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CONTENTS

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DEPARTMENT OF COMMUNICATIONS

No. 44 **24 January 2014**

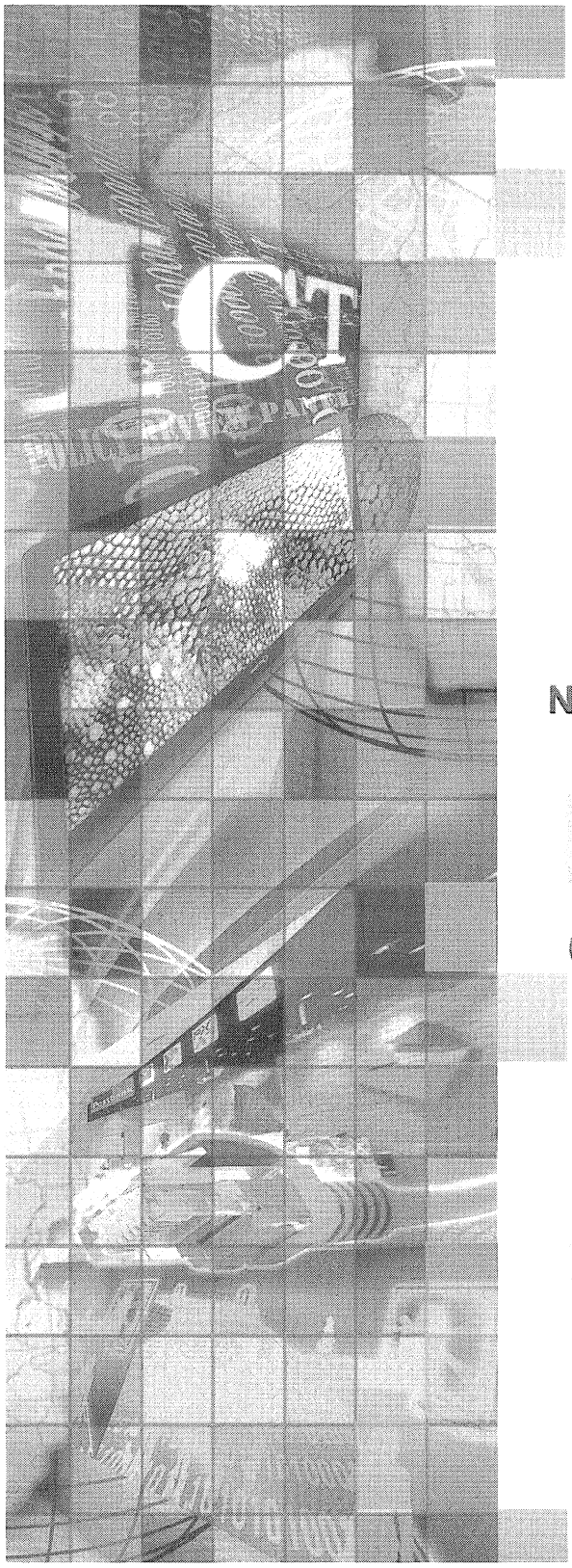
NATIONAL INTEGRATED ICT POLICY GREEN PAPER

1. The National Integrated ICT Policy Green Paper is hereby published by the Minister of Communications for general information and comment from interested persons. Written comments must reach the Department within 30 calendar days of the date of publication, addressed to -

The Director-General, Department of Communications; For attention: Ms. Mameetse Mphahlele, Head: ICT Policy Review Project Management Office
Block C, iParioli Office Park, 1166 Park Street, Hatfield, Pretoria
Private Bag X860, Pretoria, 0001
Tel: 012 427 8522/ 012 420 7701; Fax: 012 427 8016; GreenPaper@doc.gov.za

2. Comments received after the closing date may be disregarded.

Yunus Carrim, MP
Minister of Communications



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Department:
Communications
REPUBLIC OF SOUTH AFRICA

NATIONAL INTEGRATED ICT POLICY

GREEN PAPER

December 2013

TABLE OF CONTENT

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FOREWORD

Minister Yunus Carrim

Our last major policy review of the ICT sector took place in the first five years after our 1994 democratic elections. We had separate White Papers on telecommunications (1996) broadcasting (1998) and postal services (1998). That may be about 16 years ago in calender years, but in ICT terms it is much, much longer, given the speed and sweep of changes since then! And crucially: each of those White Papers was done largely in isolation from the other two – and yet, today, with the convergence of technologies, it is hardly possible to talk of each of these key ICT sectors separately, given their interconnections.

So this Green Paper is very necessary and long overdue.

It seeks to provide an overview of ICT developments in our country since 1994, sketch the current terrain, deal with changes in the ICT sector globally and raise questions about how South Africa can become a more effective knowledge economy and information society. It is utterly clear that if we are to effectively tackle our economic growth, development and job-creation tasks, we will have to draw far more on ICT. What, the Green Paper asks, are the poicy, legislative, regulatory, institutional and other changes we have to make to ensure a more effective ICT sector that more actively contributes to economic growth? What do we have to do to ensure that we realise the vision in the National Development Plan of "a seamless information infrastructure that by 2030 will underpin a dynamic and connected vibrant information society and a knowledge economy that is more inclusive, equitable and prosperous," the Green Paper asks?

ICT has huge, huge potential to reduce the inequalities in our society. But if not managed properly, it also has huge potential to increase our divisions. We have far too many divides in our country as it is. We have to use ICT to reduce the gap between the haves and have-nots, between the connected and the disconnected in our society. So the digital divide is not just between the developed and developing countries, it is also, crucially, between the privileged and not-priveliged in our society. Tackling this is the responsibility of all of us, not just the government.

In fact, most of the issues raised in this Green Paper, it has to be stressed, cannot be addressed by government alone. We need the active participation of business, trade unions, civil society organisations, individual experts and the public generally to respond to the issues in the Green Paper and contribute to shaping a new integrated ICT policy relevant to our country's needs.

This Green Paper has not just been dropped from above by government. Many stakeholders have, rightly, been calling for a review of ICT policies for some time now. And several have also had a hand in broadly shaping the Green Paper. In December 2012 former Minister Dina Pule appointed an ICT Policy Review Panel comprising a representative range of stakeholders, under the leadership of Mr Joe Mjwara, to faciliate a review of existing policies and propose changes to them following consultations with the public. We are grateful to the Panel for the work they have done and for bearing with the pressures of these past few months to get this Green Paper out – on time! Of course, it is not a perfect Green Paper. But then which Green Paper is? And why should it be? After all, a Green Paper is primarily directed at stimulating and encouraging discussion on key issues and ensuring active public participation in shaping policy. This Green Paper certainly meets those aims. It's up to you to make the most of it. And we most certainly want you to.

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Some of you have, as mentioned, already got involved. The ICT Review Panel published a "Framing Paper" in April 2013 for public comment on the objectives and principles that might underpin the new policies. Many of the comments made in response to the "Framing Paper" have been included in some form or another in this Green Paper.

So responses to this Green Paper will be the second stage of the consultation process.

We will, by the end of February 2014, organise national public hearings on the Green Paper. In the weeks that follow, we will be holding provincial public hearings. The valuable proposals in the written submissions to the Green Paper and during the public hearings will be included in a subsequent Discussion Document that will serve as the basis for the National Integrated ICT Policy White Paper which we hope to finalise by August 2014. This White Paper will provide the framework to adopt new ICT legislation more suitable to the changed and changing times.

So here is your chance! Take part! Help shape your and your country's future!

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DEPUTY MINISTER STELLA NDABENI-ABRAHAMS

The launch of the National Integrated ICT Policy Green Paper is an important milestone in constructing a platform for us to use modern communication technologies to address the developmental gaps.

The National Developmental Plan identified information and communication technologies as important to building an information society and knowledge economy. This vision necessitates us to facilitate the provision of seamless information infrastructure that will enable access to the creation and consumption of a wide range of converged services required for effective economic and social participation. The disparities between the urban and rural areas still remain high. We hope the research done on the availability of the infrastructure will focus our efforts on those areas where the backbone infrastructure has not yet reached as well as on the access part of the network, including in rural areas. It is time we take stock of how far we have progressed on our journey to digital inclusiveness and to overcome the obstacles we face.

We must also take stock of the high prices we as South Africans continue to pay for communications. Elsewhere in the world people are enjoying higher speeds and faster services because of the technological changes that have taken place over the last decade. It is also time that we put our house in order and start to benefit from the innovative services that the converged world can bring about in an appropriate policy and regulatory setting.

Our country still suffers from glaringly inequitable levels of access to all sorts of resources, among them health, education, finance and the very information and communication technologies whose access would alleviate the sufferings. Closing the gaps will require innovation and joint efforts by all role players. It is for this reason that we have engaged with other government bodies and entities in the development of research that informed this paper. As a result we are more aware of the ICT projects and programmes that government is undertaking. We are equally much more aware of the challenges different government entities face in their quest to modernise their ICT infrastructure to deliver services to the public.

In the discussions leading up to the release of the National Integrated ICT Policy Green Paper it became obvious that government must find new ways of coordinating itself if we are to succeed in using these technologies to deliver services successfully and in an affordable way. ICT revolutions make possible better cheaper access to knowledge and information. This speeds-up transactions and process and reduces their cost, which in-turn benefit citizens and consumers. We hope you too can contribute ideas on how government can coordinate efforts at national, provincial and municipal level more effectively.

The positive impact of the use of information and communication technologies on economic development is now well established. The International Telecommunications Union posits that 1.3% economic growth in terms of the GDP can result from 10% broadband penetration. For this to be realised government will have to make the widest possible use of information and communication technologies in everything we do. Government must act as an aggregator of demand side measures that will stimulate public sector use of the technologies. Government must also facilitate access to rights of ways and wayleaves in order to allow for the rapid deployment of infrastructure.

The National Integrated ICT Policy Green Paper presents an occasion for us to engage each other on what we believe to be our core needs and how we see the information and communication technology sector advancing our community and societal interests.

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It is important to remember that technology is shaped by society as much as it shapes society. Thus, those interested in harnessing the power of new technologies should help create the right environment for it to flourish. All views are important in this dialogue. We invite you to be part of the solution. Join the discussion.

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CHAPTER 1: GREEN PAPER

1.1 Green Paper for Public Consultation

In the years after the dawn of the new millennium, and a decade since the two-phased World Summit on Information Society (WSIS) the world has witnessed transformation at unprecedented scales. The proliferation of the internet, associated technologies, applications, content and services are at the core of this transformation. Communications have always been at the centre of human society and the opportunities presented by rapid technological advancements are impacting profoundly on this core human activity. Advanced communications systems not only reflect development, but they drive it too. A key issue which consequently arises is whether the policy environment is sufficiently supportive and enabling to ensure that all sectors of society reap the benefits of the digital age. This question is therefore a fundamental point of departure in proposing this green paper for public consultation.

Until now, the communications industry in our country has traditionally been divided into telecommunications, broadcasting, and postal services. In 1994, at the advent of our democracy, we saw a revolution in communications as the state broadcaster became a public one, the airwaves were opened up, and an independent regulator was established.

This revolution has been an ongoing one. Our communications infrastructure has changed profoundly in the past 20 years: mobile phones are now almost universal in the country, there are nearly 200 radio stations on air, and there is substantially more competition in broadcasting than ever before, and the way in which we access information and services.

This change has reflected not only an opening up of the communications sector, it has also reflected our Constitutional values. The most fundamental rights of equal citizenship and freedom were embodied in the various policies that recast the broadcaster from a state to a public one, that opened up the airwaves, and that opened ownership to a wider sector of citizens.

Yet we are still faced with pressing challenges, particularly in an age where the world is changing from an analogue to a digital one, and where the previous divisions, between telecommunications, broadcasting and postal services, are no longer as clear in an age of convergence. The rapid pace at which the internet has become pervasive, has not kept up with the rate at which all our citizens have been afforded access to affordable, secure, reliable and quality communications services.

The purpose of this Green Paper is thus to continue a process to both change and develop the Information and Communications Technology (ICT) sector in a way that better serves the needs of citizens, and that boosts economic and social development, as well as transformation in our society. The Green Paper will be used to canvass opinions on the various aspects of the communications sector that need to be reviewed. It will include an examination of those elements of the communications policy and regulatory environment that have either not achieved, or only partially achieved, the goals they set. In some cases, policies were successful in resolving the challenges of the past, but now need to be reviewed to meet the demands of a new technological age. There are also many developments that could not have been predicted when previous policies and laws were drafted and that now require attention.

The first phase towards developing a new policy approach began when a Framing Paper was gazetted for public consultation in April 2013. The Green Paper is the second round of a

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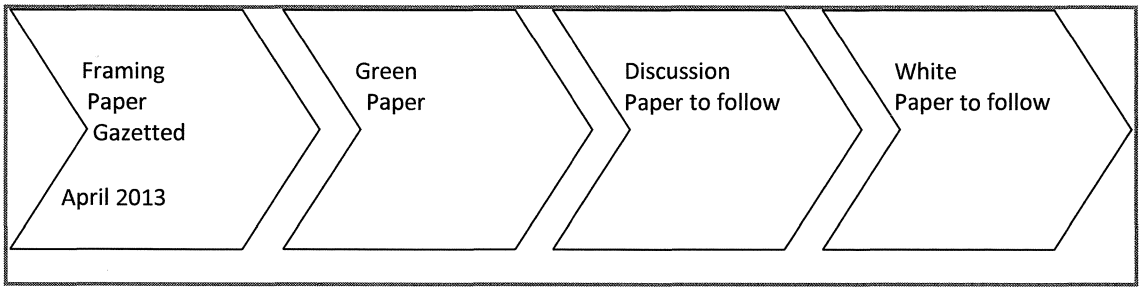
consultative process that seeks to involve all South Africans in the review and development of new policies that will take the country forward.

The next step in policy making will be the issuing of a Discussion Paper for pubic consultation and thereafter the gazetting of a White Paper, which spells out policy positions of Government.



The Green Paper is an invitation to stakeholders and all members of the public to comment on policy issues and to participate in legislative reform. This document is an essential part of the democratic process.

In this document, we review the ICT sector and pose questions at the end of each chapter. These questions are posed to invite comment from the public.

1.2 Background to the Policy Review: Proposal for Discussion

In 1994, South Africa developed separate frameworks for the telecommunications, broadcasting and postal sectors. The policy frameworks adopted assisted the country to begin transforming the communications sector, and, for example, provided for universal service and access to information and communications technologies.

All of these policies, however, acknowledged that changes in technology would require a review of the country's policy and regulatory approaches in the future. Some steps at a policy, institutional and regulatory level have already been taken in response to changes in the communications sector. For example, the broadcasting and telecommunications regulators were merged in 2000 to begin the process of streamlining the regulatory approach to the sectors. In 2005, the Independent Communications Authority of South Africa (ICASA) was given the responsibility for the regulation of postal services as well. That same year, 2005, a new law, the Electronic Communications Act (no 36 of 2005) was enacted, advancing the process of integrating the policy frameworks for the different sectors in recognition of convergence in the communications sector.

However, South Africa has not yet taken full advantage of the possibilities and opportunities created by the convergence and digitisation of communications technologies. The fragmented approach adopted at the advent of democracy, does not maximize efficiencies and in future will increasingly hamper the capacity of the sector to fulfil socio-economic development. The silo approach to the sector needs to be reviewed so that we do not inadvertently create a digital divide where access to quality communications services, technologies, infrastructure and content is a privilege of the elite, rather than a right for all.

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CHAPTER 2: THE CONTEXT FOR POLICY REVIEW

2.1 The Framing Paper Overview

Earlier this year, the ICT Policy Review Panel, appointed by the Minister of Communications in November, 2012, published a draft Framing Paper for public comment. The Draft Framing Paper contained 14 Objectives and Principles that underpin the current policy environment. The Panel requested comment on the relevance of each objective in the current state and the future. It also asked for suggestions on any other objective and principle that could help define the communications environment of the future.

The Policy Framing Paper was the first opportunity for members of the public to contribute to the process. This Green Paper is the second opportunity, and shortly thereafter a discussion paper will be drafted that will be the basis for public consultations leading to the White Paper.

The Framing Paper identified 14 key policy principles. Although not exhaustive, they laid the foundation for discussion about the objectives of a new communications sector policy.

2.2 Key Principles

The Policy Review Panel has carefully considered the responses to the Framing Paper Discussion Document. The Panel is unanimous that if the market wasleft to its own devices,and should the status quo be left intact, there would be some serious developmental failures as some sections of the South African population still do not appeal to market forces because of their economic and geographic profile. Consequently, the Panel rejects any suggestions that do not support the objectives and principles that guide the way to a new communications framework.

The Panel in its deliberations also reaffirmed a rights-based approach on the grounds that most of these objectives and principles are derived from rights enshrined in the Constitution. However, the Panel amended some of the objectives and principles in line with suggestions where it felt appropriate, and retained and fine-tuned others. Refer to the Department's website for all the principles.

1. South Africans have a right to freedom of expression;
2. South Africans have a right to access a diverse range of information, opinion and news of relevance to their communities and lives;
3. South Africans have a right to a secure, quality and affordable communications infrastructure and services;
4. South Africans have a right to benefit equitably from the ability of the communications sector to facilitate social development and improve the quality of life of individuals and communities;
5. South Africans have a right to the creation and dissemination of content that celebrates their cultural heritage in languages of their choice;
6. South Africans have a right to equitable universal access to communication infrastructure and services;
7. All sectors of the population have a right to equally enjoy and benefit from communications services;
8. South Africans are entitled to communication services that reflect, respect and uphold community standards and values in accordance with the constitution;
9. South Africans have a right to privacy and to protection of personal information;

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10. Government has a responsibility to maximise the overall public benefit derived from the use of public resources;
11. South Africans are entitled to a communications sector that facilitates innovation, fair competition and equitable treatment of all role players;
12. South African citizens are entitled to consumer protection rights with regards to communication services;
13. South Africans have a right to an environment that is not harmful to their health or well-being.
14. Policy must recognize the need to protect children from potentially harmful content

There were some additional objectives suggested by respondents to the Framing Paper. The Green Paper invites comment from the public on these additions. Among these were the following:

1. South Africans have a right to an inclusive, transparent, accessible and technology-neutral policy making and regulatory process that promotes stability and fosters a knowledge based society;
2. South Africans are entitled to a communications sector that prioritises and promotes public interest, independent regulation, fair and equitable treatment of all role players, and net neutrality;
3. All South Africans are entitled to a secure cyber environment in which all infrastructure, network and service providers work together to maintain the highest standards of security;
4. South Africans have a right to a three-tier system of broadcasting providing for public, community and private ownership; and
5. South Africans have a right to access public information through the communications services in order for them to be active participants in political and social life, as well as in the construction of a knowledge-based society.

