systems and measures to protect the privacy and security of citizens in line with the Constitutional provisions.

A framework for the development of the e-government services will take into account the different levels of development and offer mechanisms for knowledge sharing. Existing legal and policy frameworks will be reviewed to support the innovative ways of delivering services and secure citizens' rights.

The e-government strategy will support South African industries and in particular SMMEs and identify set-asides for them in the government procurement of hardware, software and applications. Government wills priorities collaboration with South African companies in the procurement and deployment of technology. A detailed e-Government Strategy document with a guiding framework as well as structures, priorities and targets will be submitted to Cabinet for approval and public dissemination. A comprehensive educational and informational campaign will underpin community involvement and mobilization to utilize these services.

A detailed E-government Strategy will outline the mission, vision, and objectives of the next stages of the development of e-government services in South Africa and how it will be programmed.

For ease of management and monitoring of progress the e-government strategy will be implemented through the following pillars and work streams:

4.1.2.1. ONE Government-One Citizen View Portal

The most important critical success factors for e-government include the acceptance by the users. Research indicates that ease of use, completeness of the information and system reliability are key to acceptance by the users.

Currently a citizens requiring electronic services from government is required to fill in different forms and provide similar information whenever he or she must interact with government. In a reflection of this practice government does not have a single view of a citizen as information about the citizen is scattered in various government departments' archives. This situation epitomizes the lack of consolidation and fragmentation that prevents ease of use of e-government services.

The maturity levels in the use of ICTs within society and the public service sector now requires an evolution that will consolidate the various portals and windows to offer citizens a consolidated picture of government services and in turn government a single view of the citizen. To this end government will review its access strategy in order to provide for an interactive, transactional portal that will give a holistic view of government and its electronic services.

The following principles will guide the consolidation of the existing portals:

➢ The Integrated Portal will give the citizens a single view of government and government a single view of the citizen.
➢ The Integrated Portal will offer services in all official South African languages
➢ The integrated Portal will cater for all the needs of South Africans including people with disabilities.
➢ The Integrated Portal will provide informational as well as transactional services
➢ Point-of Presence Framework incorporating the government offices and Post Office infrastructure as access points

4.1.2.2. Consolidation, Interoperability and Back End Integration of e-Government Services

The achievement of the policy goals and objectives to offer equal access to government services, improve productivity of the public sector and to reduce costs hinges on the design and architecture of the ICT environment. I has been noted that one of the persisting challenges in the government ICT environment are different legacy systems and different technologies and technical standards that have been adopted in the past because of the lack of coordination mechanisms.

The Interoperability of government systems is critical to increased efficiencies and security of the e-government environment. In this regard government IT systems must allow for automatic information sharing and exchange of messages and documents, collaborative applications, distributed data processing and report generation. Importantly for citizens the IT systems must enable whole –of-government search and queries.

The need for consolidation and operability stems also from the need for government to leverage its buying power in order to promote efficiencies and other policy goals including promoting the local IT industry.

Consolidation and interoperability will also eliminate unnecessary duplication of similar IT functions, projects and resources. To this end work will be undertake to review the existing IT infrastructure, norms an standards with a view to establish:

➢ A single e- Government Framework to guide the development of all services by the public sector.
➢ Standardization of government ICT infrastructure and integration of the legacy systems
➢ The Government Cloud ICT Framework, norms and Standards
➢ Government Data Exchange to serve as the information clearing house
➢ Government Master Data and Services Structure will be established to manage the consolidation of government data warehouses
➢ Reengineering of the government service delivery mechanisms and processes to take into consideration the technological capabilities.
➢ Phased approach to the automation of the different departmental processes.

4.1.2.3. Enhanced security for government networks, communications infrastructure, government information, citizens personal and transactional information

Advanced e-government services rely on the trust and sense of security of different role players for its success. Data protection, privacy, a secure environment free of intrusions, malware and virus infiltration are some of the pillars that drive a sense of security in the system.

There are equally inherent requirements that government systems, electronic documents and data should be protected from unauthorized access, malicious codes and denial of services.

Importantly, critical public infrastructure for the delivery of services is now a target of attacks including infrastructure such as dams, electricity grids, railway systems and ports. With greater interconnection and dependency on the internet comes increasing vulnerability to cyber attacks that the implementation of the e-strategy must mitigate.

