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Contents

No.		*Gazette No.*	*Page No.*
GENERAL NOTICES • ALGEMENE KENNISGEWINGS			
Telecommunications and Postal Services, Department of/ Telekommunikasie en Posdienste, Departement van			
887	Electronic Communications and Transactions Act (25/2002): National e-Strategy Digital Society South Africa	41242	4

GENERAL NOTICES • ALGEMENE KENNISGEWINGS

DEPARTMENT OF TELECOMMUNICATIONS AND POSTAL SERVICES

NOTICE 887 OF 2017

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

NATIONAL e-STRATEGY
DIGITAL SOCIETY SOUTH AFRICA

I, Siyabonga Cyprian Cwele, Minister of Telecommunications and Postal Services, hereby, in terms of Section 5(5) of the Electronic Communications and Transaction Act, 2002 (Act No.25 of 2002), Chapter 4 of the National Development Plan 2030 and Chapter 10 of the National Integrated ICT Policy White Paper of 2016, publish the National e-Strategy.

Dr Siyabonga Cyprian Cwele, MP
Minister of Telecommunications and Postal Services
Date: 7/11/2017.

telecommunications & postal services
Department:
Telecommunications and Postal Services
REPUBLIC OF SOUTH AFRICA

2030 NDP

DIGITAL SOCIETY SOUTH AFRICA:

South Africa's National e-Strategy
towards a thriving and inclusive digital future

DIGITAL SOCIETY SOUTH AFRICA

South Africa's National e-Strategy towards a thriving and inclusive digital future!!

2017-2030

Contents

1 INTRODUCTION 2
2 PILLAR 1: ICT SECTOR INTERVENTIONS 4
2.1 Overview of the ICT sector: Key drivers of growth in the ICT sector 4
2.2 Sector cost structure 7
2.3 Sector Competitiveness Constraints 8
2.3.1 ICT- Research and Development Expenditure (ICT R&D) 8
2.3.2 ICT Skills Gap 10
2.4 Interventions to grow the ICT sector 10
3 PILLAR 2: SECTORAL INTERVENTIONS 13
4 PILLAR 3: DIGITAL INDUSTRIAL REVOLUTION 17
5 ANNEXURE 1: 19

1 INTRODUCTION

Digital Society SA is South Africa's National e-Strategy, which aims to position South Africa as a significant player in the development of ICTs throughout the value chain of the sector as well as accelerate the uptake and usage of ICTs in other social and economic sectors. In essence this deals with the transformation of South Africa into a full digital society marked by a widespread diffusion, uptake and usage of ICTs in the whole society. This is critical for the government and society wide on-going interventions to accelerate growth and facilitate economic and social inclusion. The ICT sector has a significant role to play in driving and enabling the new growth and developmental trajectory.

The National Development Plan Vision 2030 states that "a single cohesive National e-Strategy is essential to ensure the diffusion of ICTs in all areas of society and the economy. ICT as an enabler, can speed up delivery, support analysis, build intelligence and create new ways to share, learn and engage".

The National e-Strategy builds on various policies within the ICT and related sectors amongst them the Integrated ICT Policy White Paper and the ICT RDI Roadmap and the Industrial Policy Action Plan. It seeks to ensure a coordinated approach to the implementation of various initiatives arising from these and other government policies. The National e-Strategy should therefore be read together with these and other policies to establish an ecosystem as the basis of the digital society. In this context, by a digital society we refer to a widespread diffusion, uptake and usage of high speed quality, secure and affordable ICTs by all segments of society be they individuals or organisations and is underpinned by the effective coordination and building an ecosystem around the following critical issues:

I. **Enabling policies**: South Africa's ICT and related policies should be forward looking, transparent and predictable ICT to enable inclusive growth and development.
II. **Infrastructure**: the digital society will be underpinned by the availability of infrastructure throughout the country. Interventions are thus needed to stimulate both the public and private sector investments building on SA Connect and the introduction of supply side interventions to promote competition and SMME development in the telecommunications and broadcasting industries.

III. **Universal access**: all South Africans should have access to affordable user devices and high quality services irrespective of geography and social status.

IV. **Security**: citizens should trust the ICT environment knowing that their information and transactions are protected.

V. **Content**: South Africans should be involved in the development of local content taking advantage of the ubiquitous nature of the ICT sector. There is a big scope for South Africa to emerge as one of the leading content industries on the continent and in the rest of the world. Strong and affordable content rights management and protection must support this.

VI. **Innovation:** government and society as a whole should pay specific attention to the development of local intellectual property and knowledge to encourage and support local production and manufacturing. Importantly, innovations should be geared towards growing the ICT sector while at the same time introducing ICT enabled solutions in the other key sectors of the economy.

VII. **Skilling the nation**: a massive skills development programme to create awareness, demystify technologies and extend the use of technology to embark on complex transactions should underpin the uptake and usage of ICTs in the whole society.

Within this overall strategic construct, instead of being an omnibus of all ICT initiatives, the e-Strategy should focus on initiatives that have a significant, catalytic potential on growth and development with a long-term view to transition the economy to the Digital Industrial Revolution. This e-Strategy accordingly consists of three pillars, namely 1. Interventions focused on the ICT sector as a standalone growth area 2. Sectoral plans focused on the uptake and usage of ICTs in all sectors of society and the economy and 3. The development of a roadmap and action plan to transition the South African economy to the Digital Industrial Revolution. Each of these pillars have different considerations and activities designed to achieve defined policy ends. The three pillars are mutually reinforcing and complement each other.

In order to remain relevant, the e-Strategy shall be reviewed every year especially to accommodate the reports of the Digital Industrial Revolution Working Group.