2.3 Historical Overview

The ICT sector is currently experiencing major technological and market changes, with many referring to it as a revolution of the scale last experienced with the invention of the printing press. Such rapid change means policies and laws need to be regularly reviewed in order to set the framework for implementation across sectors. The policies, laws and regulations under review in this Green Paper date back to the 1990s and were drafted shortly after the first democratically elected Government was inaugurated in 1994. A flurry of policies and legislation was drafted, across the communications sector, in order to align with the objectives set out in the Constitution.

2.4 Why review the policies, laws and regulations governing the Communications Sector?

2.4.1 A changing society

Much has changed in recent years, especially in the ICT sector due to the rapid expansion and fast-paced developments in technology, and the emergence of new media as a result of the Internet. Both homes and offices have been transformed technologically and a new worker entering the market today would be puzzled by equipment found in an office just 20 years ago: telex machines, floppy-disc computers, tape cassettes and monochrome computers devoid of graphics and of course without a mouse. To make a telephone call you needed to stand still as mobile devices were still emerging; to get in touch with someone urgently you "paged" them, which involved phoning an operator, who would send a text message to the recipient on a device that would beep to inform them to call you back; the

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fastest way to get a document across the world was to fax or telex; to conduct research you needed to read a printed book or use microfiche. Cables connected your computer to your printer, you watched TV in real-time and recorded programmes on your VHS or Beta recorder.

With the entry of broadband in the past 10 years, the ICT landscape has changed dramatically and the internet is now a major medium of communication. The SA population has grown from 37.8 million to 52 million between 1993 and 2011 and in that time the number of households increased by 4.6 million to 14.5 million. Per capita income has risen from R11 000 to R64 000 in the same period.

Mobile technology, broadband, digital television, smartphones, the cloud, tablets, and new media technology are all recent developments in the market. These changes have far-reaching implications for any new policies and legislation.

Best practice in the fast moving technological revolution is to do regular policy reviews, ideally at least every five years to make sure that the objectives outlined in the policy are being implemented, and also to look at gaps and challenges as a result of the introduction of new technologies.

2.5 Changing ICT environment

2.5.1 Technology Convergence

Convergence relates to the tendency of technological systems to develop in a manner that allows them to perform multiple tasks with one device. It also means that a single infrastructure can provide a multiplicity of content or services; that a single service-provider can provide multiple services, or that content can be aired on multiple platforms. There is also corporate convergence, which means that one company can provide several of the above services.

In this context it refers to the process in which previously separate technologies such as telephony, data and video can now be saved, transmitted and received using the same devices. The net effect of this technological trend is to reduce the cost of construction of the transmission networks as one transmission system can be used for many services. Technology convergence is of particular interest to policy makers and regulators as it changes the nature of services, allowing an operator who was licensed under one category to be able to do things that would have required different category licences in the past.

2.5.2 Platforms, Applications and Services are converging

Three major technological developments influencethe communications landscape in a radical manner.

- The first is the shift to Internet Protocol (IP) - based technologies that have affected the cost of networks, at the same time offering opportunities for innovation and new services. Examples of these are Voice Over Internet Protocol, which has been in existence for about a decade, and internet broadcasting.
- The second is the deployment of fibre-optic technologies that have increased the speed and size of data that can be transmitted from one point to the other.
- The third development is the entrance and use of wireless technologies.

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2.5.3 Convergence of Internet and Media

Two factors will change the broadcast environment significantly. The first is the migration to a digital system from an analogue one. This will allow the viewer and listener much more choice as more channels proliferate. The International Telecommunication Union has declared that such legacy systems must be switched off in Africa and the European region by June 2015.

The other factor is the internet, which has begun to affect the traditional broadcasting industry. Although relatively few people in South Africa watch video over the internet, traditional boundaries between content on the Internet and broadcast content are eroding. Digital technologies have brought about a situation in which broadcasting can be received through any network and by many devices beyond the television set. Hybrid services that belong to both the Internet and broadcasting worlds have emerged. For instance, newspapers now offer both audio and visual content online, and the major broadcasters are now offering textual services online.

2.5.4 Convergence in Policy and Regulation

Current policies and laws are based on a traditional structure that was premised on distinct broadcasting, telecommunications and IT markets. These markets were based on the existence of distinct industries around telephony, point-to-multipoint broadcasting services, and mobile telephony services. The existence of distinct and separate policy and regulatory approaches for broadcasting, radio-based communications and telecommunications does not take into account the changes that have taken place. The convergence of technologies has brought about a situation that makes it possible to use any infrastructure to deliver any communication service. A single infrastructure can be used to access television, Internet, radio, as well as deliver voice and video services.

2.6 ICT as an enabler and National Imperatives

Over the past three decades, developments in the ICT sector have changed much of the world. The implementation of different strategies to make new technologies more widely available has transformed countries, societies and the activities of individuals. The availability of ICTs now determines levels of efficiencies in different spheres of human endeavour and business. The same ICTs have transformed international and global trade enabling individuals to receive information and services from all over the world. South Africa requires ICT policy and legislation that responds to the changing times and at the same time positions the country to compete effectively on a global stage.

The greatest challenge faced by South Africa is that of poverty reduction, creating jobs and reducing inequality. An ICT policy framework, correctly framed and directed, is ideally placed to play an important role in dealing with this triple challenge.

The implementation of e-services, including e-government, e-health, and e-education may propel a significant increase in the ownership of end-user equipment. Even though these gadgets have themselves been converging, allowing for reception of any content on a single device, evidence still points to ownership of several devices by individuals. The reason is that size and performance still dictate the choice of the best gadget for use for specific application. An individual middle-class household may still own a television set, a sound system, and a computer, in addition to the tablets and smart phones owned by different members of the family.

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Chapter 3: The Current State of the South African Communications Sector

3.1 Electronic Communications Sector

3.1.1 Legislative and policy environment

The 1996 White Paper on Telecommunications envisioned a policy environment in which the telecommunications sector balances the provision of basic universal service to disadvantaged rural and urban communities with the delivery of high-level services capable of meeting the needs of a growing South African economy. The White Paper sought to, amongst other things, provide for a new market structure that orientates the sector towards accelerated development and universal service, as well as take into account technological and international trends.

The market structure entailed a period of exclusivity for Telkom. After this exclusivity period, the White Paper envisaged an environment whereby various telecommunications market segments would be liberalised in a phased process, put into motion and overseen by the Regulator. This policy provision enabled the licensing of the Second National Operator in the fixed-line market, and three mobile operators. In terms of the ownership, investment and financing, the state retained a majority shareholding in Telkom and shareholding in Vodacom. The Altech Judgement in 2008 cleared the way for Value Added Network Service (VANS) licencees to self-provide their own telecommunications network, facilities and services.

A Telecommunications Regulator called the South African Telecommunications Regulatory Authority (SATRA) and the Universal Service and Access Agency of South Africa (USAASA) were set up. SATRA was established to regulate telecommunications in the public interest and also manage the radio frequency spectrum with the exception of the broadcasting services frequency bands which were then administered by the Independent Broadcasting Authority (IBA). In 2000, SATRA and the IBA merged,and the new regulator, ICASA, was established.

The White Paper sought to address issues of transformation in the sector through the economic empowerment of historically disadvantaged individuals, to ensure that meaningful participation in all aspects of productive economic activity was achieved. Regulations published by ICASA, the establishment of a new licensing framework, as well as the promulgation of the principal legislation on Broad-Based Black Economic Empowerment gave effect to the policy imperatives of broadening equity ownership, employee share-ownership schemes, creating opportunities for meaningful employment and management, the effective promotion of entrepeneurship, licensing opportunities and procurement and set-aside policies.

The issue of universal access and universal service were fundamental policy issues addressed by the White Paper on Telecommunications. In this regard, the creation of USAASA was aimed at, inter alia, providing access points for communications infrastructure and services. In addition, the White Paper also sought to address the manner in which the cost of services is determined through tariff regulation, as this aspect was critical to the achievement of universal service. The key requirement was to create a balance between affordability and the need to expand and upgrade the network.

In terms of legislative reforms, a new Telecommunications Act was promulgated in 1996. The Act provided a framework whereby the legal situation with regard to licences and supplementary agreements issued or made prior to the introduction of new telecommunications legislation was dealt with; the new licensing regime of operators was introduced; the integration of TBVC areas and the question of the interception of

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telecommunications call traffic was addressed. The Electronic Communications Act of 2005 repealed the Telecommunications Act. As convergence legislation, it allowed for a separation of policy-making from that of regulation; allowed for more competition through various regulations including on facilities leasing, interconnection and the rapid rollout of ICT infrastructure and spectrum management.

3.1.2 Growth and outlook

The ICT sector in South Africa is characterised by an exponential growth of the mobile sector, with a penetration rate of about 136%. Statistics South Africa reports that the contribution of the ICT sector to GDP in 2012 was 6%, and that the telecommunications sector market alone had grown to more than R179 billion in 2011. According to Stats South Africa, the 2011 Census survey shows that 89% of the 14.5 million households in the country have access to mobile phones, whilst 75% of households have access to a television set and a further 68% have access to a radio. However, penetration of radio is much higher, reaching nearly 90% of the population. The Census survey also reveals that only 35% of households have access to the internet and only 15% have access to a landline phone.

These statistics underscore the startling growth of the ICT sector, driven in the main by the mobile sector, while fixed line continues to decline. But they also show the gaps that persist, particularly in relation to internet access.

Table 13 : Summary of ICT access in South Africa from Census 2012 and RIA ICT Survey data 2011-12

	Census data		RIA Survey data	
	2006	2011	2007	2011-12
Households with fixed line	18.5%	14.5%	18.2%	18.0%
Households with computer	15.6%	21.4%	14.8%	24.5%
Households with radio	76.5%	67.5%	77.7%	62.3%
Households with television	65.5%	74.5%	71.1%	78.2%
Households with internet		35.2%	4.8% (household) 15.0% (individual)	19.7% (household) 33.7% (individual)
Cellphone ownership (household)	72.7%	88.9%	62.1%	84.2%

Source: RIA ICT Survey data 2011-12

Source: RIA ICT Survey Data 2011-12

The role that ICTs play in the broader society is underscored by the 2010 World Bank study that found that for every 10% increase in broadband penetration in emerging markets, there is a 1.38% increase in GDP growth.

Therefore the ability of South Africa to compete in the global economy is dependent, to a large extent, on the state of its ICT sector and in particular the country's ability to facilitate and grow the sector to meet its citizens' needs for affordable, accessible broadband. The rapid deployment of fast and affordable broadband infrastructure remains a powerful lever to create an internationally competitive knowledge economy, improve productivity and expand access to new markets.
According to the RIA ICT Survey data 2011-2012, about 22% of internet users access the internet via ADSL but more people access it using their mobile devices.

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In the current regulatory environment, BMI-T forecasts the fixed and fixed wireless connection rate to decline by2.4%, whereas mobile connections are expected to grow by6.2%. The continued reduction in fixed-line penetration, the saturating mobile market and the drop in data prices due to increased competition, as well as the sustained economic downturn have had an effect on growth in the past few years.

Telecoms sector revenue grew from R8.2bn in 1993 to R157bn in 2012 and is expected to grow to R187bn in 2016. In this scenario, the Compounded Average Growth Rate (CAGR) is expected to be 4.6% from 2010 to 2016, with the Public Switched Telephone Network (PSTN) fixed-line and value-added services growing at only 1.1% as opposed to the mobile cellular growth of 5.9%.

Table 4
Telecommunications services revenue forecast overview, base scenario, 2010 – 2016 (Rm)

	2010	2011	2012	2013	2014	2015	2016	CAGR 11 - 16
Total mobile cellular services	94 868	103 548	110 515	116 003	123 799	131 183	138 069	5.9%
Total PSTN fixed-line and VAS	42 006	41 900	42 576	42 817	43 561	44 191	44 342	1.1%
Alternative voice services	4 398	3 679	3 568	3 548	3 684	3 957	4 283	3.1%
Total	141 272	149 127	156 659	162 368	171 044	179 331	186 694	4.6%

Source: BMI-T, 2013. Alternative voice services (Traditional LCR, VoIP, Hybrid VoIP / LCR) - base scenario

Source: BMI-T, 2013. Alternative voice services (Traditional LCR, VoIP, Hybrid VoIP / LCR) - base scenario

Despite the emergence of a sophisticated telecommunications market in South Africa in the democratic era, the central policy issue that has not been adequately addressed is that of achieving affordable access to reliable and robust communications infrastructure and services. Various research studies show that the ICT access gap is growing, particularly between rural and urban areas, as well as between those with higher and lower incomes.

South Africa has effectively lost its status as continental leader in terms of the global ranking indices produced by the World Economic Forum and the International Telecommunication Union.

For instance, the Network Readiness Index (NRI) of the WorldEconomic Forum, 2013, shows that South Africa currently ranks 70th in the world, out of a total of 144 countries. This study measures a country's propensity to exploit opportunities offered by ICT, and the impact of ICT on the competitiveness of nations. South Africa continues to trail behind other comparator countries such as Chile, Turkey and Poland.

Despite the ICT sector's phenomenal growth in the past two decades, the cost of communication remains relatively high. According to Gilwald, Moyo & Stork (2013),when compared with other African countries, mobile and fixed retail prices are in most cases ten times higher. The table below shows South African prepaid mobile prices in relation to the 10 cheapest countries in Africa, based on the Organisation for Economic Co-operation and Development (OECD) 2010 prepaid low-user mobile basket (40 calls per month prepaid).

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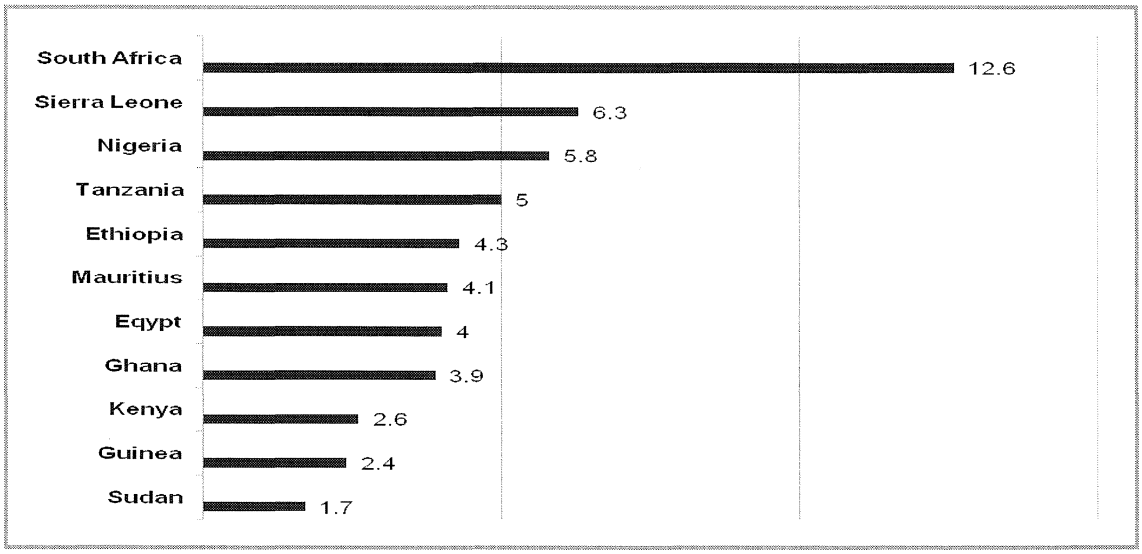
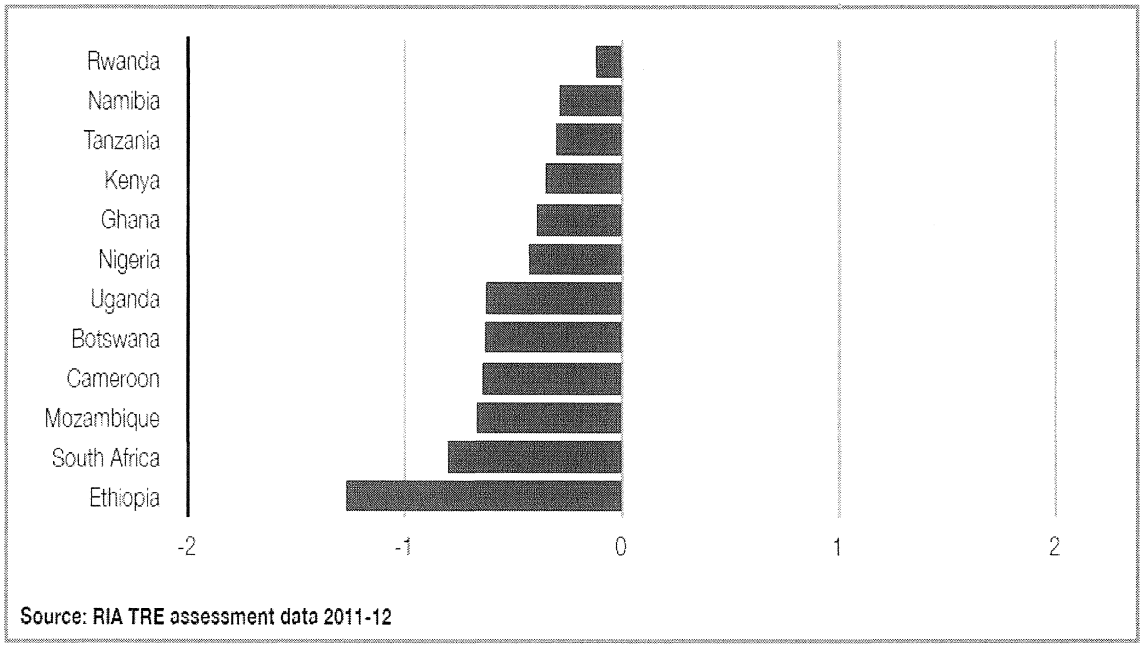


According to the Telecom Regulatory Environment (TRE) assessment method, which assesses the effectiveness of sector regulation through stakeholder perception of seven regulatory dimensions, which include market entry, quality of service, anti-competitive practices and universal service obligations, South Africa scores only slightly better than one of the other 11 countries, Ethiopia. A TRE assessment probes the perceptions of stakeholders of the entire policy and regulatory environment, not the regulator per se.