44% of South Africans are now connected to the internet and use the internet for their daily transactions. The proliferation of the smart devices and mobile applications point to an exponential increase in the number of South Africans connecting to the internet in the next decade. There is a growing need for cybersecurity education programmes including behavioural guidance like the need for and specifications for passwords as well as technical guidance.

To this end an elaborate cybersecurity framework will be developed taking into account the e-government requirements and the cybersecurity threats South Africa is exposed to.

To this end the e-strategy framework will be harmonized with existing provisions and lead to:

- ➤ The implementation of the National Cybersecurity Policy Framework

- ➤ The Development of Protection of Personal Information Framework
- ➤ The development of Electronic and Digital Identity Framework
- ➤ The development of the Electronic Signature Framework
- ➤ The development of Citizen and Data Privacy Framework
- ➤ The development of Electronic Payment and Transaction Framework
- ➤ The development of Citizen Cyberawareness Campaign

4.1.2.4. Human Resources and ICT Skills/Awareness Training

The development of skills is one of the core issues that need to be tackled for the development of electronic services in South Africa. The demographics of the country point to a majority that is young and capable of learning and mastering the electronic environment. With such a young population, with generations growing up immersed in digital technologies, South Africa possess what it needs to grow and develop digital services.

The early introduction and teaching of technology, the use of the technology to teach and learn are critical factors in the successful integration of the future workforce in the digital economy.

Skills and training strategies must also deal with the changing nature of the employment environment to take into consideration the infusion of technologies that is fast becoming a norm. The older generations of workers must not be left behind but given the necessary ICT tools and skills essential to their economic participation.

The third category requiring skilling are the citizens in general who must use the tools to interact with government for public services. Computer literacy training will play an important role to bridge the digital divide. Government has adopted a policy of universal access to ICTs that views the delivery of ICT infrastructure and services from both the supply and demand sides as important.

Industry based research indicate that the skills set required for e-commerce include both the technical skills as well as skills such as digital marketing, web analytics and copy writing. The Skills Framework must deal with these aspects in addition to the managerial disciplines. Web skills are a new expanding area that warrants more investment in the light of the determination to promote South African content.

To this end a skills development framework for the implementation of the e-Strategy and e-government will focus on:

➢ Public Sector ICT Training Framework
➢ Citizen Training and ICT Awareness Campaigns
➢ Software and specialist skills Development Programme
➢ School Curriculum reform
➢ Graduate Employment Programme

4.1.2.5. Manufacturing and SMME support Framework

The need to develop the SMME sector in South Africa has been accepted by government as a requirement to achieve higher economic growth targets. Government through many initiatives is creating entrepreneurial environment guided by the Small Enterprise Development Strategy through amongst other means creating demand for Small Enterprise products and services. The strategy is also predicated on the set aside of a significant size of public procurement bill for the SMMEs. Government programmes like the e-government and broadband roll-out should form a part of the means to grow the demand for SMME goods and services.

The demand side of the roll-out the broadband networks and services coupled with the e-government services will present an unprecedented opportunity to engage the SMME sector in the manufacturing of end–user equipment that will be manufactured and distributed as part of government services.

The interventions in this area will focus on:

➢ E-Government end-user equipment manufacturing strategy
➢ Software and Digital content Development Programme
➢ SMME Procurement strategy
➢ E-Procurement

4.1.2.6. Government public services delivery priorities

The sector e-strategies will require each sector to develop programmes for the implementation e-Strategies and e-government by different government departments. Listed below are government interventions along the prioritized areas to fast track e-government.

➢ Broadband Infrastructure Roll-Out
➢ E-Health Services Development Framework
➢ E-Education Services Development Framework
➢ E-Higher Education system
➢ E-Crime Prevention Strategy
➢ E-Tourism Development Strategy
➢ E-Commerce and Postal Services
➢ National Smart Cities and Smart Community Framework

5. Oversight Institutional Mechanisms

This e-Government Strategy document recognizes that the lack of coordination mechanisms ahs been the greatest policy gap that has resulted in many unintended consequences including the duplication of infrastructure and efforts as well as the proliferation of systems and wastage. The strategy therefore recognizes the need for developing an institutional framework that will oversee planning, reporting and monitoring from a central position but allowing for execution and strategy implementation at various logical levels. This institutional design will allow for the design and implementation of government wide systems based on common frameworks but leaving the essential task of service deliver to the departments responsible for their respective mandates.

