

directed at recapitalisation programmes and some of the telco based government investments are in Neotel and Telkom.

- 9.2.6 Private sector investment straddles across multiple media and telco asset ownership in South Africa. In more recent times, a consortia based approach to investing in the installation of national backhaul optic fibre capacity signified the profile of risk taking in the private sector for large scale projects with medium to long term financial returns.
- 9.2.7 Since the privatisation of Telkom in 1996 which was one of the largest deals at the time in Southern Africa, where SBC Communications and Telekom Malaysia bought a 30% stake into Telkom for approximately R5.58 billion, FDI started to become a significant factor in telecommunications particularly.
- 9.2.8 The United Nations Conference on Trade and Development (UNCTAD) analysis of data from the World Bank's database on Private Participation in Infrastructure projects suggest that foreign companies invested more than \$100 billion in telecoms projects in developing countries over the period 1996-2006.
- 9.2.9 Although Africa's Proportion of FDI has grown over the last decade, it does not reflect a region that has one of the fastest economic growth rates and highest returns on investments in the world. Therefore South Africa's own investment requirements need to cater for the development of suitable infrastructure and content management.
- 9.2.10 The ICT goal to achieve 100% broadband access and to create 1 million jobs require significant investment in broadband infrastructure, services and content management. Currently, only 4 out of 100 households use broadband in South Africa as opposed to the OECD average of 23.3 fixed broadband subscribers per 100 inhabitants. However as stated elsewhere in this document, a digital

government will create a critical mass requirement which will catalyse overall broadband growth in the country.

9.2.11 The sector has seen significant investment into the expansion of fibre optic networks e.g. SEACOM, EASSy and WACS. FDI investment was also made through;

- Vodafone purchasing a stake in Vodacom
- Ericsson partnership with the City of Johannesburg in BWired to develop R1 billion fibre optic ring

9.2.12 At a summary level, the ICT sector does however face a number of challenges with regards to investments:

- the draft Broadband policy that was intended to facilitate growth does not adequately address a number of factors, particularly market structure, institutional arrangements and the regulatory framework amongst others;
- high service costs attracting ICT sector investors;
- limited ICT infrastructure with relatively low to average broadband speed capabilities and low broadband penetration;
- limited granting of new ICT licenses;
- ICT skills base; and
- labour related issues.

9.3 Future policy direction

9.3.1 The current investment initiatives to develop the ICT industry are largely targeted at the delivery of basic and enhanced capability infrastructure. Sentech estimates that a National Wide Broadband Network can be rolled out in all 9 provinces over a period of 3 -5 years at a cost of R1.5 billion and where the planned roll out is estimated to create 30,934 direct jobs.

9.3.2 The development of a management framework to direct investment is critical. In order to derive benefits out of an Integrated National ICT strategy, the following areas should be targeted for investment;

- Content production and ICT based services over time as infrastructure matures
- Education and training
- Convergence around broadband and DTT
- Digitisation of government with a focus on security, health and education
- Integration of government entities and where digitisation of government will drive government efficiency

9.3.3 The 2011-2015 South Africa IT market compound annual growth rate (CAGR) is projected to be in the region of 13%, as a number of major IT infrastructure projects generate spending at provincial levels. Business Monitor International expects South African IT spending to increase from ZAR 72 Bn in 2011 to about ZAR 117.4 Bn in 2015, faster than real GDP growth. South Africa's information technology market is the largest in Africa, ranking 20th in the world in overall market size and 8th in IT spending as a proportion of GDP.²⁴

9.3.4 South Africa has a stock exchange that is the 18th largest in the world; and modern infrastructure supporting relatively efficient distribution of goods. South Africa is a prime destination for non-oil foreign direct investment. ICT inbound investment in 2009 was buoyed by US\$ 2.2 Bn through the purchase of a stake in Vodacom by Vodafone. More recently, the US\$3.2 Bn Dimension Data buy out by Japan's NTT also increased inbound investment into the country²⁵.

²⁴ Source: Global Competitiveness Survey 2011; IMF data 2011; EIU 2011

²⁵ Economist Intelligence Unit 2012

South Africa's outbound investment in ICT tends to be in the form of telco expansion in Africa e.g. MTN and Vodacom. ICT products and services do not feature in the top export categories at this stage. However with planned investment into SEZ, this profile can be changed as ICT markets are established on the continent and globally. South Africa in striving to be globally competitive will benefit from policy support to increase its outbound investment into the continent and elsewhere globally.

The key areas of ICT investment globally and which are highly congruent with targeted investment areas for South Africa are:

- Digital Television
- Universal Access by all
- Digital Inclusion Programmes (subsidised PCs, notebooks, tablets, etc.)
- National broadband networks
- Improving broadband speed
- Improving uptake of ICT usage
- Increasing affordability
- Set-top Box infrastructure
- e-commerce and mpayments based solutions

9.3.5 For global investors entering the African market, South Africa has historically been perceived as the gateway into Africa. Such a perception is mostly true, however sentiment is changing and the impact of actual FDI in South Africa is not as high as expected.

9.3.6 A cursory look at UNCTAD statistics reveals that Nigeria attracted US\$11 billion in 2010 compared to South Africa's US\$1.6 billion and this trend is expected to continue into the foreseeable future. A recent forecast by the Economist of the 10 fastest growing economies in the world (2011-2015) features seven African

countries: Nigeria, Ethiopia, Mozambique, Zambia, Tanzania, Congo and Ghana implying that more African countries will be contending for international funding.

- 9.3.7 Notwithstanding the above, South Africa aims to strengthen and reclaim its' position as the Gateway to Africa, a theme repeated by His Excellency, President Jacob Zuma, so that it may gain access to BRICS markets and BRICS investment. As an economic springboard into Africa's potential one billion consumer base, South Africa makes a highly eligible partner in enabling companies to set up a base of future expansion onto the continent.
- 9.3.8 A number of funding resources are available for the public and private sector for ICT development. These include USAASA who is currently tasked with the administration of STB subsidies to the amount of R2.5billion and which funds government has set aside. National Treasury has also established a Jobs Fund in order to create 150 000 job opportunities over three years.
- 9.3.9 With South Africa's growth rate of 3% much lower than the other BRICS countries, there appears to be a mismatch between the new entrant and the other four member countries. South Africa can enhance its investment profile because of its' sound institutional stability, historically strong financial markets, and effective financial sector regulators that are looked on favourably by foreign investors. However, South Africa cannot afford to delay in communicating its ICT industry plans with BRICS partners and thereby gain traction on partnered benefits for the BRICS countries. South Africa has a lot to gain and contribute from partnering with the countries with the highest global ICT indices in the world.