The shifts in perception of the efficiency of the regulatory environment in South Africa are:



Source: RIA TRE assessment data 2011-12

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3.2 Broadcasting services sector

3.2.1 Legislative and policy environment

The transformation of broadcasting in South Africa from the state controlled apartheid system to an independently regulated sector underpinned by the constitutional imperative of freedom of expression began even before the 1994 democratic elections, with the promulgation of the Independent Broadcasting Act and the appointment of a publicly nominated board of the South African Broadcasting Corporation (SABC) in 1993.

The Independent Broadcasting Authority (IBA) was appointed in 1994 and initiated, in line with its founding legislation, the Triple Inquiry into the Protection and Viability of the Public Broadcaster, Cross Media Control, and Local Content. This inquiry provided the basis for the initial re-regulation of the broadcasting sector and licensing of new community and private services. The 1998 White Paper on Broadcasting focused on extending the initial reforms through the development of a national policy and clearly defining the roles and responsibilities of parliament, the executive, the independent regulator and the broadcasting sector. The principles and approaches outlined in the White Paper are crystallised in the Broadcasting Act, no 4 of 1999, the Independent Communications Authority of South Africa Act, no 13 of 2000 and the Electronic Communications Act, no 36 of 2005.

The policy framework and related legislation emphasises the central importance of the constitution in developing the regulatory approach to the sector.

"The South African constitution guarantees a number of fundamental rights, which should be taken into account in determining broadcasting policy and its regulation. Amongst these are:

- Freedom of expression for all South Africans
- The right to equality
- The equality of all languages
- The multi-cultural nature of SA and the right of all South Africans to the promotion of their cultures
- Choice and diversity"

Within this context, the 1998 broadcasting policy framework identifies key public interest values such as universal access, diversity, equality and independence and it outlines how broadcasting services are collectively responsible for meeting these.

The policy and laws set out, among other things:

- Specific provisions to ensure fair competition between services. The EC Act in particular emphasises the role of the regulator in relation to that of competition authorities and set out processes to be followed by ICASA in determining ex-ante provisions.
- Clarity on the role of the SABC as the public broadcaster, the introduction of a Charter for Public Broadcasting and provisions for funding the public mandate via licence fees, cross-subsidisation of public services by a public commercial wing and government funding.
- Rules on ownership and control of broadcasting services to limit media concentration and promote diversity and broad-based black economic empowerment.

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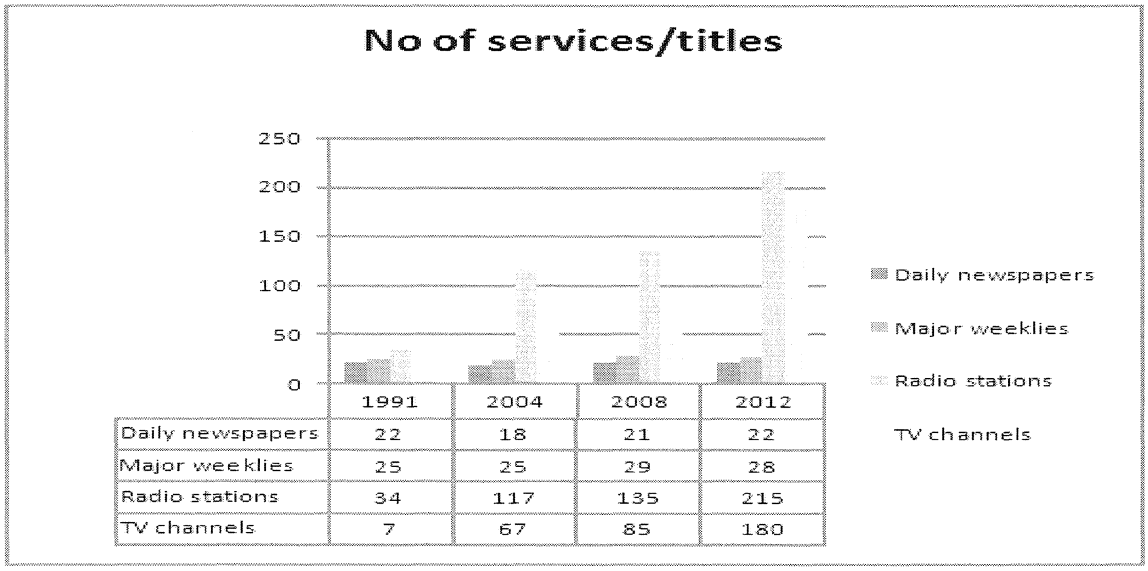
3.2.2 Growth and Outlook

There has been considerable growth in the number of services available in most areas, – particularly in the community broadcasting area. Other significant changes are the issuing of licences by ICASA for all SABC services (which prior to the Broadcasting Act operated under grandfathered licences and did not have detailed conditions) and for satellite subscription services. The SABC is licensed to offer three analogue television channels. One of the channels is licensed as a commercial service. Two additional regional public television services licences were issued to the SABC in 2005. The reach of SABC has been continously extended. More channels will be launched on the DTT. SABC launched a 24-hour news service on the DSTV platform with a promise that the news service will be available free-to-air on the launch of DTT. The SABC operates 18 radio stations including 15 public radio stations and 3 public commercial services. Radio XK broadcasting in in!Xu and KHWE launched in 2004. The SABC radio services cover all official languages. There is one free-to-air commercial terrestrial broadcaster that is privately owned, etv. The number of channels operated by etv will increase with the introduction of DTT. Two free-to-air Direct-to-Home (DTH) services were launched in 2013. There is one terrestrial subscription television service and two satelliite subscription services. 15 commercial radio services operate in SA.



	1991	2004	2008	2012
Daily newspapers	22	18	21	22
Major weeklies	25	25	29	28
Radio stations	34	117	135	215
TV channels	7	67	85	180

3.2.3 Penetration and uptake

In terms of reach, 6.16 million (12.3% of the population) do not have access to Radio service, 7.38 million people (14.7% of the population) do not have access to Analogue Television services, 4.15 million people (8.3% of the population) do not have access to any terrestrial broadcasting services. A total of 670 526 people (1.34% of the population) only have access to one television service.

Substantial progress has been made with respect to expanding the analogue terrestrial television broadcast network from 60% of the 'population reach' in 1998 to over 91.7% population coverage in 2012. In the same year the public broadcaster's SABC 1 and SABC 2 were reported to each have population coverage of 91.2% and 92.5%, respectively with SABC 3 having 82.1% coverage. There remains a segment of the population which does not have access to television but this has been substantially reduced from 40% of population in 1998 (as reported in the White Paper) to less than 10% population coverage in 2012.

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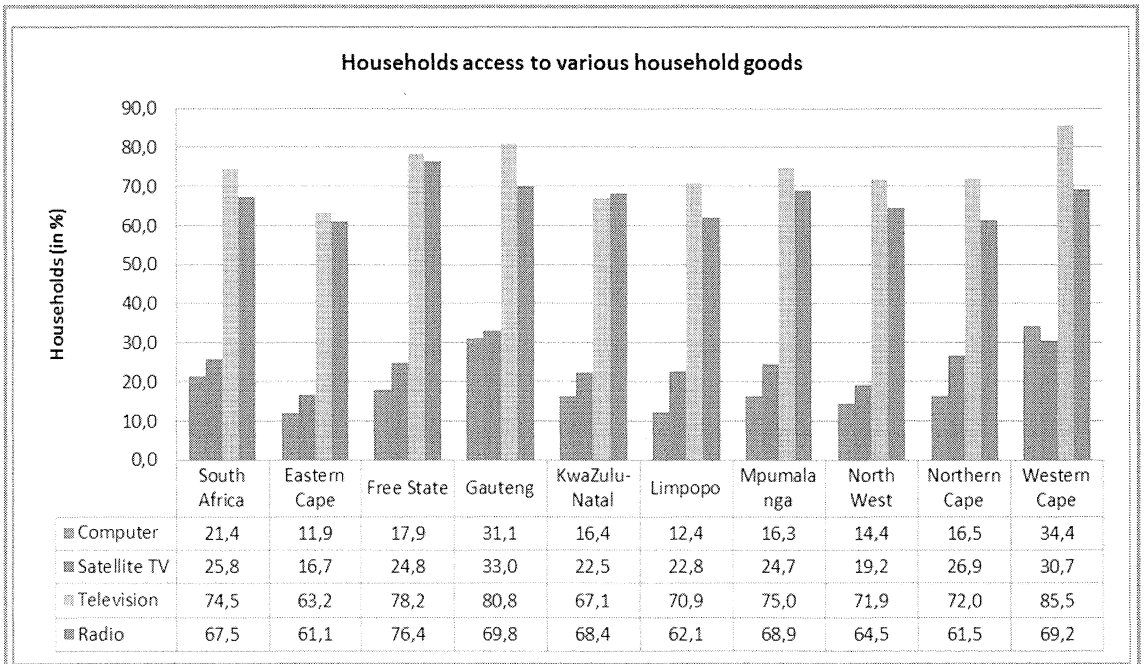
With respect to sound broadcasting, population coverage of public broadcaster's radio station varies from the highs of 80% for SAFM, Radio 2000 (both English medium radio stations), and RSG (Afrikaans medium with national coverage) radio stations to the lows of regionally based Good Hope(English) and Tru FM (IsiXhosa) at 8% and 2%, respectively. Ukhosi FM with a total population coverage of 45% attracts the largest audience of all SABC radio stations although it has a lower overall population coverage. This is possible given its traditional target audience of IsiZulu speakers (76% IsiZulu speaking population coverage) and their geographic spread around the provinces of KZN, Gauteng, Mpumalanga, Eastern Cape and the Free State. This pattern repeats itself with other language groups' radio stations.

Data from StatSA Census 2011 was utilised to get a snapshot of households' access to various household goods as shown in the figure below. The national radio penetration of households stands at 67.5% of total households and that of television at 74.5% of households. The Free State has the highest levels of radio penetration at 76.4% of households. The Eastern Cape, Northern Cape and Limpopo have the lowest levels of radio penetration at 61.1%, 61.5% and 62.1% each, respectively.



	South Africa	Eastern Cape	Free State	Gauteng	KwaZulu-Natal	Limpopo	Mpumalanga	North West	Northern Cape	Western Cape
Computer	21,4	11,9	17,9	31,1	16,4	12,4	16,3	14,4	16,5	34,4
Satellite TV	25,8	16,7	24,8	33,0	22,5	22,8	24,7	19,2	26,9	30,7
Television	74,5	63,2	78,2	80,8	67,1	70,9	75,0	71,9	72,0	85,5
Radio	67,5	61,1	76,4	69,8	68,4	62,1	68,9	64,5	61,5	69,2

Figure 1: Household access to radio, television and computers – (StatsSA Census 2011)

The Western Cape, Gauteng and Free Sate have the highest levels of television penetration of households with 85.5%, 80.8% and 78.2% each, respectively. The Eastern Cape and KwaZulu-Natal have the lowest levels of household television penetration with 63.2% and 67%, respectively. For Limpopo, North West, Northern Cape and Mpumalanga the household television penetration falls within the ranges of 70% and 75%.

Given the geographic coverage of broadcasting services and households' access to radio and television sets, it is likely that a lack of penetration, may be due to a combination of factors.

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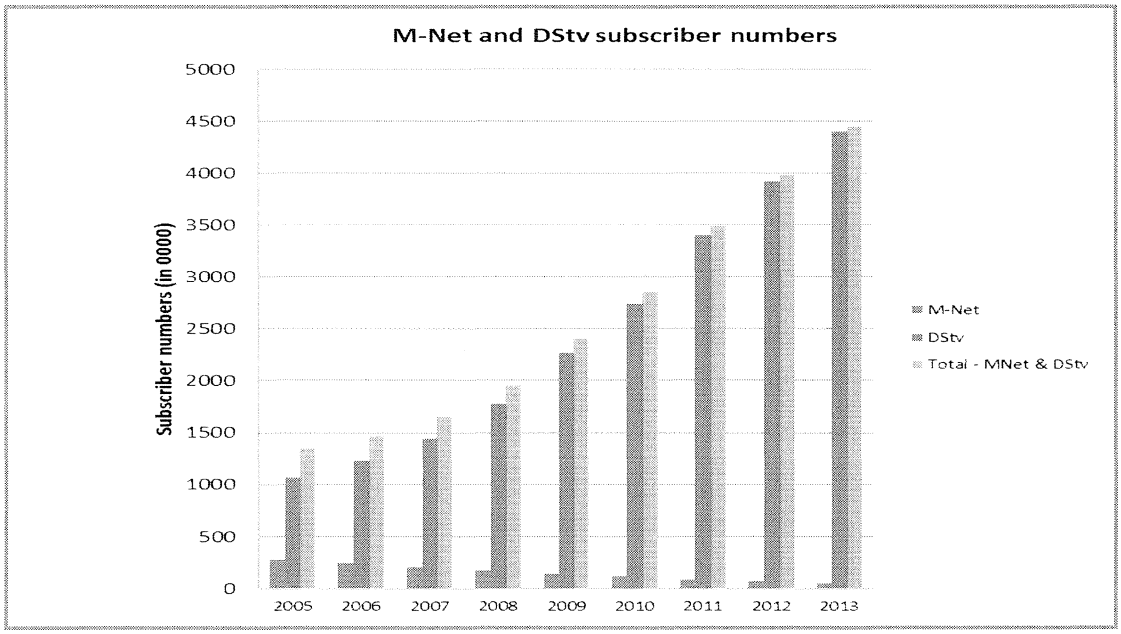
3.2.3.1 Audiences

3.2.3.1.1 Television

Viewership of television has grown significantly since the White Paper was finalised in 1998. In the past ten years alone, viewership has increased from 68% of the adult population in 2002 to 92 % of all adults (over the past seven days) in June 2013 according to the South African Advertising and Research Foundation (SAARF). SABC 1 has the most viewers at 27.7 million. It was viewed by 78.8% of adult viewers in 2012 compared to less than 60% in 1998. SABC 2 has 24.8 million viewers and was viewed by 71% of the adult audience in 2012 (compared to50% in 1998/1999), e.tv has 23.95 million viewers (68.6% of viewers) and SABC 3 reaches 21 million viewers. Community television has mirrored this growth and currently sits with an average weekly reach of 8.5%.

Satellite subscription television service, DSTV, has grown its audiences significantly since 1998 – from 2% in 1998/1999 to 28% of the adult population in 2012 (9.9 million viewers). This increase has been driven at least in part by the subscription service introducing a range of cheaper bouquets over the past five years.

The growth in viewership of DSTV services is obviously matched by an increase in subscriber numbers. The figure below shows the dramatic growth in subscribers for DSTV since 2005.



South African households' viewing patterns have changed over the past 15 years. For example, South African content is increasingly popular and demanded by audiences and thus a commercial rather than only regulatory imperative for broadcasters. This has led to multi-channel satellite services introducing more local channels over and above those required by South African content regulations (such as Mzansi and eKasi channels).

3.2.3.1.2 Radio

Total radio listenership has in the meantime remained relatively stable– with All Media Products Survey (AMPS) recording a past seven day listenership of 91.8% in 2002 and 92.6% in December 2012. The listenership figures however for individual services has

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increased over time as SABC public radio stations, in particular, have extended their coverage areas.

Unlike television, listenership figures for radio are not directly comparable as this is inevitably affected by their licensed coverage areas. SABC radio stations have the most extensive coverage - with Radio Sonder Grense, SAFM and Radio 2000 covering the largest areas in terms of their licence conditions. The public commercial stations, Metro FM and Radio 5, are the only commercial radio services licensed to broadcast in all major urban areas. These stations therefore obviously have higher listenership than private commercial stations (which cover cities or specific provincial areas) and community stations (which each are licensed to cover specific local communities). Over the 1998 to 2012 period Ukhozi FM has consistently had the most number of adult listeners followed by Metro FM and then Umhlobo Wenene.

While radio listenership has remained largely consistent, individual stations audiences have fluctuated. Audiences for the community radio sector as a whole has in particular shown growth – increasing its share of audience from about 16% in 2005 to 25% in June 2013 (AMPS). This reflects the growth in the number of licensed community radio stations with the introduction in the ECA of the less stringent class registration process (the number of stations licensed has doubled over the period).

3.2.4 Revenue

The total advertising spend (adspend) across the media (including adspend on print, radio, television, new media, and outdoor) grew by about 355% from 1999 to 2012. Adspend on television increased from about R2,8bn in 1999 to R16,2bn in 2012, while spend on radio over the same period grew from R916m to R5.2bn. Adspend on the internet was R832m in 2012 from 0 in 1999.

Of particular interest is the change in advertising spending patterns over the period (see figure below) Whereas print media had the biggest share of adspend in 1999 (44% share of total), television now has the largest share. Radio's share has also grown over the period.