There are three roles that will inform the definition of roles and responsibilities:

The first role of the service provider consisting of government departments and agencies that possess specialist knowledge of the various sectors and who are mandated to deliver services. ICT tools and systems are meant to assist the specialist to fulfill the mandate instead of replacing them.

The second area relates to the setting of policy on norms and standards governing IT systems in government and the policy on the administration of the public service.

The third role relates to the planning, development of networks and digital systems and their regulations for use by both the public and private sectors and citizens including for government-to-government, government-to-business and government-to-citizens communications.

The institutional framework will outline the mandates and assign responsibilities in line with the institutional scheme outlined above.

➢ Defining Roles and Responsibilities
➢ Inter-Ministerial Digital Transformation Committee
➢ Government information Office
➢ Monitoring and Evaluation

6. E- Sectoral Strategy Plans

The National e-Strategy, as an Overarching Framework, provides a well-coordinated and integrated roadmap that will guide all ICT initiatives by government, private sector, academia and the public at large. It is critical that each sector develops its own e-strategy that is aligned with the goals, objectives as well as priorities of the National e-Strategy. These strategies are intended to assist various sectors to plan for and implement the National Strategy.

ICTs have been acknowledged as crosscutting enablers that can impact on virtually all the social and economic sectors. It is therefore important that different sectors of South African social and economic formulate plans that address the specific concerns and challenges related to each sector. These e-

Sectoral Strategies must address how the ICTs will be strategically applied at a national scale in respective social and economic sectors. Each sector faces different challenges and opportunities emanating from the use of the ICTs. The development of the sectoral strategies will ensure a holistic adaptation and enable the different sectoral players to build the required human and technical infrastructure and know how.

Through the adoption of the ICTs different sectors could reach new markets, send or receive goods and services and transact in a more efficient way compared to traditional methods. New types of jobs and new fields could open up for different sectors taking into consideration the infusion of automation and robots in the production, packaging, transport elements of trade. Sectoral plans will be critical as the country prepares for the 4th Industrial Revolution which will have an epoch making impact in terms of how businesses and organisations operate. The sector e-strategies must address the emerging challenges and opportunities presented by the shift to the 4th Industrial Revolution.

By 2030, the year NDP goals are to be realized, the world would be a different place in terms of how government functions, business is done, the production of goods and services as well as societal expectations.

There is a growing realization and acceptance everywhere that the 4th Industrial Revolution has started in earnest and secondly, will pose a serious challenge unless mitigated because of the disruptions in which societies, economies and markets function.

The deployment of these technologies has already started with serious consequences for the industries that are disrupted. Driverless cars, automated robot-based production, packaging, warehousing are some of the innovations that have been introduced. The ability of the country to adopt, manage and use these technologies across all industrial and economic sectors will influence how competitive the country is in terms of global and regional trade. A proactive strategy will enable proper planning that will mitigate the potential job and market share losses and social disruptions while amplifying the advantages.

6.1. Opportunities and Challenges of the 4th Industrial Revolution on all sectors of society and economy

As indicated the potential of the Fourth Industrial Revolution is enormous for companies that will invent new technologies, and businesses that take first mover advantage. There is enormous potential also for the skilled people who will work using these technologies in terms of better paying jobs. The deployment of these technologies in all aspects of the human life will lead also to tangible improvement of the quality of life of those who benefit from such technological diffusion. No doubt we as country need to embrace this revolution to benefit in these terms.

There are challenges that must be mitigated consciously so that these technologies and the 4th Industrial Revolution serve all South Africans and do not reproduce the inequalities of the past. Some of these challenges include:

The impact of 4th Industrial Revolution will be felt in all sectors of the economy and society and not only on the technology and information communication sectors.

➤ The national dialogue must involve all sectors of society and industries. The dialogue must be broadened, (beyond and ICT Strategy), to understand and proactively respond to the likely impact on all areas of national life. The recent WEF document analysed the barriers to dealing with the disruptive changes lying ahead as insufficient understanding of the impact by government, business and social partners.

The entry of 4th Industrial revolution technologies will change how we produce goods and services requiring a major rethink to employment and the role of the SMMEs

➤ Examples of driverless cars and workerless factories point to significant potential of the technological changes to disrupt labour markets. Repetitive work across the board will performed by robots resulting in displacement of workers in the production, packaging and distribution processes. As automation increases computers and machines will replace workers across a wide spectrum of industries. The reduction in the cost in production is expected to have a broader effect of changing the balance of trade and shifting back production to the industrialised countries. Whatever advantages of cheap labour that countries in the South have had and which necessitated outsourcing of manufacturing will be eroded. The industrialized countries will use their access to latest manufacturing technology based on robots and extensive infrastructure to shift the balance of trade further in their favour. South Africa is vulnerable, like many of the countries of the South who export raw materials to the industrialized countries, to forgo the further chance to industrialise.