Recommended areas for discussion

- Role of government and private sector in broadband infrastructure investment
- Effectiveness of USAASA in allocation of funds for STB manufacturing
- Incentives for increasing local and foreign direct investment

Recommended discussion questions

- What are the key suggestions to remove barriers to SME and SMME development?
- What is the role of public sector and the role of the private sector in broadband investment?
- What policy changes are required to attract foreign direct investment?
- What policy changes are required to enable and improve further local investment?
- Is policy intervention required to support an increase of outbound investment?
- How should the National integrated ICT policy be designed to create an enabling environment for ICT investments?
- What are the fiscal and other interventions in the form of incentives which should be contained in policy driven imperatives to drive investments in the ICT industry?

10. HUMAN CAPITAL

10.1 Historical Policy overview

10.1.1 Skills in the ICT sector have been shaped by a number of policies and even various Corporate Social Investment (CSI) and corporate training project driven initiatives guiding its growth over the last few years. Specialised effort was focused on ICTs to address four main factors viz., skill shortages in engineering and technology, transformation in the sector to represent the HDI, gender and the physically challenged groupings and lastly the need to develop specialised skills to support an increasingly complex digital environment in ICTs.

10.1.2 Globally the transition to a digital environment also received much attention and it became necessary to accompany large technology projects with formal change management initiatives in order to migrate the workforce and users of digital systems to a new operating environment. Another important factor which started to become prevalent was the lowering of barriers to enter into the ICT sector as costs to establish green field solutions dropped. Thus adoption of systems became relatively easier compared to computer based solutions and non-software driven systems of the past. It is also important to observe that as more and more systems went online, this drove an uptake in the user base which translated into increased usage of the Internet via mobile and fixed line device access.

10.1.3 The major relevance of the above is that skills required to design, manufacture, install, operate and maintain digital ICT systems within this rapidly changing environment also needed to adapt with agility. Learning had to be specifically designed to suit the purpose of varying skills needs versus a highly formal learning intervention of the past. This changing method applied to both the high end of skills development e.g. where software programmers would rely on software debugging tools and prewritten software coded modules as tool-sets

versus developing code from scratch to end user software which took on an online user paced learning mode of teaching via machine based methods.

10.1.4 Locally, an important factor impacting on the skills development requirement was that there was an ageing workforce who had installed, maintained and operated the key ICT systems in use across all industries including that of broadcasting and telecommunications. These skills designated as 'critical skills' were required to lower the risk of transitioning to the digital environment. Sector Education and Training Authority (SETAs) were established to focus on specific skills development programmes in the various industry verticals and skills across the different work bands needed to be formally recognised irrespective of the employee not having a matric certificate or formal tertiary education. Given South Africa's education system pre 1994, this was an important step in the right direction to give recognition to tacit work knowledge gained.

10.1.5 The Media, Information & Communication Technology (MICT) SETA currently classifies the ICT sector as professionals from the following sub-sectors: IT, Telecoms and Electronics Industries. The MICT reported the following growth in the sector in 2005, IT Sub Sector (16.39%), Telecommunications Sub-Sector (26.27%). Apart from the MICT, other SETAs include The Insurance Seta (INSETA) which currently represents an industry with a very wide range of employers, many of whom are very small (about 10 employees) and very large employers (in excess of 12000 employees). The majority of the workforce represents skilled and highly skilled employees. The Manufacturing, Engineering and Related Services SETA (merSETA) Authority is another one of the 23 SETAs established through the Skills Development Act of 1998 to ensure that the National Skills Development Strategy (NSDS) is fulfilled

10.1.6 The E-education White Paper was adopted in 2004 where the main goal is to have every learner at schools to be ICT competent by 2013. Another major driver in the policy arena was also the DoC driven e-Rate Policy & the

establishment of an Educational Network (EduNet) which addressed school connectivity barriers mainly due to the affordability of connectivity to the Internet for the purposes of education. This document leads all ICT initiatives and together with the Electronic Communications and Transactions Act of 2002 as a basis, promotes the establishment of a Universal Service Agency, a Universal Service Fund, an Education Network (EduNet) and e-rate to support easier access by educational institutions to ICTs.

10.1.7 The White Paper on Telecommunications stated that knowledgeable and skilled human resources of the nation are its wealth and without adequately trained people at all levels, the nation will not be able to expand its economy to create the wealth needed to lift the standard of living of all its people. Furthermore the telecommunications sector plays a key role both within the ICT industry as well as in multiple secondary industries.

10.1.8 In accordance, the DoC proposed to make funds available to enable the capacity building where the management of such funds was for the responsibility of ICASA. The essential provisions are set out below:

ICASA will support telecommunications focused applications in the following categories:

- Training and re-training of human resources presently active in the sector.
- Development and growth of the training of artisans and technicians.
- Development and growth of undergraduate higher education.
- Development and growth of postgraduate training and research.
- Promotion of interest in technology among schoolchildren.

10.2 Overview of ICT landscape in SA

10.2.1 MICT Seta was established specifically to address skills development in Information Systems, Electronics and Telecommunications Technologies. The Skills Development Act governs skills development in the ICT sector and is

subsequently overseen by the Department of Labour (DOL). The Department of Trade and Industry (dti) also established SAVANT which serves as a marketing and awareness programme for the South African ICT and Electronics Sector. The main objective of SAVANT is to support existing South African ICT and electronics companies as well as foreign investors. SAVANT also promotes South Africa abroad and acts as intermediary between investors and domestic businesses.