2 PILLAR 1: ICT SECTOR INTERVENTIONS

The first pillar is anchored on the implementation of the Integrated ICT Policy White Paper and ICT Research Development and Innovation and has two elements. The first element is focused on opening the ICT sector and the introduction of competition, expansion of the ICT sector to reach all parts of the country and the lowering of the cost to access and use ICTs. The second element of this pillar relates to making ICTs relevant to and easily adaptable to different societal and economic sectors. In this regard, it focuses on cross cutting issues like infrastructure, applications and digital identity and other related enablers.

2.1 Overview of the ICT sector: Key drivers of growth in the ICT sector

The National Integrated ICT Policy White Paper sets out a medium to long-term transformation agenda of the ICT sector to ensure that it meets the needs of all segments of society and the economy. Work has commenced to implement the provisions of the White Paper thereby creating an enabling environment for the growth of the ICT sector on its own, positioning the sector to enhance growth in the other sectors and to begin the process towards the transition to the Digital Industrial Revolution. Specific interventions to drive the first pillar include:

1. Legislative changes to create an enabling environment for a competitive sector including the establishment of a dedicated regulator and a dedicated ICT Development Fund.
2. Licensing of the Wholesale Open Access Network to stimulate service based competition.
3. Introduction of mechanisms for the rapid deployment of electronic communications facilities
4. Introduction of the e-Government and ICT SMME strategies.
5. Creation of an enabling environment to make ICTs relevant and adaptable to all social and economic sectors by prioritising the rollout of critical infrastructure, and
6. Ongoing efforts to reduce the cost to communicate.

On the market side, key trends are drawn from the International Data Corporation report of 2014 is an analysis of ICT trends published by Accenture Technology Vision (2014), AT Kearney: "IT 2020: Preparing for the Future" (2013), McKinsey Global Institute: "Disruptive Technologies " (2013), IBM Global Technology Outlook (2013) and its own predictions. They

identified the following as the most important global trends affecting the ICT market and the socio-economic system in future:

- **Mobility and mobile apps**: The incredibly rapid penetration of mobile devices and technologies in the market and the broad phenomenon of leveraging mobile solutions in the business environment. The 5th generation mobile technologies takes this further to enabling the industrial internet of things (IoT) as well as connectivity of devices that far outnumber the number of connected persons.
- **Cloud computing**: the disruptive delivery model of IT software and services, based on flexible and on-demand business models.
- **Big data analytics**: a new generation of technologies and architectures, designed to economically extract value from very large volumes of a wide variety of data, by enabling high velocity capture, discovery, and/or analysis.
- **Social Media technologies**: the use of social media within and outside the enterprise, implementing social marketing techniques and facilitating collaboration and knowledge sharing.
- **Internet of Things (IoT)**: A dynamic global network infrastructure with self-configuring capabilities based on standard and interoperable communication protocols where physical and virtual “things” have identities, physical attributes, and virtual personalities, use intelligent interfaces, and are seamlessly integrated into the information network.
- **Customer Experience IT (CXIT)** refers to the IT-related investments required to manage and optimise the customer's (or a citizen's) experience with an organisation. This is a new concept reflecting the increasing convergence of innovative IT (mobile, social technologies, cloud, Big Data, IoT, Data Science) into applications and services centred on the customer experience, implemented through investments made by business managers other than Chief Information Officers (CIOs).
- **IT security**: given the increasing dependency of European organisations on ICT systems, and the growing complexity of connected environments, there is strong demand for and diffusion of software and tools to insure IT systems security at all levels.

A report concludes the trends analysis by underlining the relevance of the convergence of these new technologies and their cumulative effect on the market and on usage patterns.

Locally, the convergence trend is emerging strongly. A few years back there was a clear separation between companies providing IT services, communications service providers and broadcasting services. Even within the communication services, mobile and fixed Internet service providers were distinct. The landscape is quickly changing, the industry is experiencing high level of consolidations and convergence of companies within the IT sector, and between companies in the IT and telecommunications sub-sectors. A snapshot of the consolidation and mergers between 2015 and 2016 is presented in [WhoOwnWhom 2016]. Economic performance of the ICT sector.

The ICT sector in South Africa is an important component of the national economy. Technology is involved in almost every facet of the economy – from telecommunications to increasing productivity in manufacturing with robots, and more efficient computer hardware and software.

Although there have been positive developments in the South African ICT industry such as mobile technology growth, internet penetration growth (albeit slow), the existence of the National ICT policy framework, increasing numbers of smart devices, tablets and smartphones, appreciating stock prices of ICT firms such as Adapt IT, Naspers and Telkom; the South African Information and Communication Technology (ICT) sector landscape has not grown as fast as it can, and South Africa is falling behind other middle income countries (Jean and Simon, 2013 ;Jean and Simon, 2014). The sector GDP contribution declined from 3.2% (ZAR 92 billion) in 2011 to 3% (ZAR 114 billion) in 2014 (BMI-Techknowledge, 2015; STATSSA, 2017).

South Africa is a net importer of ICT goods and services, making it increasingly challenging to curb the burgeoning deficit in the balance of trade (DTPS, 2016; STATSSA, 2017). The deficit in the balance of trade increased from 42 billion in 2011 to 97 billion in 2014 (BMI-Techknowledge, 2015; STATSSA, 2017). This means that the deficit has increased by more than 100% in 3 years. This trend is particularly concerning as it will severely impact South Africa's ICT innovativeness and competitiveness in both local and global markets. The ICT sector is one of the highest contributor of South Africa's total imports contributing on average about 10% of all South Africa's imports (DTPS, 2016; STATSSA, 2017). Most imports are radio, television and communications equipment, while exports comprises mainly of broadcasting, telecommunications and information (knowledge) supply services (BMI-Techknowledge, 2015; DTPS, 2016; STATSSA, 2017).