It is also important to compare the share of total television adspend of the different broadcasters. While SABC has the largest share of total television adspend, its share has decreased over the period. E.tv obviously had an insignificant share in 1999 given that it had just launched. It is nevertheless interesting to note that the share of television spend for FTA broadcasting (ie for SABC and e.tv collectively) as a whole has decreased over the period given the increased share allocated to subscription services (driven by growth in advertising revenue for DSTV primarily).

It is also important to consider subscription revenue over the period. According to Pricewaterhouse Coopers (PwC), the total subscription revenue for pay-tv in 2012 was R15,2bn – exceeding the total revenue from television adspend.

3.3 Postal services sector

3.3.1 Legislative and policy environment

The 1998 White Paper identified postal services as the most basic and common means by which messages can be communicated and goods delivered. It stated that postal services were a basic link serving the entire population. The postal services also serve as an important medium of communications for business and commerce. Government committed to facilitating the growth and development of the sector and to ensuring the provision of universal and affordable postal services to all South Africans, irrespective of race, gender,

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class, age or geographical location. The overarching goal of the policy framework was to ensure a more accessible, equitable, efficient, and effective postal service.

The objective was to balance the provision of basic universal postal services to disadvantaged rural and urban communities, with the delivery of service capable of meeting the needs of a growing South African economy.

The fundamental policy principles were equal access to a reliable basic letter service regardless of physical location, at a uniform rate of postage and at an affordable price. The White Paper provided for the achievement of universal service by structuring the market into reserved and unreserved markets, and ensuring that SAPO receives a degree of monopoly protection, as it rolls out universal service obligations in the postal sector. These obligations are included in the licence conditions of SAPO. The licence issued in 2012 (effective from 2008) makes provision for a monopoly in a reserved sector, as well as defining universal service obligations by outlining under-serviced areas in schedule 1 of the licence and then addressing roll-out to meet these obligations in schedule 2 of the licence.

All other services, including parcel and express services, and any future services differing from those defined as reserved, are categorised as non-reserved and are subject to competition and market forces. However, these licensees do not have the any licensing obligations.

The White Paper envisaged the corporatisation of the Postbank, which would be wholly owned by Government that could encourage a culture of savings among its target clientele. A three-phased restructuring plan was implemented resulting in the Postbank as an autonomous fully-fledged savings bank, owned by the Post Office. In the interim period, Postbank was to operate as a profit centre, and to continue to be exempt from registering as a bank under the Banks Act. To this end, the Postbank Act was promulgated and is intended to provide the financial services as envisaged in the policy.

3.3.2 Growth and outlook

According to StatsSA, the value of postal and courier activities in the 2009/10 year was R9,1 billion. In the same period, SAPO reported total revenues of R5,5 billion. Using these revenue figures, SAPO has a total market share of 61% of the total postal and courier services.

SAPO was issued with a 25-year licence in 2001 and it is the only licensee operating in the reserved market (defined as delivering any postal items that weigh less than a kilogram). This exclusivity was confirmed in SAPO's amended licence conditions gazetted in 2012. Its monopoly in the reserved areas was confirmed until 2017.

In terms of the unreserved market, ICASA has a total of 300 registered courier services. However, the South African yellow pages shows that there are just over 2 000 listings under 'courier services' in South Africa. It should be noted, however, that this listing does not provide the reader with an accurate picture in relation to which companies are operational or not. However, given the revenue data supplied by Stats South Africa, the rest of the sector is worth R4,5 billion.The SAPO revenue rose from R1,9 billion in 1994 to R5,9 billion in 2012, a 208% increase. This trend is evident from the figure below.

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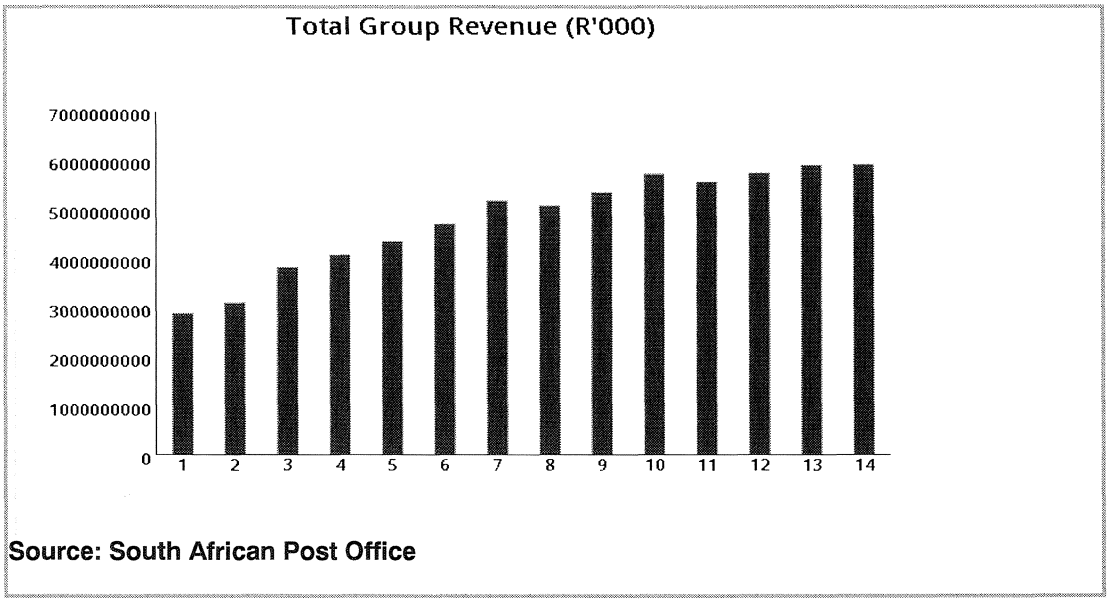

Source: South African Post Office

The Postal Services Act (Act 124 of 1998) mandates the South African Post Office (SAPO) to provide postal services on an exclusive basis to all South Africans. According to SAPO's Annual Report the branch network extends to 2 433 access points. These access points are made up of 1 590 fully-fledged branches as well as 843 retail postal agencies.

The post offices are used to distribute goods, provide financial services and provide access points to a range of government services. SAPO's Annual Report indicates that its customer base stands at 33,7 million adults in the country.

Of the total post office network (including branch network and points of presence), 1 763 access points are located in rural areas, with the balance of 670 in urban areas. It must be noted however, that postal services are provided mainly through agencies in rural areas.

The other mandate of SAPO is to roll-out national addresses to South Africans. In the past five years, SAPO has provided addresses to over 10 million households. More than 70% of these addresses are in rural and peri-urban areas. SAPO has more than 4 million postal boxes, and about half of these are currently in use by individuals and businesses. Of the postal boxes currently in use, about 773 000 are first addresses for private and individual/residential use. The balance is for business use. About 43 000 individual business addresses are in use.

According to the Banking Association of South Africa, 22,5 million people (67%) of adults in South Africa access banking services.

The Postbank is a savings institution that operates as a division of SAPO. It provides banking facilities to people who have previously had limited access to financial services. Currently, the Postbank operates only as a savings bank. It has 6 million customers, or roughly 2,6% of total market share.
The Banking Association of South Africa indicates that there are 17 registered banks in South Africa, of which the four major banks represent 84% of total banking assets. This makes for a highly concentrated industry. The Postbank has total assets under management within SAPO of R10 billion.

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3.4 E-services (including e-commerce)

3.4.1 Legislative and policy environment

The 1999 Green Paper on e-Commerce and the Electronic and Communications and Transactions Act (ECTA) of 2002 highlighted the major areas of legislative and policy interventions in respect of e-commerce, cybercrime and cybersecurity. The ECTA further provided for the development of a three-year national e-strategy covering issues such as e-government services, roles and responsibilities, coordination, monitoring and implementation of the national e-strategy, research and development, as well as international coordination.

The ECTA provides for the building of trust and confidence in network infrastructure to ensure a secure information society. The law enables the authorities to tackle all basic types of cybercrime offences as well as operations and prosecution. The ECTA defines a number of conducts that constitute cybercrime, and establishes several procedures to enhance enforcement of the Act by law enforcement authorities.

E-signature and e-transaction is covered in the ECTA of 2002. This legislation is a solid foundation that governs e-signatures and introduces basic principles, such as 'functional equivalence' of electronic and paper-based signatures. Provisions are based on United Nations Commission on International Trade Law (UNCITRAL) Model Law. The DoC is the accreditation body for e-signature service providers. Two service providers have been licensed: LAWtrust and SAPO.

Online consumer and data protection in South Africa is currently based on the Electronic Communications and Transactions Act (ECTA), the National Credit Act (NCA), the Consumer Protection Act (CPA), and, in the future, the Protection of Personal information Act, (POPI), which was recently signed into law. Provisions in this Act deal with data protection and govern conditions relating to the processing of personal information, based on OECD Guidelines.

In South Africa, as in other countries, copyright is dealt with through both national and international laws and agreements. Both approaches complement each other in order to ensure adequate recognition and protection of the rights of the copyright holders. The main international treaties to which South Africa is a signatory include the Berne Convention (1978), the Trade Related Aspects of Intellectual Property Rights (TRIPS) of the General Agreement of Trade in Services (GATS) (1995), the World Intellectual Property Origination Treaty (WIPO Treaty), and a number of other treaties administered by the WIPO such as the WIPO Performance and Phonograms Treaty. The current South African national legislation is covered in the Copyright Act of 1978 and amendments.

The Department of State Security is finalising the National Cybersecurity Policy in which the issues of the protection of critical databases and critical infrastructure will be addressed. Currently the implementation of critical infrastructure protection is fragmented. Computer Emergency Response Teams (CERTs) and Computer Security Incident Response Team (CSIRT), and Cyber Security Emergency Response Teams (CSERTs) need to be established on a national level. They coordinate activities against cybersecurity threats, and ensure international cooperation. Public CERTs should be complemented with sector CERTS and private sector CERTS (for instance in the banking sector).
Chapter Ten of the ECTA deals with the Domain Name Authority. It provides for the establishment of .zaDNA as a Section 21 company and its overall mandate is to manage and administer the .za namespace. Although the ECTA provides for the appointment of Cyber-inspectors to monitor online content with regard to compliance with national legislation, there are currently no cyber-inspectors appointed by the DOC to check whether cryptography service providers are compliant with the law, or that authentication service

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providers and data controllers, or information officers, comply with the relevant provisions of the ECTA.

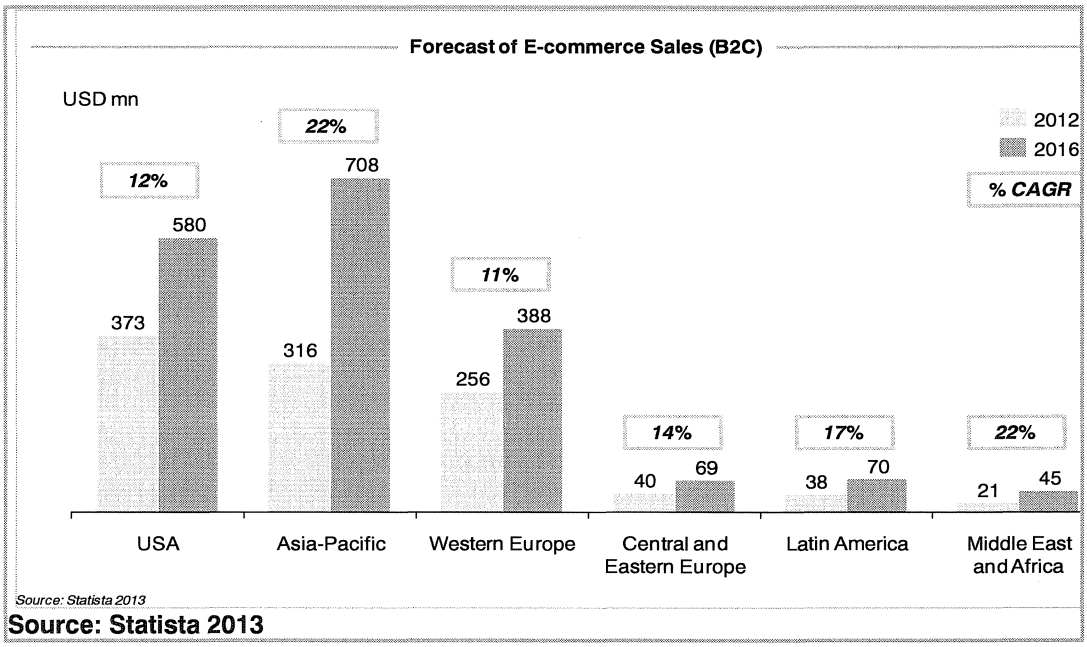
3.4.2 Growth and Outlook of the commerce market

E-commerce in South Africa has grown significantly in the past several years with reports showing that in 2010 alone, R2 billion was spent in online shopping and in 2011 the number was targeted to reach R2.8 billion, a 30% increase.

South Africa is considered a leader in e-Commerce development in Africa. Based on a survey conducted by MasterCard, South Africa takes the lead in terms of the 54% of respondents who say that they usually use the internet for online shopping. This percentage is twice the regional average.

However, in comparison with developed markets such as the UK, USA and South Korea, South Africa has a long way to go in the development of its e-commerce sector. Amongst other factors, South Africa is lagging behind in terms of internet penetration, delivery infrastructure, competitive retail market and credit card usage.

The internet is changing the way business and trade is carried out, by moving it from the physical environment to an electronic one. Rapid increases in internet access and penetration around the world, will enable further developments in the e-commerce arena. The figure below illustrates this point.



Source: Statista 2013

Building trust and confidence in the ICT infrastructure is pivotal for an emerging online marketplace. The promotion of trust and confidence depends on a number of factors that include the application of information security standards, definition of cybersecurity organisations and education of society as a whole, from internet professionals to ordinary internet users.

A cybercrime prevention framework, which tackles two types of cybercrime offences is vital to deal with cybersecurity threats and attacks. The framework must address both the new forms of offences which include illegal access, illegal interception, misuse of devices and the old forms of offences, which include computer-related forgery, fraud, child pornography etc.

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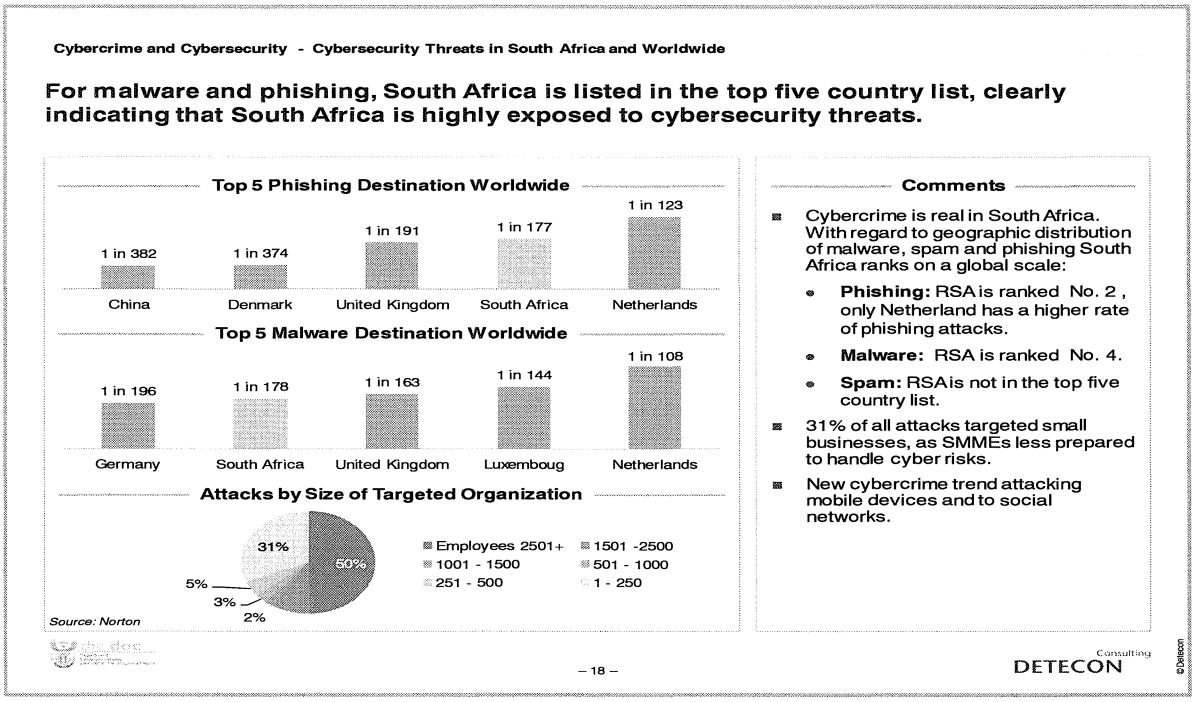
South Africa is listed in the top-five country list, clearly indicating that cybercrime is already a serious threat. For phishing, South Africa is number two; only Netherlands has a higher rate of phishing attacks. For malware, South Africa is number four. For spam, South Africa is not in the top five country list. The figures below illustrate this point.



E-government activities and service delivery

According to the UN e-Government Survey of 2012 which included 193 countries, all countries in Southern Africa fell behind in overall ranking due to continued lower levels of availability of ICT infrastructure. The table below illustrates this point.

Rank	Country	World e-Gov ranking 2012	World e-Gov ranking 2010
1.	Seychelles	84	104
2.	Mauritius	93	77
3.	South Africa	101	97
4.	Tunisia	103	66
5.	Egypt	107	86
6.	Cape Verde	118	108
7.	Kenya	119	124
8.	Morocco	120	126
9.	Botswana	121	117
10.	Namibia	123	125

The first milestone in e-Government in South Africa, following the promulgation of the ECTA, was the adoption of the Batho Pele principles, which is a cornerstone of a framework for equal access to effective public service delivery. The Presidential Commission on the Transformation of the Public Sector paved the way for the establishment of the State Information Technology Agency (SITA). The DPSA developed the "The Digital Future" report which envisaged e-government as a key enabler of government modernisation. The e-Government pillars as envisaged in the DPSA report are demonstrated below.