10.2.2 A National Colloquium on Information and Communication Technology Education and Training and the production of graduates, was held in March 2007. This Colloquium brought together representatives of government, universities and the ICT industry in a ground-breaking joint venture to address the need for high-level skills in the ICT sector. Following on this there was also a National e-Skills Dialogue Initiative which was launched in March 2009 where this dialogue facilitates communication between the government and a variety of role players in the industry to ensure alignment between the supply and demand of skills.

10.2.3 Aligned to this, the DoC launched an e-Skills Institute to take a new approach on ICT education and training. The CSIR and the Department of Science and Technology (DST) has a focus on R&D including software applications development. In order to capacitate for the future ICT industry requirements which includes job creation, the location of these skills and Innovation based activities together with funding should be assessed.

10.2.4 In September 2010 the DoC in conjunction with the e-Skills Institute held an ICT Career expo to encourage the uptake of studies in the ICT field where the theme selected was; "the e-Generation, building capacity for an e-Society".

10.3 Future policy direction

10.3.1 On the skills front, many young people from historically disadvantaged backgrounds come out of the Basic Education system never having been exposed to ICTs. This impacts their performance in institutions of higher learning, as well as their ability to adapt and become competent in the use of ICTs. Related to this is that post-school education and training system (colleges and universities) produces graduates that are insufficiently e-skilled, regardless of their selected profession and this impedes the adoption of computer based solutions in the wider industry which in turn affects productivity and global competitiveness.

10.3.2 This finding was confirmed in 2008 when the DOL published the National Master Scarce Skills List indicating that South Africa has a critical shortage of 'ICT workers.' In addition to generally insufficient ICT skills output from the educational system, South Africa has also not invested in developing specialised Research and Development (R&D) and Innovation skills despite this being an important area to unlock global competitiveness. It also becomes evident that whilst there are multiple programs across all key stakeholder groups addressing skills development, there is room to improve upon the yield from R&D and Innovation and where the connect between R&D and Innovation for ICT as well as addressing the feeder supply into the workforce needs to be strengthened²⁶.

Employment in ICT needs to be created throughout all sectors across government and industry ranging from the postal sector to local content development including animation to installing and operating broadband networks. Some 160 000 jobs could be created through broadband infrastructure initiatives by 2020."²⁷ The immediate employment opportunity linked priorities defined by the DoC are; Broadband, Digital migration and the Postbank.

²⁶ National e-Skills Plan of Action 2010

²⁷ Source: Engineering News, posted August 23rd, 2011

10.3.3 Non-core ICT skills and 'closely related skills' will serve as foundation skills for all ICT based projects. The non-core ICT skills that are available from other professions in the market would require 'basic ICT up-skilling programmes to enhance knowledge of ICTs and become more proficient in the use of ICTs supporting the effective working of other secondary industries.

Recommended areas for discussion

- Integration between NEMISA, ISSA and other institutions to streamline and harmonise development of ICT skills
- Capacity building at the DoC , SOCs and ICASA
- Government's role in defining collaboration with tertiary institutions to address specialist ICT skills development

Recommended discussion questions

- What policies and incentives can be put in place to encourage highly qualified skilled professionals to remain in the country/ return to the country?
- How can a closer relationship be forged between institutions and the private sector in order to produce relevant skills required for the industry?
- What funding mechanism should be established to promote skills development?
- How can government encourage the private sector towards the development of ICT skills?

11. INDUSTRY DEVELOPMENT

11.1 Historical Policy overview

11.1.1 ICT industry development is an important area for South Africa in that job creation and the ability to attract increased investment into manufacturing is highly dependent on it. ICT industry development is regarded as an economic growth engine and is thereby emerging as a key priority area for the DoC.

11.1.2 With the exception of reference to STB manufacturing and the establishment of local content production hubs in the draft Broadcasting Digital Migration Policy, the DoC has not developed any particular policy stance on ICT industry development thusfar. An ICT Manufacturing Policy issued by the DoC is therefore conspicuous by absence and needs attention. However, it is understandable that the DoC has been attending to a backlog of priorities in facilitating the transformation of the ICT industry. In particular, universal access, universal service and ICT market liberalisation all contribute to the strengthening our democratic discourse and were required to shape the market post 1994. However as the DoC prepares for a new era in ICTs for all South Africans, ICT industry development is a key foundation block for the future environment.

11.1.3 The dti will continue to play an important role in administering incentives to support the ICT manufacturing sector. In the future environment, it is expected that the DoC will further support through policy intervention initiatives which are aimed at increasing local and global investment into ICT industry development in South Africa. Thus far, the incentives and schemes which have supported South Africa's ICT manufacturing sector are administered by the dti, as well as the Industrial Development Corporation (IDC), South African Revenue Services (SARS) and the National Research Foundation (NRF) on behalf of the dti.

11.2 Overview of ICT landscape in SA

11.2.1 South Africa's R&D led electronics (ICT) manufacturing capacity dwindled significantly towards the late 1980's onwards²⁸. This had an immediate detrimental effect on the economy with widespread job losses in factories across South Africa. At the time South Africa was actively manufacturing an array of audio visual consumer products ranging from radio and television receiver sets through to electronic security prevention systems installed in motor vehicles. Manufacturing plants were located across the country and goods were manufactured for both local and overseas market consumption. There is sound evidence to show the innovation present in South African manufacturing as consumer based products e.g. prep-paid telemetry based electricity systems were initially conceptualised and designed as a relevant market solution as far back as the 1980s.

11.2.2 Design capability in the various manufacturing plants extended from highly skilled engineering and design through to that of artisanal skills deployed on the assembly benches to build up products from component and PC board level. Local manufacturing plant skills even included fitters and turners responsible for mechanical design and assembly of equipment suitable for South African operating conditions.

11.2.3 A few factors contributing to the dearth of this once vibrant electronics industry include South Africa's overall global competitiveness to match and beat price in low cost manufacturing destinations established in the East and Far East. An interesting phenomenon started to occur in the world where the higher costs elements pertaining to ICT manufacture viz., that of R&D and engineering design comes from what is regarded as higher cost developed countries and where the actual assembly and manufacture is then carried out in lower costs and emerging market countries. Thus even in the East and Far East this led to the segmentation of R&D and design input typically originating out of countries like

²⁸ Economic Sectors and Employment Cluster 2010/11 – 2012/13 Industrial Policy Action Plan

Singapore, India, Malaysia, Japan and Korea and where large scale manufacturing output is produced by countries like the Philippines, Indonesia and China. This inevitably led to an overall strengthening of the ICT manufacturing belt in the South East Asia region and where ICT exports to the developed world regions notably increased.