➤ Big conglomerate companies are the most likely to go high tech and introduce robots and mechanized production systems to cut back on labour costs and for them to deal with competitive pressures.

➤ Most of the new companies will be SMMEs requiring access to funding and other governmental support to reach markets. The importance of the SMMEs as drivers of economic growth and job creation will likely grow.

There will be a fundamental change in the nature and types of jobs

➤ Whilst research indicates that there is likely to be a shedding of certain jobs, it also indicates that there will be new categories of jobs created. Examples of the impact of the changing nature of jobs is research indicate that in the USA, about 47% of total current employment is at risk over the next decade or two. Middle income jobs based on routine and repetition are at most risk.

According to research the least prone to replacement and automation are social workers, sales managers, doctors, human resources managers, computer system analysts and chief executive officers.

➤ Research has a bearing on the gender dynamics of employment indicating that a large share of the labour market disruption is likely to be concentrated in occupations with the largest percentage of female employees. The professions that are expected to grow jobs already have the highest gender imbalance, such as engineering, mathematics and computer sciences. Gender balance in skills training and education should receive more focus.

➤ The school curriculum and training programmes should support the new technologies. ICTs should be introduced early in learning and continuously throughout the learning stages.

➤ Employees will require constant exposure to new technologies and retraining. Worker skilling programmes need to keep pace with the rising demand for new skills and to cater for the displacement as a result of automation.

New Technologies will foster a need for an open and transparent government

➤ As the digital platforms become more accessible it will increasingly enable the citizens to engage more with government, voice their opinions, coordinate their efforts and even circumvent governmental structures. Twitter has already played a significant role in popularizing social unrest and protests movement in different countries. It has also enhanced direct interaction amongst citizens.

➤ The digital revolution presents government with a golden opportunity to engage more with citizens and to deliver services faster and more personalized. On the whole governments will have to respond to the pressure to be as efficient as the private sector in the delivery of services, change approaches to policy making. Effective e-government strategies and platforms that improve over time will be a necessary element of democratic governance.

➤ With increasing reliance on digital existence and identity protection of personal information and the safeguarding of information of individuals and citizens held by government will be paramount.

The 4th Industrial Revolution will impact on the nature of national and international security

➤ The digital platforms connected through the internet are by their very nature international in scope. Access to national and regional networks and as a result regional economic activities will be a key feature that requires highest standards of protection from cyber crime and other cyber security threats.

➢ The control and safeguarding of the internet will become one of the foremost requirements as individual countries rely on the internet and digital platforms for their mission critical systems, defence, industry and the delivery of services to the public.

➢ International corroboration will be required to establish the minimum standards and procedures for the operation of the internet and digital platforms.

The most important aspect of this discussion is that we should place people at the centre of whatever we do to adapt to the 4th Industrial Revolution and the technological changes that drive it. This is not a discussion about technology for the sake of technology. This is a discussion of how we use technology to improve the standards of living of our people, to deliver better and more efficient services to meet their needs and to open up avenues for them to reach their human potential. It is a discussion about how we empower our citizens to embrace the opportunities brought by this revolution while minimizing its negative side effects. Quite evidently, people need to be skilled to participate in the Fourth Industrial Revolution as users of the technologies and most importantly, as creators of technologies that will improve our lives and better our society.

6.1.1. Sector Plans Objectives

➢ The sector plans will underpin joint sector implementation involving government, the business community and social partners.
➢ Sector Plans will detail how each sector of society or the economy will infuse technology to deliver public, commercial and community services,
➢ Sector plans will promote growth, employment and reskilling of the current workforce
➢ Sector plans will plan for the development of the future digital human resources capacity, develop, promote and adapt South African ICT products and services,
➢ Sector plans will outline measurable procurement strategies for services from the SMME and youth sectors.
➢ Sector plans will provide coordination mechanisms at a sector level to ensure that government, business and communities are aligned. Different government departments will co=ordinate and convene the different sector stakeholders

6.2. e-Commerce and electronic payment systems.