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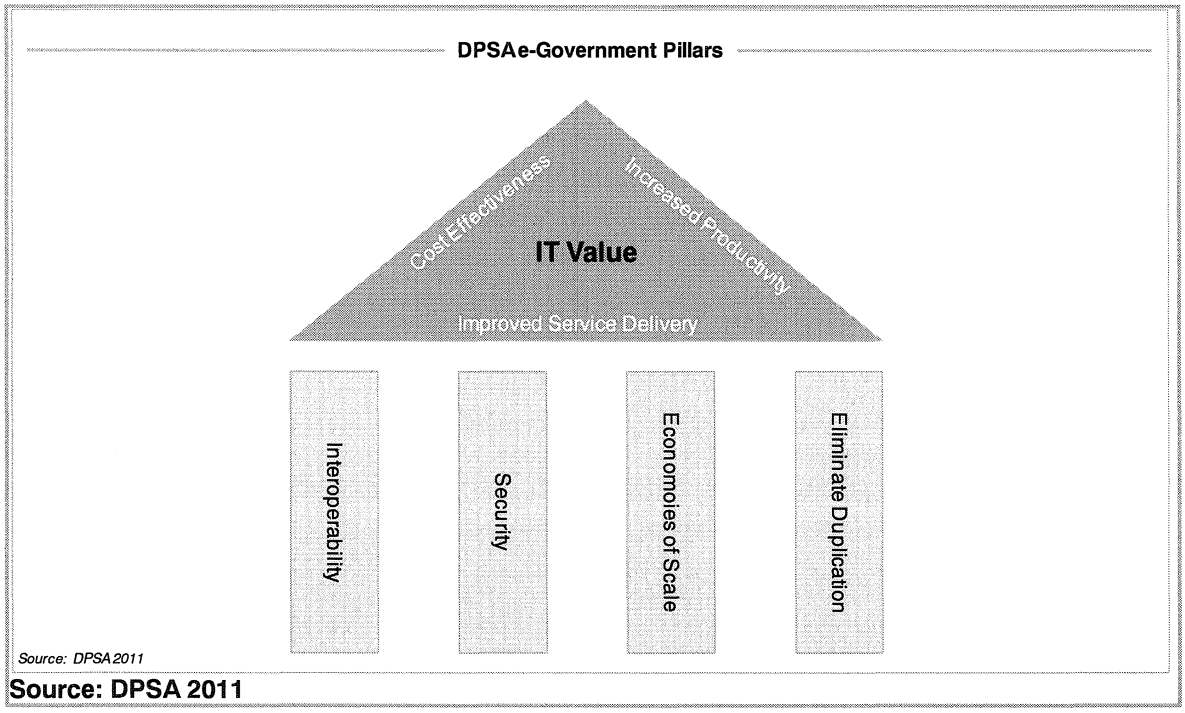

Source: DPSA 2011

The South African government has established statutory bodies to co-ordinate implementation of e-Government projects. Amongst these are the State Information Technology Agency (SITA) and Government Information Technology Officers Council (GITO Council). SITA is responsible for the acquisition, installation, implementation, and maintenance of IT in the public sector. On the other hand, the GITO Council, which consists of national and provincial IT officers, is responsible for consolidating and coordinating IT initiatives in government, including e-Government, to facilitate service delivery.

Regulatory frameworks have also been developed to direct the implementation of e-Government initiatives. The White Papers on Transforming Public Service Delivery (WPTPSD), Promotion of Access to Information Act, Electronic Communication and Transaction Act, Electronic Government Policy Framework, Minimum Information Security Standards (MISS), Minimum Interoperability Standards (MIOS) and Policy on Free and Open Software (FOSS) are noteworthy.

Collectively, the frameworks promote transparency, accountability, good governance, information security, and freedom in the acquisition and use of IT.

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Chapter 4: Postal Infrastructure Services and Content

4.1 Introduction

The postal services sector is an important component of the economic sector in South Africa contributing approximately 3,16% to GDP. This includes the courier and express parcel market. The sector enables individuals and businesses economically and plays an important role in development.

The letter post is declining both in terms of volume as well as a percentage of total revenue generated in the sector. The declining trend in letter mail volumes is ascribed to the global recession and electronic substitution effects.

Despite this trend, the need for a postal service is unlikely to disappear. While efforts are being made to bridge the wide digital divide in South Africa, postal services remain important for people and communities who do not have ready access to e-mail or the internet, for example, when applying for jobs or keeping in touch with family. The postal network also serves as a conduit for government to communicate with communities in the most rural parts of the country, as well as communities without access to electronic media.

Besides, almost every business relies on the postal, courier and express parcel market for daily operations. From a social perspective, a basic postal service is the right of all citizens and is essential to the social and economic development of South Africa. Almost every individual is dependent on postal services and almost every business's value chain intersects with the postal service's value chain.

There is a need to fulfil the social obligations of the sector while still ensuring that it remains commercially viable. The social objective is characterised by universal service obligations and is driven by affordability, equity and keeping costs down, while the commercial objective is driven by profit maximisation, efficiency, and quality of service imperatives.

4.2 Policy and regulatory environment

The Postal Services Act No. 124 of 1998 (the Postal Services Act), provides for an operator to be invited by the Minister to provide services within the reserved area. Currently SAPO holds a 25-year licence and is the only operator licensed to provide services within the reserved area. Operators wanting to operate within the unreserved area must apply for a registration certificate with the regulator. The registration is valid for one year from the date of issue and costs a non-refundable fee of R500. SAPO is also required to register in order to provide unreserved postal services.

The Act provides for the Regulator to suspend or cancel any licence or registration certificate issued, if the holder has contravened the terms and conditions of the licence or certificate or the provisions of the Act.

ICASA is expected to monitor not only SAPO's compliance with licence terms and conditions as well as the law, but that of all postal operators serving the unreserved market. However, due to capacity constraints, over the years ICASA has relied on compliance reports submitted by SAPO and has performed limited inspections.

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4.3 Overview of postal services and products

According to the South African Standard Industrial Classification (SIC) system an industry is made up of enterprises engaged in the same or similar kinds of economic activity. In terms of this classification, postal activities include the following:

- pick-up, sorting, transport and delivery (domestic or international) of letter-post and mail parcels and packages by postal services operating under universal service obligation.
- collection of letter-mail and parcels from public letter boxes or from post offices, and
- distribution and delivery of mail and parcels

Courier activities on the other hand include:

- pick-up, sorting, transport and delivery (domestic or international) of letter-post and mail parcels and packages by firms not operating under a universal service obligation
- distribution and delivery of mail and parcels

The Postal Services Act defines a postal service as including the following:

- the provision of a reserved postal service or an unreserved postal service as contemplated in Schedule 1 and Schedule 2 of the Act, respectively.
- the issuing of postage stamps
- the provision of roadside collection and address boxes

As part of its extended services SAPO also provides financial services through the provision of a savings bank. This has been provided through the Postbank, and has allowed SAPO to further diversify its income stream away from mail revenue.

4.4 Market structure and competition

The following section analyses the various ways in which the postal services sector can be segmented.

4.4.1 Reserved and unreserved market segments

The unreserved market includes the provision of all courier services together with any postal service that falls outside of the reserved area. According to ICASA's database, there were just under 300 courier operators registered in 2012. While there may be several hundred postal and courier operators in South Africa, the sector is dominated by approximately 20 firms, accounting for 98% of the industry's revenue. The five largest firms account for 78% of the total revenue in the sector, indicating a high level of concentration.

SAPO's exclusivity renders it the most dominant operator in the sector, accounting for about 60% of market share in terms of revenues from postal and courier services in 2012.

Despite the legislative delineation of the market into reserved and unreserved segments, there are unlicensed operators encroaching on the reserved services market. Despite being illegal, this practice amounts to unfair competition to SAPO,given that operators in the unreserved market segment do not have universal service obligations. For this reason, the capacity of the Regulator to monitor compliance in the sector cannot be over-emphasised.

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4.4.2 Communications and distribution market segments

The distribution market includes the transport and delivery of goods to a specified address. Postal delivery is a specialised sector of the distribution market, especially the distribution of individual parcels.

According to the South African Express Parcel Association (SAEPA), a courier service is any company that transports/ships time-definite parcels. The amount of time required to deliver couriered parcels varies from one day to three days. Therefore SAEPA sees courier as any service that delivers items that have a maximum of three days for delivery and are more than 1kg in weight.

4.4.3 The letter and parcel market segments

The parcel distribution market caters for all material falling outside the definition of a letter. Services are offered by companies on high-volume and localised routes which demonstrate the practice of "cherry-picking".

4.4.4 Individual and business customer segments

Customers in the postal services sector are segmented according to individual consumers and business consumers living or operating in the rural or urban areas of South Africa. Urban areas are characterised by heavy postal traffic, whereas rural areas are characterised by light postal traffic.

4.4.5 The Postbank

The Postbank was established in 1910 as a savings bank. It may not provide loans or overdraft facilities to its customers. It is, however, a member of the multinational financial services organisation VISA, and participates directly in the National Payments System (PASA). In its 2012 Annual Report, SAPO reported that deposits grew by 6.9% in the year, bringing the total savings under management by Postbank to R4 258 million. As at 31 December, 2012, there was an industry total of R151 816 million in 'savings deposits' of which the Postbank deposits represent 2,6%. However, with over six million customers, the Postbank ranks in the top five banks and has a formidable customer base to launch new services and products in the lending, borrowing and investment sectors and thus provide much needed competition in the sector.

The Postbank is currently undergoing the necessary legal and regulatory processes to become a fully-fledged bank.

4.5 Postal Universal Service and Access

4.5.1 The postal address system

According to the Universal Postal Union (UPU), an address is a basic human right. To this end member countries adopted a White Paper during the 2012 Doha Plenipotentiary Congress of the UPU, at the heart of which is a call for member countries to commit to the development of address infrastructure and the provision of an address to everyone.

Notwithstanding the declining mail volumes, SAPO has managed to roll out millions of addresses over the recent past. The target of providing addresses to first-time address owners supports SAPO's mandate of ensuring the right of every citizen to be connected socially and commercially, at an affordable cost. In the 2012 Annual Report, SAPO committed to rolling out an additional 3,6 million addresses between 2011-2013. The

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amended licence sets a target of 2,3 million new addresses between the years 2012-2014. In the financial year that ended on 31 March, 2012, 1199 273 addresses were rolled out to first-time address owners against a target of 1195 690.

The address system is important for a number of reasons, including:

- location finding for ambulance, fire, police and rescue services
- geographical analysis and information about a city and its people, for instance as conducted in the census
- home and location addresses for easy communication and delivery
- business and tax applications
- provision of municipal services
- maintenance and repair of water, electricity, sewerage and telephone systems
- facilitation of law enforcement

4.6 Postal services in the digital age

The flow of mail has changed from a two-way communication process, to a one-way flow. The mail business is increasingly moving towards 'pull' effects, that is, a customer or business requests an item, rather than 'push' effects where a business or friend sends a letter. The postal market can be viewed as moving away from social mail services, and towards business and corporate mail, albeit with consumers on the receiving end of those transactions. SAPO is uniquely placed to leverage on the vast network of postal outlets, fleet of delivery vehicles and telecommunications infrastructure to offer integrated services such as telecommunications, financial services and logistics.

SAPO's broadband infrastructure, depending on architecture and capacity, could be leveraged to offer broadband services in rural and under-serviced areas, or to provide Wi-Fi zones within a specified radius of the retail footprint.

4.7 Postal reform trends

The postal sector in most OECD countries remains dominated by a state-owned vertically-integrated monopoly, still largely protected from the forces of competition.

Globally there is a trend towards greater corporatisation, commercialisation or privatisation prior to liberalisation of the postal market. The general intention is to create a more efficient governance structure for the postal operator particularly when it must compete with private operators in a liberalised market.

The following are some of the conclusions and lessons from international postal reform:

- Many countries have successfully undertaken reform;
- Where postal monopolies have been eliminated this has led to commercial flexibility;
- Reforms have frequently involved changes in the universal service obligation;
- Many governments have removed universal service delivery from the postal service itself and shifted it to another entity, such as the regulator;
- The experience in countries that have eliminated their monopolies, such as New Zealand and Sweden, suggests that universal service can still be maintained at affordable prices without a delivery monopoly;.
- Many reforms have included a mechanism for making the cost of providing universal service explicit such as a universal service fund; and
- Postal reform in some countries has included changes from government to private ownership, as in Germany and Holland.

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Policy questions:

1. Is the distinction between reserved and unreserved services a clear one in practice? Should this distinction be maintained into the future? If so, is the scope of the monopoly broad enough to fund universal service obligations?
2. How can SAPO's infrastructure be leveraged to rollout government services?
3. Should the Postbank continue to be a subsidiary of SAPO or should it be a stand-alone fully-fledged independent banking institution?
4. How do we ensure the right of every citizen to an address? Should government continue subsidising SAPO in order to fund universal service?
5. What role should operators in the unreserved segment of the market play insofar as universal service is concerned?
6. What role can SAPO play in the roll-out of broadband?

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Chapter 5: Enabling environment for electronic Communications

5.1 Introduction

The past decade has seen an unprecedented rise in the number of people connected to voice, video and internet services globally. The International Telecommunication Union estimates that 5,2 billion people will be connected globally using mobile devices by 2020. The strong evidence of linkages between investment in Information Communications Technologies, economic growth, improvements in the economy and other social indicators is now widely accepted. However, such development objectives can be achieved only within an enabling environment, which inherently comprises the infrastructure and services of electronic communications (previously known as telecommunications). This Chapter thus examines the key issues related to the creation of a sustainable enabling environment for the deployment, uptake, and adoption of ICTs in the South African environment. Its focus therefore is on the key issues in the policy environment matters which relate to infrastructure issues. This includes: policy and regulation framework; economic regulation; specific technology matters; and Radio Frequency Spectrum.

In the current era, one of the most pressing issues related to the creation of an enabling environment relates to broadband policy. This is receiving attention world-wide, and according to the ITU, 134 countries today have comprehensive plans to introduce broadband and Information Communications Technologies as part of their developmental plans. South Africa is also in the process of finalizing its own Broadband Policy, Strategy and Plan – "South Africa Connect" - that sets targets and programmes for the widest distribution and use of ICTs in line with the vision contained in the National Development Plan which seeks to ensure the creation of a "seamless information infrastructure, which will be universally available and accessible, and will meet the needs of individuals, business and the public sector, providing access to the creation and consumption of a wide range of converged services required for effective economic and social participation – at a cost and quality at least equal to South Africa's main economic peers and competitors" (NDP: pg170).

5.2 Regulatory Environment

5.2.1 Challenges

In spite of the positive growth achieved since the adoption of the Telecommunications White Paper, research conducted during the current policy review process identifies a number of unintended consequences of the policies pursued over the past 15 years. The electronic communications sector is not as competitive as it should be. The pro-competition regime envisaged in the legislation has not been fully implemented and consequently has not borne the intended outcomes. The fixed and mobile sectors are dominated by entrenched operators with significant market power who are able to influence market developments significantly. The regulatory environment is relatively weak with an under resourced and under capacitated regulator. A review of the institutional roles and responsibilities of the different players involved in policy and regulatory settings indicate a lack of common purpose and interaction to the degree required to drive policy. The lack of interaction is at times institutionalised. The question now is how all institutions dealing with public policy can better cooperate to deliver on the key policy and legislative mandates.

5.2.2 Current legislative framework

The Electronic Communications Act of 2005 provides a regulatory framework for licensees in the electronic communications sector. The Electronic Communications Act of 2005 was intended to provide a legal framework to allow for the opening up of the sector to new

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entrants, and consequently for the regulation of competition, interconnection and facility leasing arrangements.

5.2.3 Licensing

The Independent Communications Authority (ICASA) may grant electronic communications network licences and electronic communications services licences. The licences may be granted on an individual or class basis.

Individual licences can be granted for networks, as well as services at provincial and national level to licensees operating for commercial purposes. Individual licences are also issued for networks and services for entities in which a public entity owns interest greater than 25% of the share capital. The Independent Communications Authority may only grant individual licences in accordance with a directive issued in terms of Ministerial directives.

Class licences are issued upon registration for networks and services of a district municipality or those of municipal scope operated for commercial purpose.

This licensing regime came into effect after the enactment of the Electronic Communications Act of 2005 which mandated all licensees to convert their old licences to fit into the horizontal licensing order that was contained in the legislation.

5.2.4 Competition issues

2005 is regarded as the watershed year for the intensification of competition brought about by the Electronic Communications Act (ECA). The Electronic Communications Act intended to promote competition within the ICT sector.

The current phase of telecom reforms can be described as one where broadband services are intensified. This is aimed at achieving the National Development Plan's vision. The success of the Broadband Policy and the meeting of its targets will be dependent, amongst other things, on the performance of the electronic communications market. Provisions for competition and the actual competition will be vital in the affordability and the extent of use of broadband services.

In the electronic communications sector, the debates about the modes of competition centre on the comparison and the determination of the efficacies of facilities-based competition against services-based competition.

The advocates of Facilities-Based Competition claim that in the long term, market equilibrium will be realised when players in the market build their own facilities.

On the other hand the advocates of Service Based Competition argue that available facilities, usually of the previous monopolies such as Telkom, should be shared. They argue that competition should be downstream, mainly in the retail market as opposed to the wholesale market.

These debates are playing themselves out in discussions about local loop unbundling, regulatory forbearance in mandating access to new broadband infrastructure, the sharing of broadband infrastructure, and wholesale or retail price regulations.

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5.2.4.1 Regulation issues affecting competition

The Independent Communications Authority is currently able to impose regulations affecting the following activities and issues:

5.2.4.1.1 Interconnection

The Authority prescribes regulations to facilitate the conclusion of interconnection agreements that allow different operators to connect their networks. The regulations and interconnection principles contain model terms and conditions including timeframes and procedures for agreements. Subject to these regulations any person licensed can, on request, interconnect to any person providing a service in terms of the Electronic Communications Act. Interconnection agreements must be filed with the regulator. In addition, ICASA regulates carrier pre-selection that enables subscribers of one service to be able to switch services and use any other provider.