11.2.4 Another key trend which emerged in the last two decades was the specialisation in ICT manufacturing along two lines viz., that of software engineering and hardware engineering with India choosing specialism in software engineering and China establishing global leadership in hardware manufacturing and engineering design through mastering large scale manufacturing of sophisticated and miniaturised components. In the last decade this too has evolved to embedded software solutions being deployed thereby increasing the presence of software skills required to provide support to a host of industries outside of ICT.

11.2.5 The South African Government, in recognising the importance of manufacturing in the economy, recently developed two strategies: the National Research and Development Strategy (NRDS) and the Integrated Manufacturing Strategy (IMS). The former, released by the Department of Science and Technology (DST), aims at ensuring that technology resources are better developed, focused and utilised. The latter strategy, by the Department of Trade and Industry (dti), recognises that South Africa's future competitiveness will depend on the capacity of the manufacturing sector to master advanced technology domains, to innovate and to meet the precise and evolving needs of customers.

11.2.6 The Industrial Policy Action Plan (IPAP)²⁹, which has been developed by the dti, aims to strengthen and deepen existing financing support instruments particularly by focusing on the Support Programme for Industrial Innovation (SPII) and the Technology Venture Capital Fund as part of a broader package of measures to drive economic stimulus. The main aim is intended to create more successful

²⁹ Industrial Policy Action Plan (IPAP) 2012/13 – 2014/15

and innovative SMEs that will use new systems and innovations to produce new products for global and local markets.

11.2.7 Intent on implementation action is also clear with reference to the development of Special Economic Zones (SEZ) to support long-term industrial and economic development. A new SEZ programme will be used to promote the creation of a regionally diversified industrial economy by establishing new industrial hubs in underdeveloped areas. The utilisation of SEZs will thus play a key role in government's objectives for industrialisation, regional development and employment creation. The document makes direct reference to the manufacture of STBs and software engineering based solutions which presents an opportunity to build on the plans to support ICT manufacturing in South Africa. It is relevant to note that reference was already made in the DoC's National Government and Information Communications Strategy in 1997 to develop SEZ.

11.2.8 Further development is also planned with regards to improvement of South Africa's software development capabilities through globally recognised certification of processes used to develop and maintain software applications. The objective is to improve the quality of South African software through process improvement training using Capability Maturity Model Integration (CMMi) and Team Software Process (TSP) methods and alignment of product development with domestic and global requirements. CMMi capability will enhance South Africa's profile to attract foreign investment for software development as this is a hallmark signifying software quality and where only a few countries excel in the attainment of this level of certification.

11.2.9 Collaboration between the dti and the DoC has also developed with regards to the opportunities being presented by STB manufacturing. With the approval of the DVBT-2 standard as the broadcasting standard for South Africa, an opportunity for the industry to move forward with manufacturing and the provision of other ICT based services supporting digital broadcasting is provided. There is

an opportunity to link the manufacture of STBs to a long-term vision to manufacture Integrated Digital TVs (IDTVs) for local and external markets. Global forecasts show that even with an increase in Internet connected TVs, the STB market will continue to grow³⁰.

11.2.10 A South Africa industry forecast by Oxford Economics shows that manufacturing output growth is forecast to be higher than GDP over the next decade, where up until 2020, manufacturing output is expected to grow on average by 4.3% per year. However, it is indicated that the three fastest growing sectors in manufacturing over the next decade will be motor vehicle bodies & parts, electric fittings and machine tools. Of the Top 10 fastest growing industries in South Africa, telecommunications equipment ranked 8th last year but a forecast for the next 5 years does not feature the ICT industry³¹. This provides a call for action by the DoC to develop an ICT focused industrial development strategy.

11.3 Future policy direction

11.3.1 South Africa has lost its position as a leader in the rollout of ICT services on the African continent and lags behind other BRICS countries in almost all aspects of the ICT value chain³². In dealing with immediate resource constraints and whilst gearing up capacity, South Africa must take a strategic decision on which part of the ICT value chain the country should focus.

11.3.2 The lack of new innovations originating in South Africa needs attention and could be addressed through redirecting funds which are currently injected into the CSIR and DST led initiatives to the DoC. For South Africa to achieve ICT leadership and successfully position itself as an ICT hub on the continent, it will

³⁰ There is an assumption that IDTVs will decrease STB manufacture – Gartner believes the contrary due to the flexible and expansive functionalities STBs can offer - Market Trends: Set-Top Boxes Evolving in a Competitive Market, Worldwide, November 2010

³¹ Oxford Economics: South Africa Industry Forecast Q1 2012

³² The Global Information Technology Report 2012 : World Economic Forum

require high levels of R&D with innovation in order to allow for new inventions and technologies to emerge. Hence existing strategies and policies to foster robust, well-coordinated institutional arrangements that lead to development of indigenous world-class, technology innovations in ICT through directed national ICT research, development and innovation programmes need to be revised.

11.3.3 There is a general inadequacy in ICT skills output from our educational system.

South Africa has also not invested in developing specialised R&D Skills, yet there is great potential in ICT Research and Development and Innovation that needs to be unlocked in order for the country to become globally competitive.

11.3.4 Throughout South Africa's manufacturing history there has been focus on improving the economic and social status of the country which requires more capital, technology and skills. South Africa, given its reach into the rest of Africa via physical connectivity routes including land, air and sea as well as of more recent ICT infrastructure based connectivity is ideally positioned to widen economic corridors into the continent. Specifically designated manufacturing zones could individually specialise and collectively harmonise on the manufacture of ICT goods, including software based services to meet expanded local consumption as well as African market and global market requirements³³.

11.3.5 Government has set out a New Growth Path. This path is bold in that it seeks to create 11-million jobs by 2030, reducing the unemployment rate to 6% from 25%,³⁴ where 90% of new jobs are to be created by small and expanding private companies. The ICT manufacturing sector plays an important role in fulfilling this target.