The primary contributor to the ICT sector GDP is telecommunications services which, in 2014, contributed 60% of the total ICT sector GDP, followed by related industries (contributing 16%), computer services and activities (contributing 10%), and manufacturing and content and media being the least contributor to ICT GDP at 6.6% respectively (STATSSA, 2017). Amongst others, the e-Strategy seeks to identify national priorities to accelerate the growth and performance of the ICT sector.

2.2 Sector cost structure

There is no single comprehensive report on cost structure of the ICT sector. This is partly due to the sector not being clearly defined as a single economic sector in Statistics SA Standard Industry Codes (SIC) version 5. In the revised codes, SIC version 7, ICT components that distributed among other industries have now being grouped together. In its 2013/14 ICT satellite report (STATSSA 2017), Statistics SA, has indicated that it plans to report the sector cost structure when it publishes the 2017/18 ICT satellite account report. If one looks at the telecommunications sub-sector alone, two recent reports have comprehensive details on cost structure for telecommunications industry; the first is by ICASA (ICASA 2015) and have focus only on CAPEX, while the second one that was commissioned by The Industrial Development Corporation (IDC) in conjunction with the Department of Trade and Industry (the dti), the Department of Telecoms and Postal Services (DTPS) and the CSIR, and was conducted by BMI-TechKnowledge (BMI-T 2015) has details of both CAPEX and OPEX figures.

The average spend over the past few years is around R21bn of which around two thirds (R14bn) can be attributed to spending on broadband related infrastructure. Over 70% of this capital expenditure is by mobile operators. The bulk of this equipment is purchased from the international telecommunications vendors including Ericsson, Alcatel-Lucent (now part of Nokia), Cisco, Huawei, ZTE, Nokia, Juniper, Coriant et al. Local resellers and system integrators do add value in the supply chain, particularly in the area of services e.g. installation and commissioning. South Africa also has a place in the manufacturing of materials used in the installation processes.

Empirical evidence suggests that the bulk of the equipment used in telecommunications networks is currently imported, and this is estimated at around 80% of the capital expenditure. The local market contributes around R4.2bn (20% of R21bn), which includes

items ranging from low-tech (e.g. mounting brackets, towers, etc.) to high-tech (e.g. intelligent batteries supplies, monitoring systems, etc.).

2.3 Sector Competitiveness Constraints

2.3.1 ICT- Research and Development Expenditure (ICT R&D)

Although South Africa's Gross Expenditure on Research and Development (GERD) has been steadily moving towards 1% of GDP (HSRC, 2017), this is still significantly below what is required for economic competitiveness as evidenced by Brazil (1.3%), South Korea (4.2%), Australia (2.4%) and Taiwan at 2.4% (DST, 2016). In 2013, South Africa's ICT R&D as a percentage of GERD was 8.4% while Brazil was 19.4% and South Korea was 44.8% (DST, 2016). Figure 1 shows that there has been a significant decrease in R&D investment in Engineering Science and ICT since 2008/9 (From 24.4% and 13.1% to 18.7% and 10% of total respectively), while there have been in increase in Social Sciences (9.6% to 17%) and Medical and health sciences (14.9% to 18.6%).

South Africa's ICT R&D spend as a percentage of GERD needs to at least increase fivefold to have a noticeable impact on competitiveness at a global scale. The need for increasing the ICT R&D spend will even be higher for transitioning the country's economy to the Digital Industrial revolution.

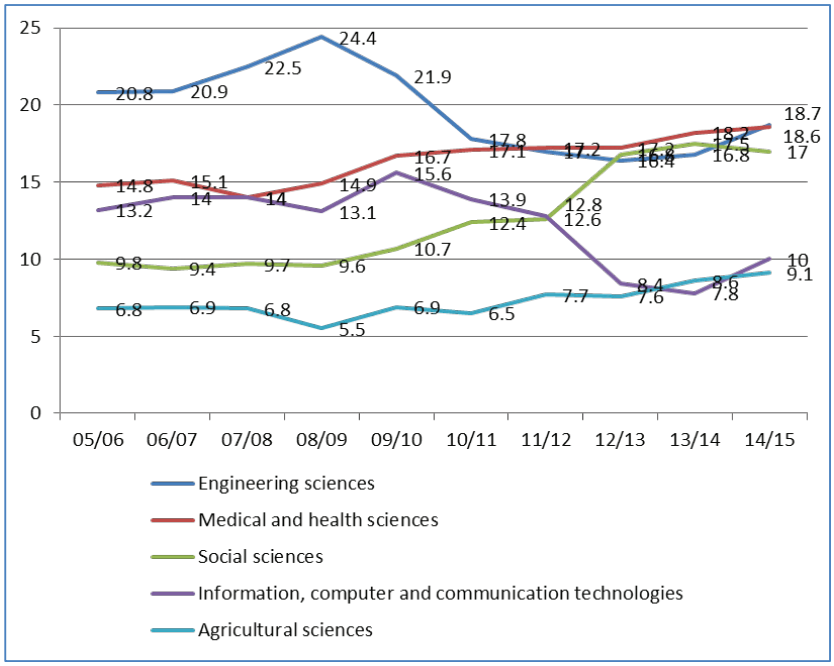

Figure 1 Top 5 R&D investments per research field in South Africa

Business is still a major investor into Engineering Science and ICT R&D vs Government (Figure 2). However Business has favoured Social Sciences over ICT in recent years while Government has also dropped investment into ICT R&D, but has favoured Health Sciences over Social Sciences in recent years. Despite the decreasing trend in ICT R&D investment spend;