The development of e-commerce at a global level has been unprecedented since its inception a few years ago. E-commerce is increasingly being viewed as a key competitive advantage of countries and companies. Ease of transaction, convenience, opening domestic and global markets and significantly decreased overheard make the e-commerce solution particularly well adopted to the increasingly networked world. It is because of these advantages that many governments are investing in broadband infrastructure, evaluating the legal and technical frameworks that will enable e-commerce and

encourage citizens and businesses to transact using computer technology and the internet.

Electronic commerce promises to be a key feature of doing business in the next decades, more so under the 4th industrial revolution, and therefore a generator of jobs, economic growth.

South African e-commerce background, successful areas and volumes South African challenges.

6.2.1. Critical Success factors

The critical factors that drive the uptake of e-commerce include.

➢ Government creating an enabling policy and regulatory environment. Of importance is the review of the national legislation to enable online activities and the recognition of identity, verification and contracting that happens online to be equivalent and equally protected like the traditional forms.
➢ A tax regime that is adapted to e-commerce
➢ National payment system that is accessible to all. Accessibility of credit cards one of the many limiting factors in the wide spread adoption and use of e-commerce
➢ The availability of broadband infrastructure and affordable internet
➢ Availability of and supply of skilled people capable of planning and managing technological innovations
➢ The ability of ordinary citizens to transact on line as a result of their comfort in iCT and computer skills
➢ Trust engendered by security measures to secure personal information, identities and consumer protection. Government taking a pro=active role to address market inefficiencies, awareness of e-commerce threats
➢ The deployment of the e-strategies in the public sector that serves to demystify the online environment.
➢ Partnerships between government, industry, business capable of addressing any emerging obstacles and challenges
➢ Building trust and confidence in the secure use of ICTs.

6.2.2. Strategic Pillars and Key Interventions

The following pillars will drive key interventions:

6.2.2.1.Supportive and responsive policy and regulatory environment

➢ Review of the laws supporting e-commerce to remove legal and regulatory barriers
➢ The development of Digital Identity Framework and standards
➢ Privacy Framework
➢ Consumer protection Framework
➢ Digital Signature and Electronic Document Framework
➢ Technology Neutral taxation Framework

6.2.2.2. SMME Development

➢ Technical support for e-commerce business strategies and practices
➢ Technical support by developing trade portals, virtual tradeshows and cyber trade websites
➢ Technical training of SMMEs

6.2.2.3. Building consumer trust

➢ Privacy Framework
➢ Implementing Cybercrime and Cybersecurity legislation
➢ Protection of Personal information Framework
➢ Cyber security and threats awareness campaigns

6.2.2.4. Promotion of ICT Skills

➢ ICT skills programme for children and teachers
➢ ICT e-learning
➢ Public Awareness Campaigns

6.2.2.5. South African e-commerce platform and Digital Content

➢ Position Post Office as the e-commerce hub regional hub in partnership with other Post offices
➢ Development of a South African e-commerce trading platform
➢ Development of South African e-payment system
➢ South African Digital Content

6.3. A roadmap towards smart cities

The advent of broadband and related innovations have also ushered new opportunities for cities and communities in general to innovate the way they provide services such as electricity and transport to their citizens. These ICT driven delivery mechanisms are generally referred to as smart cities or generally smart communities. In South Africa, some of the metros that have made some strides to rollout broadband are considering ways of introducing smart cities, which will help with the creation of local best case experiences in South Africa.

There is no doubt however that given the disparities between the metros and other underserviced areas there is a likelyhood that some areas will not benefit from the new innovations unless government as a whole (working with other stakeholders) takes tangible actions to ensure that by 2030 all South Africans live in smart communities of one kind or another.

Government has a responsibility of coordinating the drive towards the smart communities by inter alia introducing guidelines for smart cities and assisting municipalities especially in rural areas to also adopt the new innovations. Importantly, the advent of smart cities must not impose undue burdens on small municipalities. Instead, the smart communities' interventions must be

introduced within the auspices of the current work on the IDPs. ICTs should be tools to enable the implementation of government's social and economic plans to empower citizens.

6.4. Fast-tracking the roll-out of broadband infrastructure

Cabinet approved the South African Broadband Strategy and Plan in 2013.