³³Business Monitor International expects South African IT spending to increase from ZAR 72 bn in 2011 to about ZAR 117.4 bn in 2015, faster than real GDP growth

³⁴ Economist Intelligence Unit

11.3.6 To enter into the new era, an integrated ICT industry development policy is required focusing on the development of the domestic market which includes the protection of the local investors through tariff and non-tariff barriers; building market pull and supply chains and providing subsidies for R&D technology transfer. Policy is also needed to direct the selection of domestic firms to enter into local and foreign joint partnerships and be eligible for various incentive driven investment benefits.

Recommended areas for discussion

- Investment in ICT R&D and innovation
- Development of skills necessary to meet forecast supply demand in manufacturing sector
- broadband opportunities presented with manufacturing of STBs and IDTVS
- Identification of policy and regulation interventions needed to enable and facilitate strategic manufacturing decisions i.e .from semi knock down (SKD) to complete knock down (CKD) whilst developing capacity

Recommended discussion questions

1. What are the policy and regulatory interventions required in South Africa to attract private sector investment in ICT industry development/ manufacturing?
2. What is the policy intervention required to increase FDI?
3. Who within government should be accountable for driving ICT manufacturing competitiveness?
4. Who within government should be accountable for driving R&D in ICT with a link to manufacturing competitiveness?
5. Should South Africa establish its own Silicon Valley as per BRICS and African country peers?

12. DEVELOPING A FRAMEWORK FOR A NATIONAL INTEGRATED ICT POLICY FOR SOUTH AFRICA

12.1 Context setting

12.1.1 The global economic world is in a state of turmoil, yet South Africa as part of an emerging market cluster continues to enjoy economic growth and the attention of capital investors from the developed world and BRICS country peers. This augers well for South Africa's continued trajectory towards sustainable economic prosperity and longer-term economic success in the region.

12.1.2 The global ICT landscape represents a significant opportunity for South Africa to rapidly progress on several fronts, stimulated by advancement and deployment in the primary ICT industry and growth in secondary industries linked to education, health care, agriculture, financial services etc. where ICT solutions serve as key enablers.

12.1.3 For South Africa to take advantage of these positive dynamics, bold steps taken within the ambit of an integrated policy framework must include creating employment, affordable and reliable access to increase the uptake of secure broadband services whilst keeping focus on establishing and maintaining ICT market competitiveness in Africa and in the global arena.

The DoC wants to ensure that South Africa secures a global leadership position in ICT through a bold policy construct via a dramatically changed philosophy for implementation of an integrated National policy. This will be a significant departure from the evolutionary approach taken in the last decade. Key positioning of an integrated National ICT vision and strategy will be of befitting national priority requiring cohesive inter-governmental support whilst at the same time fostering a robust partnering and collaboration with the private sector.

12.2 Next steps

12.2.1 Going forward, South Africa needs to apply a visionary lens to project a future operating economic context, an environment which is characterised by super connectivity, hyper digitisation, pervasive accessibility through affordable and secure services across South Africa, a flourishing and highly successful ICT industry characterised by globally acknowledged innovation where South Africa is the dominant ICT economic hub in Africa. This integrated ICT vision and even longer term visioning including using input gathered via the Colloquium process will be used to chart the policy trajectory linking to the implementation of this vision.

Next steps to enable a National integrated ICT policy

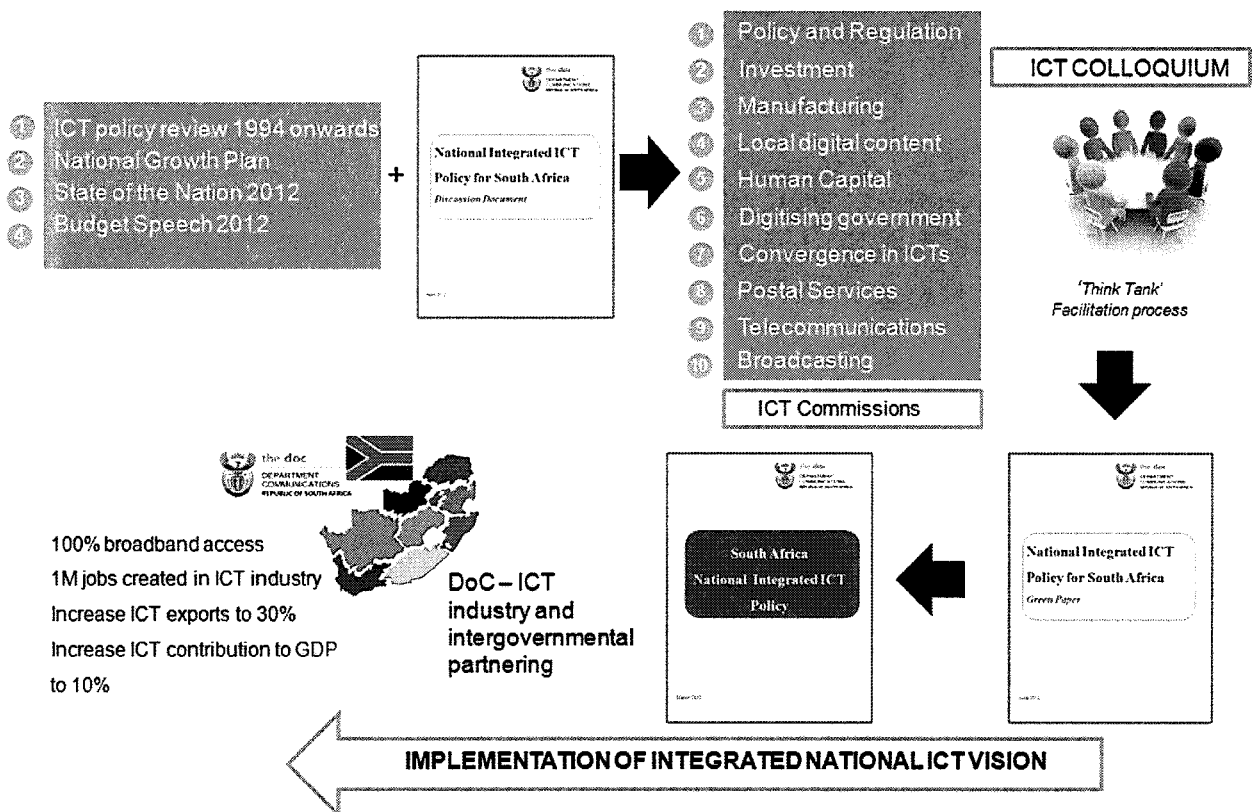


Figure 8: Next steps to enable a National integrated ICT policy

12.2.2 The development of an integrated National ICT policy will commence with a review of ICT policies post 1994. The review process will consist of both past