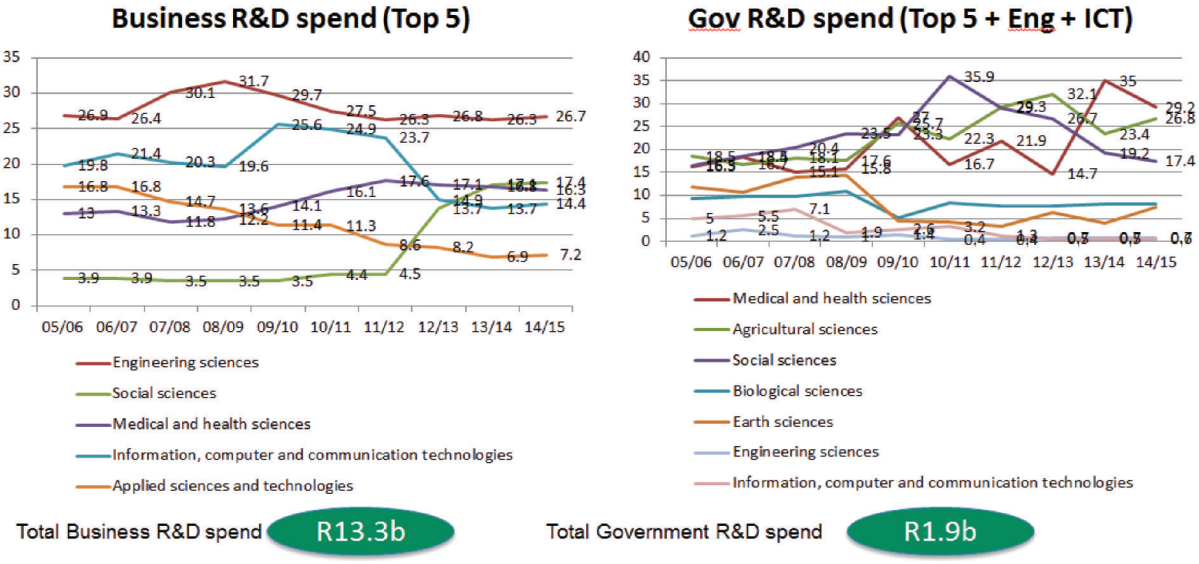

Figure 2 R&D investments by Business and Government

The increasing use of artificial intelligence (AI) in applications related to decision-making and operational management, along with the ability to sense and actuate within the physical world (Internet of Things and related technologies), is predicted to be the most disruptive future technologies. The 4th Industrial Revolution is thus of the most significance to the South African ICT sector and other sectors reliant on digital technologies. These will significantly change the jobs market and the requirements for human labour and skills. In the short term (1 to 5 years), these technologies will actually increase the number of new jobs created at both the lower and advance skill level. Human beings (with little to no advance skills) will increasingly be required to classify (tag) data (e.g. tag an image of a cat; translate content from one language to another – digital jobs) in order to provide classified and cleaned data from which AI can learn. Advance skills in terms of the design and development of such AI systems, along with advance skills related to the interpretation and insight driven analyses of data will increasingly be required over the short, medium and long term. This provides a gap for the country in the short term in which these advance skills must be built before the demand at the lower end of skills diminishes in the next 5 years.

2.3.2 ICT Skills Gap

The ICT skills gap in South Africa is hindering the country's ability to improve performance and competitiveness of not only the ICT sector but all other relevant sectors (Schofield, 2016). This skills gap is constraining the need to drive heightened innovation in the ICT sector in an endeavour to sustainably address the unacceptable burdens of poverty and unemployment (DTPS, 2016). The fourth industrial revolution which is driving the convergence of emerging technologies (cloud computing, Internet of Things, big data, analytics, machine to machine, artificial intelligence, cybersecurity, robotics, nanotechnology, 3D printing and so forth) that are increasingly becoming mainstream has increased the demand for specialized ICT skills to create, implement and maintain such emergent technologies in an era of a fourth industrial revolution driven by the increasingly knowledge based economy (Schofield, 2016). The projections in Europe indicate that 756 000 ICT practitioners will be needed by 2020, while the US indicate that currently, 209 000 cybersecurity jobs are unfilled and this number is projected to reach 1.5 million by 2020 (Schofield, 2016). These numbers indicate that the South African ICT skills deficit and related environment needs urgent, focused and intensified attention if any aspirations of becoming a global competitor are to be entertained.

2.4 Interventions to grow the ICT sector

South Africa has made strides to increase the contribution of the ICT sector to innovation in line with the ICT Research Development and Innovation Roadmap. Some of the current interventions in this regard include the Square Kilometre Array, Data Science for Impact and Decision Enhancement Programme, Mobile Laboratory South Africa, Focused Human Capital Development in Information Society, ICT Industry Innovation Programme and electronics manufacturing initiatives being coordinated and implemented by the Department of Science and Technology. More work is needed to massify these initiatives and additional funding shall be required to achieve this.

The Integrated ICT Policy White Paper and the ICT RDI Roadmap also identify massification of skills as one of the priorities of the ICT sector. A comprehensive National Action Plan is needed to position South Africa as a country that is ready to transition into a full digital society. The transformation of the National Electronic Media Institute of SA into a fully-fledged National e-Skills Institute shall drive the development of e-skills in society. The e-

Skills Institute shall collaborate with other training institutions to achieve through a National e-Skills Plan to be finalised in the first half of the 2018/19 financial year. The National e-Skills plan shall be anchored in a vision to achieve over 70% digital literacy rate defined by the number of South Africans who can use ICT services and devices to embark on one transaction or another.