6.4.1. Objectives of the Broadband Strategy and Plan

➢ Affordable broadband available nationally, to meet the diverse needs of public and private users
➢ Policy and regulatory conditions enabling public and private sector players to invest and contribute to reaching national targets
➢ Effective public sector delivery, including e-government services, underpinned by aggregation of broadband needs
➢ That all public institutions at national, provincial and municipal level benefit from broadband connectivity
➢ The development of a strong national skills base
➢ Vibrant and creative software industry
➢ A literate and skilled citizenship

6.4.2. Fast tracking Implementation

Government recognizes the critical link between the telecommunications and postal market reform and the widespread use of ICTs for economic and social development. Greater ICT use for development depend not only on the availability of the infrastructure and services but importantly on the affordability of the services. The development of the telecommunications and postal infrastructure therefore plays an important role in facilitating the use of ICTs for service delivery and the addressing societal problems.

Cabinet adopted the SA Connect Policy for broadband rollout and allocated resources for the pilot programme at 8 NHI sites. This project though seeks to ensure that 45 thousand-government office, schools, clinics, municipal offices are connected to the broadband infrastructure by 2020. The aggregation of government demand and the roll-out of broadband infrastructure to reach the government sites will bring this critical infrastructure to the reach of communities that do not enjoy broadband connectivity.

The Strategy will also entail the rollout of Wi-Fi –spots in all municipalities to offer digital connections to youth and students, people with disability and the smmes. As part of the Broadband Roll Out programme government will provide institutional support for planning to turn all communities into SMART Communities.

7. Develop comprehensive programmes to counter cybersecurity threats and secure critical South African infrastructure, government and citizens.

The threats of crimes and attacks emanating from the internet and the online environment were discussed in relation to the need for government to safeguard the e-government environment in order to build trust and confidence. Considerations of critical factors that will see e-government succeed are similar to considerations that will see South Africans using the ICTs in general.

Many countries are setting up national cybersecurity strategies to protect themselves, their economies and critical infrastructure. These strategies are multifaceted and include measures for cybersecurity standard settings, cybersecurity coordination, the assessment of national security threats, measures to combat crime and facilitate information sharing.

Cabinet adopted the National Cybersecurity Framework that outlines roles and responsibilities of the different actors within the state sector as well as providing for collaboration between government and the private sector.

Despite the adoption of the National Cybersecurity Framework there are gaps that still require attention for a successful prevention, detection and dealing with the emerging threats.

The biggest gap centres on the fact there is no dedicated cybersecurity policy in South Africa and cybercrimes are tackled by different pieces of legislation. The cybercrime policy should develop mechanisms to deal with mechanisms to counter cybercrime trends, establish obligations to cooperate with law enforcement agencies by intermediaries and simplify how online offences could be dealt with in one piece of legislation. The dedicated cybersecurity policy will also deal with legal principles to address cybesecurity challenges in the areas of new technologies like cloud computing, mobile computing and social media.

The protection of critical infrastructure is a key part of the cybersecurity strategies. Critical infrastructure includes infrastructure that is target for potential attack with risk of economic crisis, social paralysis, ecological disasters or major service denial. Critical infrastructure would include telecommunications networks, electric power networks, nuclear power plants, industrial complexes and military installations. Specific guidance on how to protect such infrastructure are required in order to proactively mitigate against such threats. Sector strategies for safeguarding critical infrastructure are essential.

Cybersecurity strategies rely on collaboration between different partners to ensure that different sectors have the capacity to deal with emerging risks and vulnerabilities, develop coordinated early warning and response, incident management. The Computer Emergency Response Teams and the Computer Security Incidents response Teams are critical. There is a need for the development of public response teams and coordination between the public and private response teams.

The e-strategy will focus on:

➢ Review of the different policies to develop a dedicated cybercrime policy of South Africa
➢ Establishment of guidelines to protect critical government communications infrastructure and telecommunications networks
➢ Establishment of the Public Computer Response Teams and coordination with private sector response teams
➢ Review and development of a national framework for the coordination on cybersecurity

8. National e-Strategy Implementation Framework

This action plan of the National e-Strategy framework focuses on the work that needs to be done over a three year period from 2017/18 to 2019/20. This approach is informed by the need to engage stakeholders such as municipalities to lead in the development of strategies and plans relevant to their area of work. It is envisaged that the implementation of all the tasks outlined in this National e-Strategy Framework will enable South Africa to reap the benefits of the digital economy and knowledge society by 2030.