and forward looking assessment components. Firstly, the effectiveness of the policies since 1994 with respect to the achievement of the main objectives will be assessed and then going forward into the new era for ICTs in South Africa, the current policies as well as policy construct will be assessed for suitability. **Figure 8** contains an illustration of the process the DoC is leading towards an ICT colloquium where after a continued transparent and inclusive process with all stakeholders will lead to the development of a fully integrated ICT policy being submitted for Cabinet approval.

12.2.3 In order to ensure that all components pertaining to the ICT industry are fully considered, viz., IT, telecommunications, the postal services, broadcasting and other electronic media and more significantly to now bring back an enhanced focus on job creation and other GDP linked initiatives, the DoC has identified ten ICT Industry Workstreams (Commissions) which will be deployed to harness the contribution and design effort into the construction process of an integrated National ICT policy.

12.2.4 Feeding into this process will be the actual policy review output whilst taking in new input requirements defining the new era in ICTs. This will be used to shape both the new National integrated policy as well as the architecture design of a new policy environment. A joint build process requiring intergovernmental support and acknowledgement of the priority this policy needs to take will form a key element of the policy development process going forward.

12.2.5 The ICT Colloquium is scheduled to take place in Gauteng on the 19th and 20th of April. This discussion paper is made available by the DoC to help delegates prepare for discussion and debate on focus areas. Following on from the Colloquium, a Green Paper will be issued and which will be used to invite further public comment and input. Thereafter a White Paper will be

developed and this will lead to the finalisation of the National integrated ICT policy for approval by Cabinet.

12.3 A view of the future ICT environment in South Africa

The main attributes of an ICT empowered South Africa in this future era will be;

- 100% broadband access
- the creation of 1million jobs in the ICT sector
- a digitally connected and accessible government with lowered operating costs
- a GDP which exhibits financial inclusion across the full economic spectrum and where a significant portion of GDP, in excess of 50%, transacts on real time epayment and mpayment systems with mass adoption of these platforms by Government, businesses, citizens and consumers alike
- enhanced domestic manufacturing and a significant net exporter of ICT systems and services
- an elevated economic standing and ICT profile within BRICS member countries
- an increase in local content production which addresses the multiple needs of language, content genres as well as content for the disabled
- an increase in data growth through adoption of ICT driven solutions in healthcare, banking, education and agriculture industry sectors

12.4 A focus on measuring success

12.4.1 A measurable attainment of this vision will be underpinned by a pragmatic policy design which demonstrates and ensures a high correlation between the objects of ICT policy design and GDP targeting. It is vital that the key performance success milestones from the previous and current policy environment be carried forward where this will help in accelerating achievement in uptake of secure ICT services and overall ICT industry growth.

12.4.2 Furthermore successful achievement of an integrated ICT policy will require initial and on-going inter-governmental commitment and support at regional, provincial and national level. Once the National integrated policy is approved, an immediate implementation via focused project driven initiatives will follow to provide the rigour of a well-managed process towards realisation of the ICT vision.

12.4.3 This co-ordinated and joint implementation approach will need to inter-alia steer towards the following;

- foster strong public–private partnering to fulfill the objectives of a competitive ICT industry
- collectively prepare for a “digital ready” government
- ensure well governed SOCs and where necessary accelerate the merging of SOCs to consolidate mandate and reduce operating costs
- co-development of an industrial policy which has a key focus on ICT manufacturing and the establishment of designated ICT zones
- a reduction in customs duty for raw material for manufacture of ICT products and equipment
- tax incentives
- accessibility to pooled funding sources and funding instruments to stimulate SME and SMME sustained growth
- an investor friendly environment to attract increased foreign direct investment where this will include the establishment of fabrication plants as well as the location of local Innovation Hubs by targeting globally leading companies
- an educational system with increased output of engineering and technology graduates ranging from FET colleges to university level PhD level graduates
- an augmented and expanded ICT research and innovation operation revitalising previous and current initiatives to be boosted with funding

support. A signature characteristic of this research and innovation operation will be to drive a strong coupling between industry and academia on input and output links geared to GDP requirements

12.4.4 Finally, an important element of a measurement system is to assess South Africa's global competitiveness in ICTs, judged by independent standards. For example, the World Economic Forum's annual assessment of competitiveness can be used as a reference to help monitor progress towards the right outcomes. In alignment with the ICT vision, this performance measurement must ensure that South Africa becomes a distinct leader in Africa and where South Africa attains the position of being a recognised leader amongst the BRICS member countries insofar as ICT achievements and innovation is concerned.

12.5 Global innovation and leadership in ICT

12.5.1 A hallmark of the DoC's vision for ICTs for all South Africans is to be bold, decisive and to dispense with the notion of incremental and evolutionary change. The Honourable Minister of Communications, Ms Dina Pule, has a view which calls for the mobilisation of the full industry including end users of ICT solutions to first envision an ICT world in 2020 where its impact on SA citizens, large corporates to SMME companies is profound, inspirational and sustainable. It is therefore appropriate to use this time as a critical juncture in 2012 to craft policies and implementation plans which at first define and later on enable the new era in ICTs for South Africa.

12.5.2 It becomes abundantly clear that the policies and policy approach of the past will not achieve this – only newer, ground-breaking policies which cohesively bind GDP elements to ICT growth and progress will be fit for purpose in the new ICT era.