Achieving universal access to high quality and affordable broadband services remains the cornerstone of government's ICT policies. Universal access will be achieved through amongst others the rollout of SA Connect, introduction of the Wholesale Open Access Network, imposition of universal service obligations on licences, introduction of measures to facilitate the rollout and deployment of electronic communications, and the direct regulation of prices to reduce the cost of communications services. These initiatives are currently being implemented starting in the 2017/18 financial year to the Medium Term Strategic Framework 2014-2019. In addition to efforts to create an enabling policy environment for the growth and development of the ICT sector, government needs to take a lead in developing an RDI approach that focuses on the development of local Intellectual Property using various mechanisms such as funding R&D initiatives and supporting research institutions such as the CSIR to develop technologies that can be deployed to address the specific needs of the South African economy.

KEY ENABLERS	
Initiative	**Interventions**
Rollout of Broadband	Connect 40 000 government sites to high speed internet networks in line with the Phase 1 and Phase 2 of SA Connect targets. Stimulate local services industry through the empowerment of SMMEs in line with the SMME Strategy. Rationalise key state broadband and IT companies to optimise governance, service delivery and performance.
Broadcasting	Accelerate the implementation of digital terrestrial broadcasting to leverage this opportunity to build a local content and stimulate a local electronics industry.
Competitive ICT sector	Enable classes of operators in the telecommunication market through introduction of enabling digital platforms to support connectivity. Envisaged operators include: Wholesale open access network, mobile virtual network operators, core mobile network operators, spectrum

	database operators and content caching and distribution service providers.
SMME development	Finalise and commence the implementation of the ICT SMME Strategy.
Government leadership	Finalise and commence the implementation of e-Government strategy to stimulate demand for government information and services and consequently for the ICT goods and services.
Cost to communicate	Commence and finalise the investigations and imposition of remedies to ensure reasonable pricing throughout the value chain of the broadband industry. Building a new institutional mechanisms including a new economic and infrastructure regulator and the ICT Development Fund.
Radio frequency spectrum planning	Undertake studies to identify future use of the scarce radio frequency spectrum in light of the advent of new technologies such as 5G.
Cyber Security	Capacitate the Cyber Security Hub and reposition it to enable widespread diffusion and use of ICTs especially by SMMEs and consumers.
Skilling the nation	Development and implementation of a National e-Skills Plan.
NEW INNOVATIONS TO BUILD LOCAL IP AND KNOWLEDGE CAPACITY	
Initiative	**Interventions**
Innovation and smart technologies	**Undertake strategic research and development process to design and develop local intellectual property aimed at the following industries or sub-industries:** 1.1 Integrated Digital Television devices taking advantage of the Digital Terrestrial Television programme. 1.2 Fibre cable taking advantage of the SA Connect programme; and 1.3 Low cost smart phones and other devices to drive the adoption of Internet services and taking advantage of both SA connect programme and Wireless Open Access Network. 1.4 Mobile broadband technologies (products and services) that respond to changes in demand for wireless broadband particularly in rural areas as well as change in the way services are delivered as a result of convergence between IT and Telecommunication. 1.5 Low power wireless technologies (products and services) that respond to changes in demand for Internet of things connectivity to support the building of smart communities (both in large cities

	and rural municipalities). Low power is of even greater importance in rural municipalities. 1.6 Wireless technologies that introduce efficiencies through increased automation to industrial processes including in manufacturing. 1.7 Geo-location based spectrum services in 5th Generation mobile telecommunication services as a radical shift in how sharing of spectrum in the upcoming network standards can be shared to increase efficiency in usage of this key resource. 1.8 Third network services that are fuelled by softwarization of networking and include Software Defined Networking, Network Function Virtualization and Lifecycle Service orchestration. These services would be enabler for South African companies to produce devices in this main sub-sector of ICT. 1.9 Develop applications for smart solutions in agriculture, transport, energy, agriculture and other key industries that assist in transitioning the country's economy to digital Industrial revolution. **Undertake strategic research and development process to inform both policy development and strategies for policy implementation such as:** 2.1 Modelling of spectrum of Wireless Open Access Network (WOAN) as new spectrum bands are made available and when the market share of WOAN increases over time. 2.2 Modelling of technology mix in the building the next generation of networks, considering both wired and wireless technologies as well as current performance of deployed networks. **Establish ICT hubs in the SEZs and other areas in all provinces to act as centres of excellence for SMMEs and other businesses involved in RDI.** **Introduce innovations and support schemes to encourage the private sector to invest in cloud computing and data centres in SA.**

3 PILLAR 2: SECTORAL INTERVENTIONS

The second pillar is about the development and implementation of the sectoral interventions to promote the uptake and usage of ICTs in the key sectors of the economy and society as

a whole. This places more emphasis on the function of ICTs as catalysts for growth and development in other sectors. Importantly, this part of the strategy establishes a link between ICTs and the key interventions identified by government in the form of the Nine-Point Plan. In this regard, the National e-Strategy departs from a notion that the priorities of government are already set out in Nine-Point Plan and related prescripts. This is largely government led although there is a recognised need to engage key players in the respective industries. For most of the 2018/19 financial year, focus shall be on the analysis of the use of ICTs in the different industries to build on what exist instead of reinventing the wheel and the identification of specific action plans that shall form part of the Medium Term Strategic Framework commencing in 2019/2020. Table below highlights some of the critical issues that need to be attended to as part of the planning processes towards the introduction of a largely ICT enabled plan of government to accelerate change. The issues raised herein begin the process of linking ICTs with the key deliverables of government as articulated in various government plans.