The Regulator has developed regulations consistent with the provisions of the Act. Amongst other things, the regulations deal with the requirement on operators to publish interconnection offers, including the location of interconnect facilities, capacity of the facilities, and prices charged. This is to ensure that everyone knows of the interconnection opportunities. The regulations are geared towards transparency in the interconnection engagements of different competitors.

The current regulations do not deal with the prices charged and the terms of financial arrangements between parties. Parties are only required to notify the Authority and file the agreements, without the Authority dealing with the terms of the agreements. The bigger operators still have price-setting potential over the smaller competitors who seek to interconnect as the only way of survival.

While interconnection regulations are important and have the potential to level the playing fields, they are constrained by what the regulator can or cannot do to regulate the financial arrangements between the parties entering into connection agreements. Interconnection regulations cannot be enough without the full implementation of the competition sections of the Electronic Communications Act, which can impose pro-competitive remedies in case of unfair discrimination or abuse of dominance.

5.2.4.1.2 Electronic Communications Facilities Leasing

The Authority prescribes regulations to facilitate the conclusion of facilities leasing agreements between different operators. The regulations cover both the essential and basic facilities. The regulations disallow any preferential or exclusive arrangements and provides for measures to deal with undue delays in entering into facilities leasing agreements. The facilities leasing regulations may exempt operators without Significant Market Power from the requirement to enter into facility leasing agreements. For purposes of promoting new investments in broadband fibre networks, the Authority may exempt even operators with Significant Market Power (SMP) from the requirements to lease fibre loops and sub-loops serving residential premises, if they meet certain conditions. These conditions extend exemptions to facilities that were built after the Act came into effect, facilities that serve areas that were not served prior to construction, or are in an area where the new facilities are constructed to compete with an incumbent operator. The Authority may prescribe regulations for wholesale rates for facilities leasing.

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The issue of local loop unbundling and the list of essential facilities were raised by a number of submissions in the FramingPaper responses. The submissions raised the need for a more thorough implementation of the current legislation. Some complained that the potential lessee enters into discussions without any insight into the networks they lease and therefore the need for the dominant player to be held accountable for Quality of Service by way of a measurable Service Level Agreement. Some pointed to the fact that there are inordinate and unnecessary delays in entering into leases and that therefore ICASA should determine the reasonableness of the requests to lease on an urgent basis.

The law requires the Authority to prescribe a list of essential facilities that must be subject to facility leasing regulations. Yet the law also limits the definition of essential facilities to those that cannot be duplicated for economic, environmental and technical reasons. The definition places a regulatory burden on the regulator to determine in an objective manner what cannot be economically, environmentally and technically duplicated. As an example, fixed local loops can now be substituted with wireless loops and can therefore in theory be excluded from the list of essential facilities. The law also focuses on copper lines as it exempts broadband infrastructure of operators with SMP so long as the network was built after the Electronic Communications Act of 2005 came into effect.

The promotion of facilities leasing should be balanced against the desire for different operators to rollout networks so that there is also effective competition in the infrastructure provision layer. The impact of local loop unbundling as part of facilities leasing has to be weighed in relation to the incentives for the owners of the loop to invest further in fibre and other technologies that make broadband to the home possible. Similarly, facilities leasing and local loop unbundling must be weighed against the desire to encourage the electronic communications network licensees to invest in roll-out of fibre to residential areas and offices.

The South African reality is that the only areas with extensive network coverage are in urban areas. The revenues used to construct and maintain networks and local loops in rural areas is dependent on profitable facilities in urban areas. A facilities leasing framework that does not take the reality of cross-subsidisation into account is most likely to affect the investments that must be made to extend networks and services to rural areas.

5.2.4.1.3 Market Concentration and the Significant Market Power (SMP)

The Authority is required to prescribe regulations defining the markets and market segments, as well as define what constitutes acts that prevent or lessen competition. The Authority is also required to periodically review markets and market segments to determine if effective competition exists in any given market or segment. The Authority has powers to impose pro-competition conditions, including separation of accounts, price controls and prohibitions against discriminatory behaviour.

Notwithstanding attempts to improve competition, the South African communications market is one of the most concentrated in the world taking fourth position after Mexico, Norway and New Zealand. The fixed market is still dominated by Telkom. Since its introduction into the market, Neotel is yet to make substantial inroads to change the market structure in a significant way. While the introduction of Cell-C in 2002 was aimed at opening up the mobile market, the operators who were established at the inception of the mobile market still dominate with significant market power.

The assumed SMP regulation model that underpins the above-mentioned definitions and mechanisms is the Static Efficiency Model (SEM), which involves trying to achieve efficient production of existing services by implementing cost-oriented and non-excessive prices, minimising and ensuring fair network access and interconnection conditions and the

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absence of predatory pricing. In South Africa, SMP lies with operators who derive their power from the historic oligopolistic nature of the market. Therefore confrontations about SMP will always be with similar operators.
Long term and high level policy interventions must be consistently applied to ensure that Significant Market Power does not hinder the opening of the market and the success of new entrants through abusing their market power and entrenched roles.

5.2.4.1.4 Numbering

The Authority is required to make regulations for a numbering plan and for efficient use and allocations of numbers. The regulations must provide for number portability based on a national number portability database. The numbering plan cannot be discriminatory.

5.2.4.1.5 Spectrum

The current legislative environment promotes the efficient use of the scarce radio frequency spectrum and its allocation to many different users in various communications fields.

There are a number of ways in which the Regulatory Authority authorizes access to the spectrum by the different operators. These could include a “beauty contest” competitive bidding process based on best use, lottery allocation involving random selection, or an auction in which the highest bidder wins. ICASA favours a technology-neutral allocation on the grounds that, among others, an efficient technology should not be penalized. In some other countries, spectrum is assigned on the basis of need, although eligibility criteria may be set. Blocks of spectrum may be assigned to eligible licensees on a first-come- first served basis. Further requests can be entertained based on demand.

5.2.5 Spectrum Pricing

In general, the role of pricing in a market is to guide the users in making decisions to use the spectrum resources more efficiently. It follows that the approach to pricing should reflect the scarcity, besides incentivising efficiency in use. It is therefore important to decide upon the objectives that the pricing policy should achieve.

5.2.5.1 Management of spectrum

The management of the radio spectrum is a combination of administrative, regulatory and technical procedures to ensure the efficient operation of radio communication equipment and services. Simply stated, spectrum management is the overall process of regulating and administering access to and use of the radio frequency spectrum. A primary goal of spectrum management is to ensure optimal use of the radio spectrum, in social, economic and technical terms. The RF spectrum is a national resource, much like water, land, gas and minerals. Unlike these, however, RF is reusable. The purpose of spectrum management is to mitigate radio spectrum pollution and maximize the benefits of usable radio spectrum.

The International Telecommunication Union (ITU) constitution recognizes “the sovereign right of each State to regulate its telecommunication”. Effective spectrum management requires regulation at national, regional and global levels.

Because access to the radio frequency spectrum is vital to meet national political, cultural, social and economic objectives, it is in the national interest for nations to participate in international cooperative processes: to be good international citizens.

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5.2.5.2 Spectrum for National Security

Every national security structure needs to have permanent access to radio frequencies to meet vital security tasks. This is based on strategies, doctrines and different policies that national security structures adhere to.
The nature of high mobility of security operations and their logistics support requires wide use, with high-speed capacities of voice, data and image communications, surveillance, reconnaissance and reporting systems playing a vital role in the command and control system.

Many of these requirements can only be met with the use of radio systems. The equipment of national security communications adds and multiplies the power of forces. That is why the use of radio frequencies' spectrum is evaluated as one of the preliminary conditions for successful national security operations.

Those parts of government that use the spectrum for public purposes have complained that they are treated like commercial operators due to the manner in which they are charged for the use of the spectrum. They complain that government has a Constitutional mandate to provide the services they provide and therefore their use of the spectrum should be considered within this context.

5.2.5.3 Will Spectrum Shortage be a Driver for a Wholesale Model?

Licence shortages and a lack of available spectrum are two significant factors driving operators to find new ways of sharing networks based on cooperation with a third party. In many markets, licences for new technologies, such as LTE, are being launched. To use new spectrum in a way that is technically efficient, competitive, and of maximum consumer benefit, especially when it comes to LTE on the sought-after 800 and 700 MHz bands, no more than three operators tend to be granted the rights to use new bands to offer competitive services. This leaves some without the possibility of differentiating themselves from new services. Those excluded from the market in these situations are then forced to launch new technologies through shared networks.

In markets such as Western Europe and India, regulators today tend to take a liberal view of the sharing of newly issued licences, stimulating increased competition – and thus facilitating the wholesale approach.

To drive operational efficiency and obtain other benefits beyond cost savings, most of today's operators use some level of outsourcing. In the next step of the industrialization process the wholesale model operations and assets are shared among multiple players through a third party, resulting in greater savings and further increasing efficiencies.

The Department of Communications earlier indicated the desire to establish a Spectrum Management Agency. The idea of a Spectrum Management Agency emanates from the Broadcasting White Paper. A review on this issue is required.

5.3 Overview of the Market

5.3.1 Fixed- Line

There are two operators licensed to provide fixed line network and services. Four operators provide mobile communications services. Telkom is the incumbent that has undergone some restructuring in the form of a 30% buy-out of its share and listing in the Johannesburg and New York Exchanges. Neotel is the second national operator, licensed in 2001 although it

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only started operations in 2006. Infraco, a wholly state-owned company, was licensed to provide wholesale services.

The biggest municipalities have acquired class licences and deployed infrastructure for self-provision. Johannesburg, Cape Town and Durban started the trend that is now popular with other municipalities.
There are a number of other infrastructure companies that have started operations providing fibre optic infrastructure to licensed operators.

5.3.2 Fixed Market Dynamics

According to a BMI-T study commissioned for the fixed-market sector, South Africa is characterised by stagnation. There has been a decline in fixed connections as more and more customers substitute fixed services for mobile services. Fixed-line penetration grew from 9,2% in 1993 to 10,7% in 1998, but since then it has steadily declined to 7,9% in 2012. This decline is expected to continue as the uptake of fixed lines decreases. The fixed-line broadband market show signs of stagnation. Research also indicates that the cost for broadband packages is higher than the cost of mobile broadband. There are less than a million ADSL subscribers. The revenues of the fixed-line sector also indicate stagnation.

At an infrastructure level, the gap remains in local access networks. International connectivity is provided by three submarine cables. The national long distance network covers 50 000 kilometres and there are significant metro-area networks. It is significant that today 84% of South Africans reside within 10 kilometres of a fibre node. The available infrastructure can be leveraged to connect all South Africans to modern communications infrastructure and services.The regulator has consistently dealt with the wholesale side of the cost to communicate.

The deployment of fixed broadband infrastructure to close the access gap will require significant investments in the fixed-line environment. Regulatory certainty is necessary to draw the level of investments required.

5.3.3 Mobile

There are four operators in the mobile market. Vodacom and MTN were licensed in the early 90s as new entrants in the then state monopoly environment. Cell C was licensed in 2001 as part of the introduction of new players. Telkom Mobile came about after the sale of Telkom shares in Vodacom.

In addition to the four licensed operators, Virgin Mobile started as a Mobile Virtual Network Operator in 2006.

5.3.3.1 Mobile Dynamics

The Mobile sector has shown consistent growth over the past 10 years. According to BMI-T report of 2013, the mobile sector has achieved 136% penetration and is well poised to play a much more significant role in providing mobile broadband services to a majority of South Africans. Research indicates that this is a global phenomenon as mobile technologies mature to offer services that rival fixed-line services.

Some operators have complained about the roaming rates that are imposed on new entrants if they want to use the infrastructure of established operators.

Research indicates that the price South Africans pay for services are high, compared with other markets. The Mobile Termination Rates are also high by international standards even

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after ICASA has forced the operators to lower their termination rates through a glide path to 40c for established SMP players and 44c for the smaller players. ICASA has recently announced intentions to regulate lower termination rates.

The practice of setting on-net and off-net prices has come into focus as the discussions on the competitiveness of the mobile market unfold. The mobile operators charge differently for calls generated and terminated within their networks as opposed to calls generated within their networks and terminated in other networks. This practice, while beneficial to the subscribers who pay reduced tariffs for the calls, has the potential of locking in subscribers to particular networks and therefore affecting competition, more so if on-net call rates are even lower than the termination rates.

5.3.4 Services and barriers to entry

5.3.4.1 Consumer protection regarding wireless services

There have been a number of stories in the media about subscribers falling victim to some service providers' gimmicks to make them take up subscriptions without their expressed consent. In some cases it was reported that a service provider got people to accept subscriptions and then began debiting them for services that they were not aware, were subscription services. The service provider would only reimburse the victims once they acted to stop the service.

Despite the existence of WASPA (Wireless Application Service Providers Association), an umbrella body that regulates the service providers in terms of a voluntary code of conduct, incidents such as theseare on the increase. This raises the issue of how subscribers can use theregulatory structures to protect themselves. How can ICASA cooperate with WASPA in order to coordinate efforts to protect consumers from scams?

5.4 Digital Age

5.4.1 Major Emerging Issues

The electronic communications environment, like other market segments of the communications sector, is subject to technological changes due to the convergence that has enabled different services to be delivered using the same infrastructure and to be received by the same devices. The disruptive and beneficiary effects of this convergence are discussed in detail in the various sections of this document. Suffice it to indicate that the policy and regulatory approaches must now be reviewed to accommodate the changes that have occurred in order to provide regulatory certainty and a market structure that will allow for innovation and introduction of new services. In summary, the evolution of the electronic communications sector will be influenced by several factors:

5.4.1.1 Shift to IP-based technologies

The shift to IP-based technologies has two major implications for the market structure and competition in the electronic communications sector. The IP-based technologies make it possible to distribute many applications over a single network. In the IP-based environment there is no longer any need to build distinct and separate networks for voice, data,audio and video. This significantly decreases costs associated with network roll-out, and network operations.

On the application side, the IP-based technologies impact positively in that they remove the need for specialised networks for application providers. New service providers are able to enter the market or create a new market by connecting to any available IP-based network. It

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is therefore possible to expand service delivery and competition with appropriate policies and regulations.

The shift to IP-based technologies present a major challenge to the current regulatory structure that still distinguishes between electronic communications network operators based on the kind of platform they own. As an example, some operators are licensed as electronic communications operators, whereas others are licensed as broadcasters. In theory, the electronic communications licensees could offer any type of service and data, but the current legislation requires the holding of a broadcasting licence to offer broadcasting services. The current provisions do not take into account the inherent capabilities of the IP-based network to transmit any kind of data to any device that can receive it.

The exclusion of content services in the definition of electronic communications services needs to be considered, as the concept of content services has not been defined anywhere in current legislation.The other challenges associated with the current definitions are that they are country specific in an environment in which the internet is a global communications network of networks. The definitions imposed on South African services with regard to differentiation of services are inherently not possible in the internet world. Anyone anywhere in the world can potentially provide broadcasting services using the electronic communications networks for reception in South Africa. This raises the question of what to regulate and why there is a need for regulation.

5.4.1.2 Deployment of high capacity and high speed fibre networks and broadband

The roll-out of fibre optical networks has revolutionised the transmission and use of electronic communications because of the increase in the amount of information that can now be transmitted. Other benefits have included an improvement in the quality of the information that is delivered, the speed of delivery and amount that can be delivered. The routing of packets on IP networks has reduced the cost of transmitting data over long distances, making for tangible reductions in the costs to communicate. The development of high capacity and high speed networks has resulted in the deployment of ICT as an enabler across all industries.

How can such high capacity and high speed networks be made available to all South Africans? Research indicates that there are significant gaps in the availability of high capacity and high speed networks in rural areas. The definition of universal services currently refers only to basic voice services.

The chapter on institutional arrangements and the review of the role of government identifies the need for a national plan to use the modern communication technologies to connect South Africans seamlessly wherever they are. The draft Broadband Policy will outline various targets to be achieved in connecting schools, hospitals and health facilities, government offices, etc. The roll-out of physical infrastructure is one part of the effort to deploy broadband services. As the Draft Policy acknowledges, demand side measures must be undertaken to ensure widespread usage of the deployed infrastructure. These demand-side measures will also entail the provision of on-line e-government services.

The current communications framework does not provide for the definition of e-government services and regulatory provisions that should govern it. Other countries provide for a framework to define e-government and other information society services that are essential for interacting and receiving governmental services. Issues of trust and security will also need to be addressed so as to ensure legal certainty.

Electronic communications network operators agree that what costs the most, and, is a cause of delays in the roll-out of electronic communications networks is the civil works that

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involves negotiations with individual municipalities and state agencies for way-leaves and rights of way. It is estimated that civil works account for about 80% of the cost of constructing the networks. In addition, operators have to contend with environmental impact assessment studies and lengthy approval processes involving public participation. The current legislation provides for rapid deployment measures, which are often ignored by various municipalities who demand adherence to their own bylaws. The roll-out of national high speed, high capacity networks require fast-tracked and streamlined network deployment measures that are respected by all municipal authorities. Municipal bylaws must be aligned with the rapid network deployment measures.

5.4.1.3 Wireless technologies

The deployment of mobile wireless technologies is perhaps the most significant game-changer in the electronic communications sector. Over the past decade the number of people using mobile wireless technologies has surpassed those connected through fixed-line. The wireless technologies have matured to challenge the fixed-line environment in the delivery of voice, data, audio and video. The amounts and speeds of transmitted data are expected to increase through the use of high demand spectrum, making the wireless mobile environment the focal point in the development of the broadband market.

5.4.1.4 Open access regimes

There are policy and regulatory approaches that can facilitate or hinder the uptake and use of these technologies to ensure reliable, quality and affordable infrastructure and services. Government's attempts to supply infrastructure directly have been expensive and not contributed adequately to acheiving universal access objectives.However, public investment in state owned networks over decades has produced a considerable national asset available for broadband deployment.