13. CONCLUSION

- 13.1. ICT policy in South Africa post the transition to democracy was characterised by the need to liberalise broadcasting, make infrastructure and services accessible to all South African citizens as well as to create market stimulus through the licensing of new broadcasting and telco players. This has met with mixed success.
- 13.2. ICT policy in South Africa must continue to provide strategic guidance to an industry which still has potential to contribute more effectively to the country's GDP. The DoC can forge ahead and continue with an evolutionary policy approach and this may adequately serve the needs of a growing country. Instead the DoC has boldly decided to define a new era for ICTs in South Africa. An integrated National ICT policy design in this new future will not be broadly applicable but will have directional intensity to provide leadership steer towards the achievement of measurable goals which are better geared with South Africa's economic growth engine.
- 13.3. The manner in which the DoC is embarking on this strategic growth path reflects a strong multi-partnering ethos and where a willingness to take learning's from both successes and failures of previous policy design demonstrates an inclusivity style with strong leadership. This is a key defining moment for the ICT industry and for all current and future users of ICTs in South Africa – it provides an opportunity to be part of a new beginning to together build a new era in ICTs for all South Africans.

List of Acronyms

Acronym	Description
.zadna	za Domain Name Authority
B2B	Business to Business
B2C	Business to Consumer
BRICS	Brazil, Russia, India, China, South Africa
CCC	Complaints and Compliance Committee
CMMi	Capability Maturity Model Integration
CODESA	The Convention for a Democratic South Africa
COMSEC	This is the former reference to Electronic Communications Security (Pty) Ltd) ie a company owned by the Government of South Africa through its National Intelligence Agency (NIA)
CPE	Customer Premises Equipment
CSI	Corporate Social Investment
CSIR	Council for Scientific and Industrial Research
DAI	Digital Access Index
DFA	Dark Fibre Africa
DIO	Deputy Information Officers
DoC	Department of Communications
DOI	Digital Opportunity Index
DOL	Department of Labour
DPE	Department of Public Enterprises
DPISA	Department for Public Service and Administration
DST	Department of Science and Technology
DSTV	Digital Satellite Television
dti	Department of Trade and Industry
DTT	Digital Terrestrial Television
DVB-T2	Digital Video Broadcasting – Second Generation Terrestrial
EASSy	East African Submarine Cable System
ECA	Electronic Communications Act
ECNS	Electronic Communications Network Service
ECS	Electronic Communications Services
ECT	Electronic Communications and Transactions
EduNet	Educational Network
EIU	Economics Intelligence Unit
ETOE's	Extra Territorial Offices of Exchange
EU	European Union
FDI	Foreign Direct Investment
FET	Further Education and Training
G2B	Government to Business
G2C	Government to Citizens
GATS	General Agreement on Trade in Services

GDP	Gross Domestic Product
GITOC	Government Information Technology Officer's Council
HDI	Historically Disadvantaged Individuals
IBA	Independent Broadcasting Authority
ICANN	Internet Corporation for Assigned Names and Numbers
ICASA	Independent Communications Authority of South Africa
ICT	Information Communication Technology
IDC	Industrial Development Corporation
IEC	<i>Independent Electoral Commission</i>
I-ECNS	Individual Electronic Communication Network Services
I-ECNS	Individual Electronic Communications Network Services
I-ECS	Individual Electronic Communication Services License
IMST	Information Management Systems and Technology
INSETA	The Insurance Seta
IP	Internet Protocol
IPAP	Industrial Policy Action Plan
ISAD	Information Society and Development Plan
ISETT Seta	Information Systems, Electronics and Telecommunications Technologies education and training authority
ISETT Seta	Information Systems Electronics and Telecommunication Technologies SETA
ISP	Internet Service Provider
ISPA	Internet Service Provider Association
IT	Information Technology
ITA	Information Technology Association
ITU	International Telecommunication Union
ITU GE-06	ITU Regional Agreement for the Planning of Digital Terrestrial Broadcasting in ITU Region 1 in the VHF and UHF Frequency Bands
JSE	Johannesburg Stock Exchange
KAI	Knowledge Economy Index
LLU	Local Loop Unbundling
MDDA	Media Development and Diversity Agency
merSETA	Manufacturing, Engineering and Related Services SETA
MICT	Media, Information & Communication Technology
MNET	Electronic Media Network
MNO	Mobile Network Operators
MTSF	Medium Term Strategic Framework
MUX	Multiplexor
NEMISA	National Electronic Media Institute of South Africa
NIOF	National Information Officers Forum
NISIS	National Integrated Social Information system
NRDS	National Research and Development Strategy
NRF	National Research Foundation

NRI	Networked Readiness Index
NSDS	National Skills Development Strategy
OECD	Organisation for Economic Development
OIC	Office for Interception Centres
PBS	Public Broadcasting Services
PFMA	Public Finance Management Act
PMR	Private Mobile Radio Networks
PNC	Presidential National Commission
PSTN	public switched telephone network
PSTS	public switched telecommunication services
R&D	Research and Development
SABC	South African Broadcasting Corporation
SAITIS	South African Info Tech Industry Strategy
SANRAL	South African National Roads Agency Limited
SAPO	South African Post Office
SARS	South African Revenue Services
SATRA	South Africa Telecommunication Regulatory Authority
SEACOM	Southeast Asia Commonwealth Cable
SETAs	Sector Education and Training Authority
SIM	Subscriber Identification Module
SIM-card	Subscriber Identification Module Card
SITA	State Information Technology Agency
SKA	Square Kilometre Array
SME	Small and Medium Entities
SMEs	Small and Medium Enterprises
SMME	Small, Medium and Micro Enterprise
SMMEs	Small, Medium and Micro-Enterprises
SMS	Short Message Service
SNO	Second Network Operator ; Second National Operator
SOC	State Owned Company
SOE	State Owned Entities
SOEs	State Owned Entities
SEZ	Special Economic Zones
SPII	Support Programme for Industrial Innovation
STBs	Set Top Boxes
TAI	Technology Achievement Index
TEC	Transitional Executive Council
telco	Abbreviated reference to telecommunications/ used interchangeably
TENET	The Tertiary Education and Research Network of South Africa
TSP	Team Software Process
TV	Television
TVBC	Transkei Venda Bophuthatswana
U.K	United Kingdom