No	Nine Point Plan Initiative	Critical interventions (Sectorial plans)
1.	Revitalising agriculture and the agro processing value chain	Identification and integration of smart projects and plans on the use of ICTs in the agriculture value chain with specific emphasis on enabling emerging and small holder rural farmers (also known as **Smart Farming).** Key components include: Demand and price signalling; production planning, and management; inputs optimisation, traceability and quality control; the coordination of resources, assets and activity; synchronised movement of goods to market and farmer organisation.
2.	Adding value to our mineral wealth (advancing beneficiation and support to the engineering and metals value chain).	Identification and integration of interventions and plans on the use of ICTs to support beneficiation. This shall include the development of local technologies to modernise manufacturing and beneficiation in key industries (also known as **Smart Industry).** Key components are smart technologies for optimising industry (e.g. mining, or manufacturing). The optimisation spans aspects such as just-in-time stock and logistics.

3.	Resolving the challenge of managing utilities; including energy, water and transportation	Introduce and integrate smart solutions to support efficient management of utility infrastructure and modernise the utility services offered through these infrastructures and thereby creating smarter communities.
4.	Operation Phakisa (Ocean economy, Mining, Health, Tourism, Basic Education, etc.)	Accelerate the rollout of Phase 1 & 2 of SA Connect to ensure connectivity of schools, Home Affairs, municipalities and health services. Introduce e-learning interventions in both basic and tertiary institutions to ensure universal access to education using ICT hubs and Post Offices as access points. Deploy critical ICT infrastructure in areas with high potential for tourism growth including innovations such as satellite connectivity to support maritime tourism and smart solutions to provide services in environmentally protected but huge tourism potential areas. Effectively use ICTs to improve the security of South Africans through measures such as Smart City plans and effective cross border management. Implement the Digital Object Architecture as the basis of the future digital identify. Software technology for collecting, analysing, visualizing, and storing operational control data as well as security incident and event management (SIEM).
5.	More effective implementation of a higher impact Industrial Policy Action Plan	ICT innovations should form an integral part of the IPAP both in terms of the role of ICTs as an industry and as an enabler for growth throughout the economy.
6.	Unlocking the potential of small, medium and micro enterprises, cooperatives and township enterprises	Commence the implementation of the ICT SMME strategy to open opportunities throughout the value chain. Introduction of the SMME Digital Mall (e-Commerce) as part of the restructuring of the SA Post Office. This shall prioritise SMMEs across sectors such as agriculture, tourism and transport.
7.	Encouraging Private Sector Investment	Introduce incentives to drive investments in high job creation opportunities in the ICT sector.

		Ensure predictable ICT policies and regulation to encourage long term commitments by the ICT sector. Licence the Wholesale Open Access Network to stimulate service based competition in the ICT sector. Reducing the cost to communicate will also increase investments in the entire economy. Ensure infrastructure availability in areas with potential for industry and economic growth.
8.	Moderating workplace conflict	Adequately prepare for the disruption of the Digital Industrial Revolution including introduction of online job opportunities. Rollout massive nationwide ICT training programmes targeting workers who are being retrenched and the unemployed youth.
9.	State reform and boosting the role of state owned companies, information and communications technology infrastructure, water, sanitation and transport infrastructure	Encourage and support the uptake and usage of ICTs by state owned enterprises to optimise production and service delivery to the citizens. Introduce and integrate ICT enabled smart transport, water and sanitation technologies as part of government's service delivery and industry innovations plans.

Government leadership as a model user is central to the country's drive towards the Digital Society and the Digital Industrial Revolution. As such, there is a need for government to speed up the implementation of the e-Government strategy. Specific interventions should also be introduced to fight crime as well as ensure effective border management.

To achieve this, the major task is create an institutional capacity to enable each sector of the economy to engage in the development of sector plans for the use and adaptation of ICTs to realise their sector short, medium and long term plans towards 2030. All these interventions in the different sectors must culminate in a national coordinated framework and action plans for the rollout and use of ICTs throughout our society and the economic sectors. Government shall establish e-Strategy Intergovernmental Forum comprising senior officials of government who are experts in ICTs and the related sectors. The Forum shall integrate the sectoral plans into a single, coherent national ICT enabled MTSF framework.

4 PILLAR 3: DIGITAL INDUSTRIAL REVOLUTION

The latest trend in the ICT sector is the 4th Industrial Revolution, consisting of new technologies that will seamlessly connect billions of people and devices, thereby having an impact on all disciplines, economies and industries. Professor Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, explains, “The 4th Industrial Revolution is said to be characterised by a range of new technologies that are combining the physical, digital and biological worlds, impacting all disciplines, economies and industries, and even challenging ideas about what it means to be human”.

In line with the 4th Industrial Revolution, there is a need for South Africa as a country to develop a comprehensive framework and action plans to deal with the opportunities while mitigating the risks of the transition to the SA Digital Industrial Revolution. South Africa’s approach to transitioning to a Digital Industrial Revolution shall be underpinned by amongst others the following:

- Technologies that enable the South African industry, with specific focus on SMMEs to develop applications and content that is relevant to majority of South Africans and extend to the whole continent. This could be achieved through the development of digital platforms and open Application Programme Interfaces (APIs) for the SMMEs to develop and monetise locally relevant services. An initiative such as introduction of the SMME Digital Mall (e-Commerce) as part of the restructuring of the SA Post Office as well as digital identity management would be good example of such enablers.
- Technologies that can be transferred to local industry to improve efficiencies in the delivery of services, in the ICT sector as well as in other sectors. Example of improving the efficiency in the ICT sector is the spectrum services and a good example in improving efficiency in other sectors is scarce resource consumption monitoring, efficiency and conservation.
- Technologies that disrupt entire industries and as a result create new markets and industries. A smart agriculture initiative that matches the demand for fresh produce and the suppliers in an open and transparent manner would be a good example of removing barriers to entry for small farmers.