FOCUS AREA	TARGET/outcome	ROADMAP	ROLE PLAYERS
4th Industrial Revolution Action Plan	Development of the 4th Industrial Revolution Action Plan 2030.	Develop the terms of reference for the 4th Industrial Revolution Working Group comprising all stakeholders to development of the Action Plan. Establish the Working Group on the 4th Industrial Revolution. Develop the National Action Plan on the 4th Revolution by 2019.	Government, academia, andustry, civil society, labour.
An enabling environment	Ensure 100% access to high speed broadband coverage.	Implement the 1st and second phase of the SA Connect, commencing in 2017/18 financial year.	National government, provinces, municipalities, state owned entities, developmental financial institutions and the private sector.

	Enhance Digital literacy.	Introduce basic online ICT training courses targeting young people throughout the country with emphasis on the Internet of Things commencing in 2018/19.	Department of Telecommunications, Department of Education, Department of Higher Education, Department of Labour, Department of Higher Education and Training, non governmental institutions and the private sector.
		Make ICT compulsory in schools and TVETs by 2019/20.	
	Cybersecurity and awareness.	Develop a partnership communications and awareness programme involving government, civil society and the private sector in 2018/19.	Department of Telecommunications and Postal Services, State Security Agency, South African Police Services, SA Post Office and the industry.
		Capacitate the cyber-security Hub with a full skills complement by 2018/19.	
		Capacitate the ICT Trust Centre by 2020.	
	Accelarate Research an Innovation.	Establish the National ICT RDI Planning and Investment Council in line with the ICT Policy by 2018/19.	Department of Science and Technology, Deaprtment of Telecommunications and Postal Services, Department of Trade and Industry, Research Councils, academic institutions.
		Launch a comprehensive research agenda and action plan that also focuses on local innovations involving SMMEs.	

		Introduce financial instruments to support grassroot and SMMEs innovations.	
e-Government	Reassert the role of government as a model user of ICTs through the rollout of e-government to improve the quality of services delivered to the citizens.	Develop a National e-Government Strategy and Roadmap.	Department of Telecommunications and Postal Services, Department of Public Service and Administration, other derpartments, State Information Technology Agency.
		Introduction of the Forum of DG's Coordinating Committee and working committees on e-government.	FOSAD
		Development of an e-government action plan in 2017/18.	Department of Telecommunications and Postal Services, Department of Public Service and Administration, national, provincial and local governments, SITA.
		Development a central e-government services portal in 2018/19.	SITA, Department of Telecommunications and Postal Services, Department of Public Service and Administration, national, provincial and local goverments.
		Implementation of e-government pilots targeting key priority areas such as education, health and safety and security in 2018/19.	
		Development of an Government Open Data Framework in 2018/19.	SITA
		Establish common service centres in	Government, SITA

		rural areas and townships to deliver e-services	
		Establish a capacity building program to develop skills in government and for citizens to use e-services.	Department of Public Service and Administration, Department of Telecommunications and Postal Services, SITA.
Sectoral eStrategies: • Health • Education • Safety • Economic sectors	All sectors of the economy led by government should develop and implement e-Strategies.	Develop sector specific e-strategies to enhance the uptake and usage of ICTs across the social and economic sectors by 2019/20.	National departments, provinces and municipalities.
e-Commerce	Development of e-commerce to stimulate SMME development and economic inclusion and empowerment in the ICT sector	Restructuring of the SA Post Office as a hub for e-commerce in South Africa and the region in 2018/19.	SA Post Office
		Develop an e-commerce gateway platform that should position South Africa as the hub of e-commerce in the country and the region.	
Smart cities and communities	Introduce a smart cities and communities initiative.	Develop a smart city National Guideline to deliver innovative, excellent and integrated public services that encourages creative service delivery in 2019/20.	Metros, local municipalities, districts and provinces.
		Establish Digital Technology Hubs in all provinces to drive	

		innovation at local levels by 2019/2020.	
Governance and Coordination Mechanism	Establishment of the Digital Transformation Inter-Ministerial Committee as the oversee the implementation of the e-strategy and e-government strategies.	Development of the terms of references for the Digital Transformation Inter-Ministerial Committee in 2018/19.	The Presidency, Department of Telecommunications and Postal Services, National Treasury, economic cluster.
		Establishment the Digital Transformation Inter-Ministerial Committee in 2018/19.	
		Formation of the Committee of Directors-General on e-government and the multi-sector Working Group on the 4th Industrial Revolution in 2018/19.	