U.S	United States of America
UNCTAD	United Nations Conference on Trade and Development
UPU	Universal Postal Union
USA	Universal Service Agency
USAASA	Universal Service and Access Agency of South Africa
USAF	Universal Service and Access Fund
USF	Universal Service Fund
VAN	Value-added Network
Vans	Value added network services
VOIP	Voice Over Internet Protocol
WACS	West Africa Cable System
WTO	World Trade Organisation

Resources and References

Reports, White Papers, Green Papers, Policies and Legislation

BROADCASTING	
Year	Reports, White Papers, Green Papers, Policies and Legislation
1993	Independent Broadcasting Authority (IBA) Act (Act 153 of 1993) promulgated
1994	Parliament establishes an Independent Broadcasting Authority (IBA) to regulate broadcasting in the public interest under the IBA Act
1995	Triple Inquiry Report (IBA)
1996	Sentech Act No. 63 of 1996
1996	The Former States Broadcasting Reorganisation Act (Act 91 of 1996)
1996	Discussion Paper on Satellite Broadcasting (IBA)
1998	White Paper on Broadcasting Policy
1999	Broadcasting Act of No. 4 of 1999
2000	Independent Communications Authority Act No.13 of 2000
2002	Broadcasting Amendment Act 64 of 2002
2002	Media Development and Diversity Agency Act, (Act No 14 of 2002)
2005	Electronic Communications Act No. 36 of 2005
2008	Electronic Communications Act, 2005 amendment of Broadcasting Digital Migration Policy
2008	Broadcasting Digital Migration Policy
2009	Broadcasting Transmission Discussion Paper
2009	Broadcasting Amendment Act No. 4 of 2009
2010	Mobile TV Regulations (ICASA)
2011	Mobile Broadcasting Discussion Paper (ICASA)
2012	Amendment to Digital Broadcasting Migration Policy

TELECOMMUNICATIONS	
Year	Reports, White Papers, Green Papers, Policies and Legislation
1958	Post Office Act, 44 of 1958
1996	White Paper on Telecommunications
1996	Telecommunications Act No. 103, 1996
1998	State Information Technology Agency Act, 88 of 1998
2000	Independent Communications Authority Act of South Africa No. 3 of 2000
2001	Telecommunications Amendment Act, No.64 of 2001
2002	Electronic Communications Security (Pty) Ltd Act, 68 of 2002
2002	Electronic Communications Transactions Act No. 25 of 2002
2002	Regulation of Interception of Communication and provision of Communication Related Information Act No. 70 of 2002
2004	Telecommunications Amendment Act, No.2 of 2004
2005	Convergence Bill, 2005
2005	Electronic Communications Act of 2005
2007	Electronic Communications Amendment Act No. 37 of 2007
2007	Broadband Infracore Bill, 2007
2008	Regulations on Exemption from Licencing published by ICASA
2009	License Fee Regulation (ICASA)
	CCC Regulations by ICASA
	Interconnection and facilities-leasing regulations (ICASA)
	Standard terms and conditions for individual and class licences published by ICASA
2010	Guidelines for market Reviews (ICASA)
	Regulations on Technical Standards (ICASA)
	Call Termination Regulations (ICASA)
	Broadband Policy for South Africa (Government Gazette 33377, July 2010)

TELECOMMUNICATIONS

Year	Reports, White Papers, Green Papers, Policies and Legislation
	National Spectrum Published with Policy Directions (ICASA)
2011	Discussion Paper (ICASA) - Framework for introducing Local Loop Unbundling
2011	Spectrum Regulations (ICASA)
	Regulation regarding contributions to USAF (ICASA)
2012	ICASA decision on Local Loop unbundling programme for 2012
	Compliance manual regulations (ICASA)

POSTAL SERVICES

Year	Reports, White Papers, Green Papers, Policies and Legislation
1958	Post Office Act no. 44 of 1958
1998	White Paper on Postal Policy
1998	Postal Services Act, No. 124 of 1998
2001	Postal Services Amendment Act No. 33 of 2001
2002	Post Office Appropriation Act (No.9 of 1998)
2004	No. 33 of 2003: Postal Services Amendment Act, 2004
2005	Electronic Communications Act, No.36 of 2005
2006	Postal Services Amendment Bill of 2006
2006 - 2007	Postal Services Amendment Bill of 2007 – 2006 to amend the Postal Service Act of 1998
2009	South African Postbank Bill 2009
2010	South African Postbank Limited Act, No.9 of 2010
2011	South African Post Office SOC Ltd. Act No.22 of 2011

Other resources

Inter-Governmental Relations Framework (IGRF) Act (2005)

State Information Technology Agency Act, No. 88 van 1998

State Information Technology Agency Amendment Act (38/2002)

The New Growth Path: The Framework

Dow Jones company information

IFC Harvard Mobile Money 2010: Unleashing the power of convergence to advance mobile money ecosystems

UNESCO World Report: Towards Knowledge Societies - 2005

ITU: Measuring the Information Society – 2011

Study on the regulation of broadcasting issues under the new regulatory framework: EU Dec 2006

www.dvb.org/

www.itu.int/en/Pages/default.aspx

www.ebu.ch/

www.cba.org.uk/index.php

www.ofcom.org.uk/

www.gsma.com/home/

www.mobileworldcongress.com/index.html

www.itu.int/wsis/index.html

www.multichoice.co.za

www.telkom.co.za

www.sabc.co.za

www.icasa.org.za

www.doc.gov.za

www.sapo.co.za

www.sita.co.za

www.mtn.com

www.vodacom.co.za

www.cellc.co.za

www.toptv.co.za

Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001
Publications: Tel: (012) 334-4508, 334-4509, 334-4510
Advertisements: Tel: (012) 334-4673, 334-4674, 334-4504
Subscriptions: Tel: (012) 334-4735, 334-4736, 334-4737
Cape Town Branch: Tel: (021) 465-7531

Gedruk deur en verkrygbaar by die Staatsdrukker, Bosmanstraat, Privaatsak X85, Pretoria, 0001
Publikasies: Tel: (012) 334-4508, 334-4509, 334-4510
Advertensies: Tel: (012) 334-4673, 334-4674, 334-4504
Subskripsies: Tel: (012) 334-4735, 334-4736, 334-4737
Kaapstad-tak: Tel: (021) 465-7531