The first task of this pillar is national awareness, discussion and engagement across society and the economy with respect to the meaning and implications of the Digital Industrial Revolution to the different sectors, the opportunities presented by the Digital Industrial Revolution and what South Africa must do to prepare for it. Accordingly, this calls for the establishment of a platform of national dialogue in the form of the Digital Industrial Revolution Working Group under the political oversight of Cabinet's Digital Transformation Committee which was first mooted in the National Integrated ICT Policy White Paper in 2016. The Terms of Reference of the Digital Transformation Committee and the Digital Industrial Revolution Working Group are outlined in Annexure 1 below. Implementing this pillar shall include the scoping of the Digital Industrial Revolution roadmap, which shall be done in the 2018/19 financial year, followed by the transitional plan to be implemented over an MTSF period 2019-2024 and conclude with the full transition into the Digital Industrial Revolution over the 2024 to 2029 MTSF and beyond.

5 ANNEXURE 1:

TERMS OF REFERENCE OF THE DIGITAL TRANSFORMATION COMMITTEE AND THE WORKING GROUP ON THE DIGITAL INDUSTRIAL REVOLUTION

1. BACKGROUND

1.1 The National Development Plan (NDP) views ICTs as a critical enabler of economic activity and emphasises its importance for the competitiveness of the economy. The NDP sees ICTs by 2030 underpinning a dynamic, inclusive and prosperous information society and knowledge economy, in which a seamless information infrastructure will meet the needs of citizens, business and the public sector, providing access to a wide range of services required for effective economic and social participation. Similarly, the 2002 National Research and Development Strategy of South Africa identified ICTs as one of the priority's to drive the growth and development of the South African economy.

1.2 The National ICT Integrated Policy White Paper also underscores the need to develop a national framework to transform South Africa into an inclusive digital society where all citizens can benefit from the opportunities offered by digital technologies to improve the quality of life targeting all citizens and in particular the poor.

1.3 The Digital Industrial Revolution concept includes integrated economies, mechanisation and automation, and builds on the digital revolution of the last century. The movement is characterised by the availability of new versatile technologies including the Internet of Things, robotics, artificial intelligence and 3D printing that are revolutionising industries across the globe.

1.4 The Digital Industrial Revolution is building on the three previous industrial revolutions. The First, in the last third of the 18th century, introduced new tools and manufacturing processes based on steam and waterpower, ushering the transition from hand-made goods to mechanised, machine production. The Second, a century later, revolved around steel, railroads, cars, chemicals, petroleum, electricity, the telephone and radio, leading to the age of mass production. The Third, starting in the

1960's, saw the advent of digital technologies, computers, the IT industry, and the automation of process in just about all industries.

2. PROBLEM STATEMENT

2.1 The Digital Industrial Revolution will have an impact on three segments of society, namely business, government and individuals. The African Continent has an opportunity to make a significant contribution to the success of the revolution, as it is likely that some of its biggest challenges can become unique opportunities. How will South Africa prepare for Digital Industrial Revolution and what will be its impact? The country shall establish a Digital Inter-Ministerial Transformation Committee and a Digital Industrial Revolution Working Group.

3. THE DIGITAL INTER-MINISTERIAL TRANSFORMATION COMMITTEE

3.1 The Digital Transformation Committee of Ministers is a Committee of Cabinet established pursuant to the National Integrated ICT Policy White Paper to undertake the following functions:

3.1.1 Oversee the transformation of South Africa into a digital society and knowledge economy by 2030 in line with the targets of the National Development Plan.
3.1.2 Lead and oversee the implementation of the e-Government strategy and related plans.
3.1.3 Lead and oversee the work of the Digital Industrial Revolution Working Group
3.1.4 Report to Cabinet on 3.1.2 and 3.1.3.

3.2 The Digital Transformation Committee may be structured as follows:

3.2.1 The President as the champion of Digital Transformation.
3.2.2 The President/Cabinet may appoint a chairperson/co-chairpersons of the Digital Transformation Committee.
3.2.3 The following Ministers may constitute the rest of the membership of the Committee:

I. Department of Trade and Industry (the dti)
II. Department of Economic Development (EDD)
III. National Treasury (NT)
IV. Department of Public Service and Administration (DPSA)

V. Department of Home Affairs (DHA)
VI. Department of Communications (DOC)
VII. Department of Basic Education (DBE)
VIII. Department of Higher Education and Training (DHET)
IX. Department of Health (DOH)
X. South African Police Service (SAPS)
XI. Department of Labour (DOL)
XII. Department of Small Business Development (DSBD)
XIII. Department of Justice and Constitutional Development (DOJ&CD)
XIV. Department of Cooperative Government and Traditional Affairs (CoGTA)
XV. Department of Performance Monitoring and Evaluation (DPME)
XVI. Department of Communications (DOC)
XVII. Government Communications and Information System (GCIS)

3.2.4 The Digital Transformation Committee shall be supported by a Management Committee comprising the following Directors-General: DTPS, DST, the dti, DOC, CoGTA, DPSA, DPME and GCIS. The Management Committee shall be supported by a secretariat housed at the DTPS but can draw capacity from other government departments and state institutions such as the Council for Scientific and Industrial Research.

4. THE DIGITAL INDUSTRIAL REVOLUTION WORKING GROUP

4.1 The Working Group on the Digital Industrial Revolution is a government led nationwide initiative aimed at mobilising the whole of society towards the transformation of South Africa into a digital society and knowledge economy by maximising the opportunities brought about by the Digital Industrial Revolution.