The private sector in South Africa has also made significant investments in broadband networks. Together these go a long way to meeting South Africa's backbone requirements but significant deficit remains, particularly in the last-mile access networks. The high levels of investment required to build broadband networks, together with the dynamic legal, institutional and human resource requirements to give them effect, have challenged countries around the world. What is clear is that neither the state nor the private sector on their own can provide solutions. Emerging success stories from around the world derive from various public-private initiatives where the relative powers and resources of both public and private sectors are integrated to drive broadband penetration.

There is also evidence that indicates that a predictable and technology neutral competitive environment premised on open access principles can deliver better results. The Broadband Policy, advances arguments for open access principles that will enable competition at infrastructure and service levels while reducing infrastructure duplication and restrictive access to networks by competitors.

Such an open access environment will require sustained action to remove the bottlenecks, barriers and challenges that have been identified. Policy certainty and regulatory clarity more conducive to investment, will enahnce competition which, if effectively regulated, will enable citizens to access affordable seamless electronic communications services. In mature resourced markets, especially where there is already platform competition, infrastructure competition is the most effective way of promoting network extension and consumer uptake. However, in more resource constrained environments investment in the duplication of infrastructure usually occurs in metropolitan centres only at the expense of wider national coverage. Redirecting investments away from duplicate urban infrastructure to unserved areas through incentives and subsidies, together with open access wholesale regulation to

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enable service based competition, appears to be a way of enabling affordable access to broadband for all.

The policy acknowledges that even in such competitive infrastructure markets, but particularly in markets where multiple infrastructure operators are not economically viable, wholesale access to dominant operators' infrastructure is essential to creating a fair competitive environment for new entrants and service providers. Regulation is always difficult because of the resource and information asymmetries that exist between the regulator and operators but all of these enabling measures will require a capacitated and involved regulator, capable of timely interventions and applications of legal remedies.

The broadband policy as a result does not envisage a single big build out, but rather that broadband will be deliver through a seamless network of public and private networks. In the implementation of the national broadband plan, the policy requires that the viability of a model for the development of open access fixed and wireless network through the harnessing of public and private sector contributions be explored. The policy further emphasises the need for strong demand stimulation measures from school readiness programmes to local content development to optimise the potential of broadband to contribute to national social and economic development.

5.5 The Legal Provisions Related to the Quality of Services

Chapter 12, Sections 69-71 of the Electronic Communication Act 36 of 2005 makes provisions for handling consumer issues, thereby improving the quality of service. Section 69 is about the code of conduct, end-user, and subscriber service charter. Section 70 stipulates that ICASA must prescribe regulations setting out a code for people with disabilities that will be applicable to all categories of licences. Section 71 makes provisions for the establishment of the consumer advisory panels that will advise ICASA on matters relating to consumer issues in South Africa.

5.5.1 The Consumer Protection Act

The Act aims to protect and promote consumer activism, by making provisions for the accreditation of consumer groups tasked with lodging complaints on behalf of consumers, as well as making available support for activities, such as consumer advice, education, publications, research and alternative dispute resolution through mediation or conciliation.

5.5.2 Customer Satisfaction Measurement (CSM)

Communications entities in most countries, with South Africa as no exception, enhance their market power by measuring their standing against competition. This standing is measured by instruments such as Customer Satisfaction Measurement (CSM) or Customer Satisfaction Index (CSI)

The CSI model is a structural model based on the assumptions that customer satisfaction is caused by some factors such as perceived quality (PQ), perceived value (PV), expectations of customers, and image of a company. These factors are the antecedents of overall customer satisfaction, and the CSM also estimates the results when a customer is satisfied or not, based on reports of complaints or loyalty by customers.

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5.6 Reform Trends

5.6.1 Intermodal and Intramodal Facilities based Competition

Facility based competition can be inter-modal or intra-modal. Inter-modal competition is competition between different transmissions media, for example satellite versus fibre. Therefore intermodal facilities based competition provides insights and competitive advantage based on technologies. Before the days of convergence, intermodal facilities gave rise to the concept of technology specific policies.

Intra-modal competition refers to a situation whereby operators adopt the same transmission medium. Therefore their differential competitive advantage is not derived from the transmission medium, but from other enterprise competencies.

A historical review of major technological innovations in the telecommunications sector suggests that, on the one hand, inter-modal facility based competition is the most effective means to foster competition between generic technological alternatives. On the other hand, intra-modal facility-based rivalry founded on similar technologies could contribute to rapid diffusion of particular technologies and the spread of knowhow, which could result in a steep learning curve and a significant reduction of maintenance costs.

Policy Questions:

1. Should policy promote either a facilities-based or service-based competition environment? Alternatively is there a case for a hybrid competition environment in which both these modes exist?
2. What mechanisms are required to ensure effective co-ordination of broadband infrastructure planning and rollout?
3. Notwithstanding current policy interventions to promote availability and access in the under-serviced areas, the local loop remains a great challenge. Should LLU policy be advanced, and if so, what are the principles which should underpin LLU policy?
4. What other policy interventions can reduce the Significant Market Power (SMP) of the oligopolies in the South African communication sector?
5. What considerations should inform the new policy and regulatory regime concerning the spectrum management taking into account the anticipated revision of the frequency spectrum regime? Is there a need for a separate agency to regulate spectrum?

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Chapter 6: Digital Information Age: E-services & Cybersecurity

6.1 Introduction

E-service commonly refers to the provision of services via the internet. E-service therefore includes both e-commerce and e-government. The rendering of government services and information to the public using electronic means, allows government to deliver services to citizens when they need them. It can also improve the quality of such services. In South Africa, e-government has gained significant ground and great strides have been made to use e-government to simplify government procedures, improve access to information by citizens, and improve service delivery, as well as strengthening accountability and transparency.

E-commerce on the other hand, refers to conducting business online. The phrase is used to describe business that is conducted over the internet using any of the applications that rely on the internet. These applications include email, instant messaging, web services etc.

E-commerce has grown rapidly since users began to search for services and goods sold over the internet. The introduction of e-commerce has changed the scope of the commercial landscape, affecting all aspects of the value chain from supplier to consumer.

6.2 E-government

6.2.1 Regulatory environment for e-government in South Africa

The Department of Public Service and Administration (DPSA) is responsible for the development and coordination of government's overall e-government strategy. Key legislation for e-government is the Public Service Act of 1994 and its subsequent amendments. This Act provides for, amongst others, the establishment of norms and standards relating to e-government and information management in the public service.

The White Papers on Transforming Public Service Delivery (WPTPSD), Promotion of Access to Information Act, Electronic Communication and Transaction Act, Electronic Government Policy Framework, Minimum Information Security Standards (MISS), Minimum Interoperability Standards (MIOS) and Policy on Free and Open Source Software (FOSS) discussed the concept of e-government. Collectively, these frameworks promote transparency, accountability, good governance, information security, and freedom in the acquisition and use of IT.

The South African government has established statutory bodies to co-ordinate implementation of e-Government projects. Amongst these are the State Information Technology Agency (SITA) and Government Information Technology Officers Council (GITO Council). SITA is responsible for the acquisition, installation, implementation, and maintenance of IT in the public sector. The GITO Council, which consists of national and provincial IT officers, is responsible for consolidating and coordinating IT initiatives in government, including e-Government, to facilitate service delivery.

6.2.2 Overview of services

There are various levels of maturity for the provision of e-government services, as indicated in Chapter 3 of this report. For the South African government, the focus is on G2G (government-to-government), G2BC (Government to Business & Citizen) and G2C (government-to-citizen) activities. Improved service delivery is facilitated by building e-Government awareness, being a model user in e-Government centres of excellence, working towards one government information and communication channel (one portal, one call centre, etc.) and above all providing expertise on e-services.

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Other e-government initiatives include e-Natis online vehicle and transport management system, the e-Justice programme to improve judicial processes, the e-Hanis programme to streamline and integrate personal identification data across government departments through the use of unique identifiers, and the National Automated Archival Information Retrieval System (NAAIRS) to facilitate access to public archived records.

6.2.2.1 e-Filing Initiatives

E-Filing is of particular interest, because it corresponds with the transactional level of e-government stage thus indicating a new maturity level for e-government.

A successful example of this sort of transactional e-Government service is the electronic filing of tax returns, which the South African Revenue Service (SARS) has implemented with success. A recent e-Filing initiative is the Companies and Intellectual Property Commission (CIPC) IP Online project by the Department of Trade and Industry (the dti).

6.2.2.2 e-health

The National Department of Health, the Medical Research Council (MRC) and the National Health Information Systems Committee on South Africa (NHIS/SA) has developed the e-Health Strategy for South Africa. This strategy is aligned with the World Health Organisation's (WHO) definitions and targets for e-health, which seek to use ICTs to treat patients, pursue research, educate students, track diseases and monitor public health. In the South African context, the general consensus is that the various inter-ministerial forums, international consultations and national ICT bodies have not been effective in guiding the implementation of the National e-Health Strategy Policy document.

6.2.2.3 e-education

As early as 1996, the Telecommunications Act, No. 103 of 1996 contemplated an education network (EduNet) to link all schools. The 2001 Telecommunications Amendment Act, No. 64 of 2001 introduced a discounted e-rate to facilitate Internet connections for educational institutions.

The 2004 White Paper on e-Education confirmed the availability of USF subsidies to achieve the discounted e-rate. In January 2005, the Minister of Communications confirmed a 50% discount on Internet connectivity costs for schools. This 2004 document stresses the need for the integration of ICT into learning and teaching, and called for the creation of a Ministerial e-Education Advisory Council.

The ECA repealed the Telecommunications Act and its amendments but largely mirrored the provisions of that Act in relation to the e-rate. In 2010, USAASA transferred responsibility for the Cyberlab program to the Department of Basic Education.

6.3 E-commerce in South Africa

6.3.1 Regulatory environment for e-Commerce

In South Africa, e-commerce policy started in 2000, when government published the Green Paper on e-commerce. The Green Paper was aimed at building trust and confidence in the security and privacy of transactions performed electronically. In addition, the Green Paper sought to enhance the information infrastructure for electronic commerce; establish rules that would govern electronic commerce and finally, bring the opportunities of e-commerce to ordinary South Africans. At that time, government focused on heightening awareness about

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the need for faster adoption of e-commerce by individuals, enterprises and governments. It outlined the legal foundation for e-commerce; identified key issues regarding the validity, recognition and enforcement of electronic contracts and highlighted issues of intellectual property protection requirements, for instance, raising awareness regarding the implementation of copyright, trademark and patent protection in an electronic environment.

The promulgation of the Electronic Communications and Transactions Act (ECTA) two years after the publication of the Green Paper on e-commerce, laid the legal framework for consumers, businesses and government to conduct and use electronic transactions in a safe, secure and effective environment. The ECTA further provided for the development of a national e-strategy, and promoted universal access to electronic communications and transactions and the use of electronic transactions by SMMEs.

6.4 Cybersecurity

6.4.1 Background

The objective of cybersecurity is to reduce cybersecurity risks, to minimise successful cybersecurity attacks, and to build trust in and security of the internet. Cybersecurity includes the application of information security standards, the definition of appropriate cybersecurity organisations and the education of internet users.

Big and small enterprises, governments, as well as private internet users are facing similar threats in cyberspace.

Countries are setting up national cybersecurity strategies in order to protect their citizens, economy and environment. Critical infrastructure like telecommunications networks, power networks, (nuclear) power plants, and industrial complexes are potential targets of cyber attacks, which could have devastating consequences if not adequately countered. To counter this threat, countries are setting up Computer Emergency Response Teams (CERTs) and Computer Security Incident Response Teams (CSIRTs). The CERTs and CSIRTs coordinate planned and ad-hoc activities against threats to cybersecurity and ensure that there is international cooperation in this area.

6.4.2 The current legal and regulatory framework for cybersecurity

The legal framework for cybersecurity matters is the ECTA of 2002. The ECTA provides for, inter alia, the following:

- Regulation of Public Key Infrastructure (PKI) and authentication and accreditation for electronic signatures;
- Legal, technical and operational framework for e-signature usage;
- Categories of electronic signatures;
- Preferred Authentication Service provider for government, namely the South African Post Office Trust Centre;
- Establishment of the South African Accreditations Authority; and
- Appointment of cyber-inspectors.

South Africa is also a signatory to international treaties such as the Budapest Convention and the SADC Model Law. The Budapest Convention remains the only international agreement that addresses cybercrime and is aimed at harmonising national laws and establishing international cooperation against cybercrime.

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6.5 Policy Reform & Trends

6.5.1 e-Commerce

South Africa's e-commerce sector faces fundamental challenges, which require a concerted effort by all role-players to ensure that it does not stagnate. Some of the issues that require policy attention include consumer protection and confidence, harmonisation of the legal framework, availability of broadband, universal access, delivery, geography, e-commerce awareness and the rise of extraterritoriality.

6.5.2 Cybersecurity

A draft cyber-security policy was published in May, 2011. The policy was developed under the DoC, but responsibility has now shifted to the State Security Agency. Today, the policy and implementation process related to the overall security framework is led by the State Security Agency. The redrafted policy was approved by Cabinet with the overall responsibility being given to the State Security Agency.

a) Data protection

The ECTA introduced the concept of consumer protection by protecting individuals from unsolicited commercial communication, and set out principles that govern the protection of personal information.

Read together with the Consumer Protection Act (CPA) of 2008, the ECTA deals firmly with the issue of unsolicited communications. Additionally, the Protection of Personal Information Act_will make it illegal for a direct marketer to market directly to any individual unless prior consent had been given, or unless that individual is an existing customer.

b) Identify theft

Identity theft is very high in South Africa. The South African Fraud Prevention Service reported in 2008 that identify theft in South Africa could exceed R1 billion in annual losses. As use of the internet rises, new forms of identity theft have emerged. Consumers' financial records can be highly impacted on by persons who steal personal information through the use of computers and other devices. Typically these scammers target people using spam email, fake online banking websites and false online advertisements.

c) Online gambling and related activities

The National Gambling Act 2004 prohibited both offering interactive gambling services and engaging in interactive games (games on the Internet). Online sports betting, online horse race betting and the business of bookmaking is lawful in South Africa, provided that the person conducting such business holds the necessary provincial bookmaker's licence(s), or is using a website with a proper licence(s).

d) Collection, preservation and production of e-evidence

The internet is not restricted to any national border. While the victim of cybercrime may reside in one country, the offender might be in another country. This means that a multi-pronged strategy is required for the prosecution of cybercrime. Law enforcement agencies are confronted with additional challenges, including the fact that data tracks are elusive, which makes it difficult for these agencies to identify attacks and trace the offenders. The collection of electronic evidence needs to be supported by effective data collection processes and must be accepted in court as evidence.

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Policy Questions:

1. Are the regulatory mechanisms adequate to protect consumers in the e-ecommerce environment?
2. What kind of effective institutional arrangements should be in place to build a robust e-commerce environment in South Africa?
3. Are the current legal measures adequate to deal with cybercrime in South Africa?
4. What institutional arrangement(s) are required to deal with cybercrime both nationally and regionally?
5. What are best tools for fighting cybercrime, in terms of policy, regulations and institutions? What other issues should be considered in dealing with cybercrime in South Africa?

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Chapter 7: Information Technology (IT)

7.1 Introduction

Information technology refers to the hardware and software used to store, retrieve and process data .The Information Technology (IT) market has maintained a degree of stability in spite of the effects of the global financial crisis. However, the prevailing uncertainty surrounding the global economy may well affect the future of the IT market. So far though, it has been somewhat protected because of its inherent features. An advantage for the sector, and a possible augur of growth, is its increased enterprise mobility, that is, the tendency to do business anywhere, anytime, using any device.The Internet and virtualisation also continue in an upward trajectory, thus positively affecting the broader IT market.

South Africa, in spite of its solid political and regulatory environment, is not yet leveraging the potential benefits associated with the ICT sector, according to a World Economic Forum Report. This is due to the lack of basic skills in large sections of the population, the high cost of accessing ICT services and insufficiently developed infrastructure, amongst other things. As a result, the economic impacts accruing from ICT in the country remain patchy.

7.2 Infrastructure, services and applications

The South African IT industry was valued at R77.1 billion in 2011 and is expected to grow at a compound annual growth rate (CAGR) of 8.6% to reach R116 billion in 2016. There were close to 2000 companies in the IT industry as at the end of March 2012. The IT services submarket is the largest, accounting for 51%, followed by hardware at 31%, and packaged software at 18% of the total IT market. The hardware sub-market is driven largely by storage and networking services. Cloud computing is expected to drive future growth in the IT services sub-market.

The hardware sub-market comprises personal computers, servers, the network, and storage facilities. There has been a steady growth in the demand for personal computers as they have become more affordable. This growth is also driven by retailers, telecoms service providers and banking institutions, which have been engaged in aggressive marketing techniques through bundled offerings of PCs, tablets and smart phones. However, end users' demand for mobile computing is affecting the PC market. Improvements in quality and durability are resulting in longer replacement cycles for PCs.

When it comes to software, South Africa is said to have competitive advantage in embedded software design and development. Software testing and piloting systems and applications are growing markets in South Africa. Local companies also offer niche manufacturing facilities for high-end technology solutions. The area of systems management is also growing on the back of cloud computing. The growth of the subsector is inhibited by lack of skills, especially in business intelligence, cloud and systems management. Software piracy accounts for about 35% of total software. Government advocates for a free and open source software (FOSS) policy that provides for, amongst others, encouraging the use of open content and open standards within South Africa.

7.3 Challenges for IT market growth

The growth projections of the IT market are negatively affected by factors such as costs to communicate, low expenditure by the public sector, market maturity and the capacity of users to incorporate digital services in their lives and workplaces, as well as larger companies sourcing directly from the original equipment manufacturers (OEMs).