4.2 At the core of its mandate is the full restructuring of the South African economy, which has been dominated for years by the Mineral Industry Complex, and there is a need for diversification with ICTs playing a catalytic role.

4.3 This entails a focused approach towards the development, production, uptake and usage of cutting edge technologies throughout the economy, taking into account the

possible negative consequences on the jobs. Propose strategies to mitigate potential job losses in the traditional sectors.

4.4 While the focus of the working group is the restructuring of the economy, it is important that we pursue a broader worldview that takes into account the impact of social interventions on growth and development thus a need for a holistic perspective on the drive towards the Digital Industrial Revolution. This calls for more strategic interventions to improve access to quality education and skills development in general to prepare the country for the future.

4.5 Worldwide governments are being reshaped by the advent of the 4th Industrial Revolution with broader implications and ramifications for the whole of society. In this regard the Working Group shall investigate further opportunities for the transformation of government using the e-Government Strategy as a baseline to the future.

4.6 All these interventions and considerations should culminate into a comprehensive National Action Plan on the Digital Industrial Revolution underpinned by effective coordination and collaboration amongst the key stakeholders with government playing a leading role.

5. SCOPE OF THE WORKING GROUP

5.1 The Working Group shall amongst others consider the following issues:

5.1.1 What are the existing considerations and impact of the Digital Industrial Revolution on South Africa?
5.1.2 What is South Africa's state of readiness towards the Digital Industrial Revolution?
5.1.3 What will be the impact of the Digital Industrial Revolution on business, society and government?
5.1.4 What are the opportunities and threats presented by the Digital Industrial Revolution?
5.1.5 Does South Africa have adequate skills for the Digital Industrial Revolution, if so, in which areas, and where are the gaps, what skills will be required going forward?
5.1.6 What is the country's capabilities in research and development and technology in support for the Digital Industrial Revolution?

5.1.7 What are South Africa's unique competitive advantages (local and international) in these areas: developments in genetics, artificial intelligence, robotics, nanotechnology, 3D printing and biotechnology?

5.1.8 How can South Africa industrialise and exploit opportunities presented by the Digital Industrial Revolution to achieve inclusive economic growth and development?

5.1.9 What would be the unintended consequences and how to mitigate them?

5.1.10 What mechanism is needed to ensure effective coordination and collaboration amongst all stakeholders?

6. METHODOLOGY

6.1 The Working group shall undertake high level research, international and regional benchmarking, and engage stakeholders within and outside government in meetings and other fora with a view to consider the views of a cross section of societal role players in the development of the Digital Industrial Revolution National Action Plan.

6.2 The Digital Industrial Revolution Working Group shall collaborate with the National Planning Commission to ensure alignment and effective planning.

7. MODUS OPERANDI

7.1 The Department of Telecommunications and Postal Services shall act as a line department for the Digital Transformation Committee and the Digital Industrial Revolution Working Group in coordination with other government departments in the Management Committee.

7.2 The Secretariat of the Digital Transformation Committee shall provide day-to-day administrative support services to the Working Group.

7.3 Amongst others, the Secretariat shall prepare information and documentation as well as coordinate meetings and related matters to support the Working Group members.

7.4 The Department of Science and Technology shall establish a targeted digital transformation research and development programme aimed at providing policy support to the Working Group and designate an implementing agency.

7.5 The Working Group shall develop its schedule of meetings in consultation with the Digital Transformation Committee.

7.6 The Working Group shall also establish its own working groups, as it deems necessary. These should cover the different aspects of the value chain of the transition to the Digital Industrial Revolution such as:-

7.6.1 Enabling policies [coordinated by DTPS]
7.6.2 Innovation, Research and Development [coordinated by DST]
7.6.3 Industrial restructuring [coordinated by DTI]
7.6.4 Labour [coordinated by DOL]
7.6.5 Others

8. DELIVERABLES AND TIME FRAMES

8.1 The Working Group may provide quarterly reports to the Digital Transformation Committee, which, in turn, shall table the same to Cabinet.

8.2 The Working Group may deliver and present its first reports within 12 months of its establishment.

8.3 Government may determine the term of the Working Group.

9. MEMBERSHIP OF THE WORKING GROUP

9.1 Viewed collectively the Working Group may be constituted by not more than 20 people with expertise in the following areas:

9.1.1 ICT policy and regulation
9.1.2 ICT business enterprise
9.1.3 R&D experts
9.1.4 Labour market
9.1.5 Agriculture economics
9.1.6 Transport economics

9.1.7 Energy economics

9.1.8 Competition law

9.1.9 Development funding and corporate finance

9.1.10 Directors-General of DTPS, DST, the dti, DPME, DSBD, EDD, DHET, DOL, NT, GCIS as ex-officio members.

9.2 The President of the Republic of South Africa may also designate the Chairperson and Deputy Chairperson of the Working Group.

9.3 Working Group members serve at the invitation of Government, which can appoint or replace members in the interest of the work of the Working Group.

9.4 Government through the Department of Telecommunications and Postal Services shall issue an invitation for people to be nominated as Working Group members although government reserves the right to approach people directly (especially international experts).

10. PROPRIETARY RIGHTS

10.1 The proprietary rights with regard to copyright, patents and any other similar rights that may arise from the work of the Working Group belong to the South African government.

10.2 The final product of all work done shall, on completion of the brief of the assignment, be delivered to the Minister of the Department of Telecommunication and Postal Services acting on behalf of the Digital Transformation Committee and Cabinet.

10.3 The Digital Transformation Committee shall have unrestricted access to all material, data and information.

10.4 The report of the Working Group may be announced to the public by the President of the Republic of South Africa following a tabling of same to Cabinet by the Digital Transformation Committee.

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