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7.4 Key success factors and future trends

Despite the challenges facing the IT sector, its products and services have become part and parcel of everyday business and social life. The fast pace of innovation helps the sector to remain relevant, while shaping the future of business and society. The factors below are set to drive growth in the IT sector.

a) **Digitisation**, that is, the mass adoption of connected digital technologies and applications by consumers, enterprises and governments, is one of the key drivers for the success of the IT market.

b) Consolidation among vendors
As a market matures, operators and service providers tend to consolidate. In a maturing market, the survival of certain companies can be guaranteed only through mergers and acquisitions. This trend will continue into the foreseeable future.

c) Growth in mobile computing
A pilot project among nurses in the Eastern Cape revealed that the use of 3G-enabled smart phones helped nurses and doctors to make accurate diagnoses, prescribe the correct medication, and reduce patient mortality. Nurses and doctors were also enabled to provide up-to-date information to patients regarding their health conditions and treatment, update their own clinical knowledge and share information with their colleagues. Whilst this development may affect the PC sub-market, it has positive spin-offs in the rest of the sector, including the development of software and applications.

d) Public sector
Implementation of the e-government policy is critical for the success of the IT sector in South Africa. This policy deals with issues such as interoperability, IT security and economies of scale

7.5 Innovation and new applications

a) Cloud computing
Cloud computing can be defined as the storing, processing and use of data on remotely located computers accessed over the Internet. It involves sharing computer resources, thus giving users unlimited computing power on demand and accessing their data anywhere through the Internet, without making major capital investments. The 'sharing' aspect of cloud computing also allows users to spread their development and maintenance costs over many users, resulting in lower costs and better service quality compared with 'on-premises' IT services.

b) Bring your own device
This refers to the policy of allowing employees or students to bring personal mobile devices such as laptops, tablets and smart phones to their workplace or classroom to access privileged company information and applications or school work.

c) IT security
The amount of data processed and stored through the IT system is growing at an exponential rate. This growth is accompanied by growing concerns about security of the system. There are three main elements to IT security and these are: confidentiality, integrity and availability.

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Policy questions:

1. How can the country's IT competitiveness be further enhanced?
2. Are there further opportunities for the export of IT products, knowledge and skills?
3. Has government's FOSS policy been a success?
4. In addition to the above, what other factors are critical for the future growth of the IT market?
5. What role can be played by SMEs in the IT market value chain?

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Chapter 8: Broadcasting

8.1 Introduction

Convergence and technological changes pose particular challenges to traditional approaches to broadcasting regulation. Increased access to high speed affordable broadband will increasingly fundamentally change the way audiences access audio-visual content. People will be able to watch and listen to a range of television- and radio-like content on a variety of platforms and devices – and be able to create and distribute their own content via the internet. As new technologies develop and become more pervasive, audiences will be able to watch broadcasting-like content distributed and developed by international and South African organisations and companies on their computers, mobile phones, tables and other connected devices. With the introduction of internet enabled televisions, set top boxes (STBs) and gaming devices, this content will also be viewable on television screens. Traditional broadcasters will face increasing competition for content, audiences, advertising and revenue from other players (including internet companies and network operators).

These technological changes pose both opportunities and threats. On the one hand it will enrich diversity and allow South Africans to access news, information and entertainment programming from a range of different sources (local and international) and enable us to tell the South African story to an international audience. On the other hand, the need to ensure all audiences access to public interest content reflecting the cultural, social and linguistic diversity of the country could be threatened as traditional broadcasters will face increasing competition. The new framework must be flexible enough to anticipate the challenges and opportunities so that the overarching public objectives set for the sector can be realised. This section of the Green Paper identifies some of the key issues facing television and radio services given technological changes. It poses questions about what policy approaches would best ensure that the critical social, cultural and political objectives determined can be achieved.

Many other countries have adapted or are reviewing their broadcasting policy frameworks in light of convergence and digitisation. Their particular public policy objectives include:

- Ensure access to diverse content for all, including locally produced public interest programming,
- Promote diversity of ownership and control of content services and limit media concentration;
- Ensure fair competition between different content services; and
- Protect audiences from illegal content; ensure community standards are agreed on and met and that children are protected from harmful content.

8.2 The Future

This section highlights key emerging issues to be considered in reviewing current broadcasting related policies and legislation.

8.2.1 The changing environment

Convergence and digitisation will inevitably change the way audiences access news, information, entertainment, cultural and educational programming. The imminent migration to digital terrestrial television will give audiences access to many more free-to-air and subscription television channels. Increased access across the country to affordable high-speed broadband linked to growth in the range, affordability and availability of internet-enabled devices (such as smart phones, tablets, smart TVs, internet enabled set top boxes

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and gaming devices) will, in addition, make it possible for South Africans to access a variety of international and South African audio-visual and audio content over the internet.

This will not only affect audiences – but will undoubtedly impact on the viability of traditional broadcasters and therefore affect their capacity to fulfil obligations placed on them to, for example, air a wide range of South African content in all languages and ensure access to services by people with disabilities (by sign-language, sub-titling and audio description for example). New content providers will also not be bound by current broadcasting codes and standards aimed at protecting audiences and children in particular, from harmful content. New services, not bound by regulations or licence conditions, will be competing with traditional broadcasters for audiences, content and revenue.

8.2.2 Defining "broadcasting"

The ECA, in line with the White Paper, includes a technology neutral definition of broadcasting. The regulator noted that in the future, on demand services, including those available over the public internet, "*may be a substitute for traditional television broadcasting*" and therefore require some form of regulation but stated that this would require a legislative amendment to permit the regulation of content services (distinct from broadcasting services) under certain circumstances.

In the UK, the Communications Act defines the different services essentially by the delivery platform used. The regulator in that country (the Office of Communications – Ofcom) has, in line with this, outlined specific obligations and requirements for the different licence categories. For example, television services using the DTT platform have to have either Digital Television Programme Service or Digital Television Additional Service licences, while those that provide television programmes or electronic programme guides (EPGs) over other platforms (eg satellite, cable, the internet or mobile platforms) require Television Licensable Content Services licences (TLCS).

One of the issues that this policy review process has to consider is the approach to broadcasting-like services delivered over the internet. The migration to digital terrestrial television (DTT) will, on the one hand, give audiences access to a greater number of television and audio channels, while freeing up frequencies that will be used to increase high speed broadband access. Licensed multi-channel television broadcasters will therefore not only face increased competition for audiences, revenue and content from new services on DTT platforms, but also increasingly compete with internet based audio-visual content providers. While some of these new services might be South African based and focused, others will originate from other countries and be targeting a global rather than South African specific audience.

In terms of current legislation in South Africa, content services such as Video-On-Demand will not require a broadcasting licence or therefore be bound by the particular obligations for broadcasters.

8.3 Regulatory Parity

A number of submissions to the Framing Paper proposed that the principle of regulatory parity should inform a new approach to policies for broadcasting and audio and audio-visual content. Regulatory parity is based on principles of fair competition and technological neutrality and aims to ensure that like services are treated in a similar manner, regardless of how they are delivered (whether, for example, via satellite, transmitters, over the internet) or what device is used to access them (for example, a radio set, the internet, a mobile phone, a television, a computer).

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While the principle of similar regulatory treatment for similar services might seem obvious, ensuring parity is not necessarily easy in practice. Traditional linear broadcasting, for example, has a range of requirements relating to prime-time (such as what types of public interest programming should be aired at times when audiences are most likely to be watching) and ICASA has set watershed periods for different broadcasters to protect children from unsuitable content. Such requirements, however, are not necessarily relevant to on-demand content providers and audiences can schedule their own prime time viewing with new technologies such as interactive television recording devices such as personal video recorders (PVR).

There are also a range of different approaches which could be adopted to achieve such parity. Linked to this, is the need to consider whether or not the current approach of regulation by business model is still appropriate. Services have varying regulatory obligations based on their business model – with lighter touch regulation for subscription services. An issue for the review is whether or not such regulation by business model will in the new environment be in line with principles of fair competition and regulatory parity, noting that these services are increasingly competing with FTA broadcasters for advertising revenue (see Chapter 3).

When considering these issues and their implications on the policy framework, it is also important to recognise that audiences may have different expectations of different mediums. In submissions on the Framing Paper, several stakeholders also raised the issue of net neutrality as critical in the changing environment to ensuring regulatory parity and fair competition between different content providers. They argued that the new policy framework must ensure net neutrality so that all data available on the internet is treated equally by network providers. These stakeholders raised concerns that if the policy framework did not enforce net neutrality, broadband providers might use their last mile infrastructure to block internet applications, content (websites, services, protocols) and competitors by, for example, using deep packet inspection to discriminate between over the top broadcasting services or applications.

Arguments against net neutrality, internationally, generally centre around the impact this will have on the availability of bandwidth given the amount of content that will be made available. Consideration of all these issues has to be guided by the overall objectives set for the policy framework and therefore be based on how best to ensure the identified public interest goals for the sector are met.

8.4 Regulatory Parity and Internet Content

An extension of the debate on regulatory parity and the decisions on what content is or not regulated, is the issue of cross-border audio-visual services. The internet has global reach. New technologies will therefore allow South Africans to access content from across the world and provide opportunities for South African stories to reach an international audience. International and local audio-visual and audio content delivered via the internet will increasingly compete with traditional South African channels and stations for audiences, advertising and subscription revenue.

This Green Paper process has to recognise such off-shore services in order to ensure a new policy framework is balanced. A key issue of the policy process will be how to reinforce South African broadcasting and other content services to ensure they can effectively compete with these international services.

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8.5 Licensing and spectrum

Current policies relating to broadcasting are largely met through licences (both individual and class). This allows specific requirements to be set for individual broadcasting services. The broadcaster is a South African registered legal entity which is held accountable for requirements set in licence conditions and relevant regulations.

In line with this, sections of the radio frequency spectrum are set aside for terrestrial broadcasting services. Licensing processes then consider, among other things, the target audience needs, what other services are available, how the aspirant licensee intends to meet key objectives (such as South African content and language mandates) and the requirements in legislation of diversity. Satellite services also require a broadcasting licence, although they do not utilise sections of the spectrum set aside for broadcasting services.

Broadcasting licences typically determine a licence area to ensure there is no interference with other services and promote diversity and fair competition. With the migration to DTT, sections of the radio frequency spectrum currently allocated to broadcasting services will be freed for use by other sectors and therefore increase access to, for example, mobile broadband. New services using the spectrum previously allocated to broadcasting will undoubtedly provide content services to drive take up and these could directly compete with licensed broadcasters. Spectrum currently allocated to electronic communications services and networks will also be used to distribute audio-visual and audio content. As noted previously, at the moment, many of these services will be competing with traditional broadcasters, but will not necessarily require a broadcasting licence or therefore have to meet public interest obligations linked to broadcasting. The notion of a "licence area" for particular services will also be irrelevant in these circumstances.

8.6 The three tier system

Several Framing Paper submissions highlighted areas where current policy objectives for the different tiers have not necessarily been met and therefore suggested that the mechanisms in place in the White Paper, related to legislation and/or regulations be reviewed during this policy process. Both Government and Parliament have highlighted in particular the need to review the role of the public broadcaster, the governance of the SABC and funding for public broadcasting.

The three tier system (public, private and community broadcasting) is one of the key means in the current regulatory framework to facilitate freedom of expression and ensure objectives relating to, for example, diversity of ownership and content are met.

- The **public broadcaster** has a specific mandate set out in a legislative Charter to fulfil key public goals such as universal access, providing a range of programming in all official South African languages and airing educational programming.

- Current policy recognises the positive role that can be played by the **private commercial broadcasting sector** (free to air and subscription) in fostering diversity of services, content, employment for producers, artists and broadcasters as well as increasing diversity of ownership. The regulator in licensing new services has to have due consideration for diversity, along with the demand and need for the proposed station or channel. Policy also stipulates that the regulator must set specific requirements in relation to public interest objectives such as the airing of South African content, broadcasting news and information programmes and commissioning of independent producers. More extensive conditions are placed on the free-to-air private commercial sector than the subscription sector.

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- The **community broadcasting sector** further extends diversity of ownership and content to the community level. Community broadcasters must provide a distinct broadcasting service dealing specifically with community issues that are not normally addressed by other broadcasting services available.

8.7 Public Broadcasting

The transformation of the SABC from a state broadcaster to a public broadcaster began in 1993 with the appointment of the first independent board of the Corporation.
The 1998 White Paper on Broadcasting took these transformation processes further. Among other things, it:

- Introduced a legislated Charter for Public Broadcasting outlining the SABC's mandate,
- Clarified the relationship between the public broadcaster and the regulator.
- Considered how the SABC mandate should be funded; and
- Separated the broadcaster into two divisions – public and public commercial.

As noted in Chapter3, the SABC currently includes:

- Fifteen public radio stations, including eleven full-spectrum services broadcasting in each of the official languages;
- Three public commercial radio services;
- Two national public television channels (SABC 1 & 2) with mandates to, among other things, treat all official languages (including sign language) equitably, and include educational programming; and
- One national public commercial television service (SABC 3).

A further two regional SABC licences (SABC 4 & 5) were granted by ICASA in 2005 but the licences were never issued pending confirmation of sufficient funding for these services. The migration from analogue to digital television will change the structure of the SABC and enable it to air many more television channels. With analogue, each spectrum channel or multiplex delivers a single analogue television channel. In the digital television environment, the multiplex can deliver up to eight channels. This will enable the public broadcaster to better meet its public mandate across its television services as, for example, it has been restricted by the number of channels in ensuring all languages are treated equitably. The time passed since the introduction of the White Paper together with the move to DTT however requires a review of this mandate. It is also crucial to review the funding model of the broadcaster and its governance structures as part of the ICT policy review process.

It is also important in such a review to consider how to ensure that public interest content is easily accessible by audiences given convergence. In many countries around the world it is recognised that public broadcasting services play a critical role in a democracy and in ensuring that society's social and cultural needs and objectives are met.

8.7.1 The Role and Mandate of the South African Broadcasting Corporation

The White Paper identified the need for the public broadcaster to play a fundamental and leading role in fulfilling public interest obligations set out for the sector as a whole. The White Paper identified the need to restructure the SABC in order for it to prioritise its public mandate while at the same time generating cash from its commercial activities. A Charter was developed and detailed in the Broadcasting Act, no 36 of 2005, to codify this mandate.

The White Paper and the Broadcasting Act required the SABC to apply for new licences from ICASA for each of its services so that it would be bound by conditions linked to its

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charter obligations. The initial licensing process was finalised in 2005. In line with the law and policies, SABC public services have to fulfil obligations outlined in the law, while public commercial stations and channels need to meet the requirements set for the commercial sector by the regulator.

The Act further requires the SABC to develop a range of editorial policies taking its mandate into account through a public process.The extent to which the SABC can fulfil all its mandate requirements on television has been limited due to the number of channels it operates. This will change with the migration to DTT and, for example, its ability to treat all official languages equally on television will be enhanced.

8.7.2 Regulatory and Licensing framework of the SABC

The SABC is bound by both licence conditions and regulations set by ICASA. The White Paper and Broadcasting Act required the SABC to apply for new licences and indicates that the public services of the SABC must be primarily responsible for delivery on public interest goals set in policy. Public commercial services have to comply with the legal and regulatory standards set for privately owned commercial services while adhering to "*the values of the public broadcasting service in the provision of programmes and service*". ICASA's content regulations outline minimum requirements for public and commercial services for radio and television.

The content regulations for television are more detailed and set minimum quotas for the different genres of programming, as well as overall percentages for content.

TV Content Quotas

The SABC has stated in its annual reports that it has generally complied with and often exceeded these quotas. ICASA has not held any hearings into alleged non-compliance with these – though it should be highlighted that members of the public have raised questions about whether or not the regulator is effectively monitoring compliance.

Licence Conditions

ICASA has set licence conditions for each radio station and television channel.They set out the universal service requirements for each of the channels and stations.

8.7.3 Funding the public mandate

The SABC in line with policy and regulation is funded by government, licence fees, advertising/sponsorship and other incidental income (sale of programmes etc). As noted above, one of the reasons for the division of the SABC into public and public commercial divisions was to protect the public mandate by allowing for cross-subsidisation of the public wing by commercial services.

The SABC has not to date published separate accounts for the divisions, and it is thus difficult to thoroughly review whether or not the division of the SABC has, as envisaged in the White Paper and Broadcasting Act, enabled the cross-subsidisation of the mandate by the commercial services.

The SABC continues to rely predominantly on commercial revenue (about 80% of its income is from advertising and sponsorship). Licence fees contribute about 18% and government funding about 3%. Allocations from government are approved through the parliamentary process and have included annual funding as well as funds for specific projects (such as elections and the migration to DTT).

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In its application for a Government Guarantee in 2009, the SABC highlighted the need for any policy review process to review the funding mechanisms in place for the public broadcaster. It specifically highlighted challenges in relation to the licence fee system.

8.7.4 Structure of the SABC

The section on funding has highlighted the need to review the structure of the SABC along with a review of the entire funding model for public broadcasting. The introduction of DTT and the increased number of television channels also requires the policy to consider whether or not these will be divided along public and public commercial lines as previously and if so, how such a division will be effected.

As noted previously, it is difficult to assess the effectiveness of the division on the funding model of the SABC as the broadcaster has not produced audited separate accounts for the two wings as required by law. It is thus not possible to, for example, assess the extent to which the three commercial radio services, have cross subsidised public interest content provided across the public radio stations.

8.7.5 Governance of the Public Broadcaster

Major issues regarding governance at the SABC have been raised recently. One of the core issues raised in parliamentary and other forums relating to this have been about poor governance. Parliament has raised concerns about the lack of accountability of the SABC, and has considered evidence in audit and other reports of poor financial and other management controls.

A key underlying issue raised by government, parliament and members of the public has been an apparent failure to effectively hold the SABC to account. Parliament has raised the need to clarify accountability mechanisms in the law to make clear, for example, the lines of accountability between the SABC and the Minister as shareholder on behalf of government, ICASA and Parliament. The Broadcasting Act together with the Public Finance Management Act, no 1 of 2000, sets out the following reporting lines in relation to the SABC:

- Parliament
- Government
- ICASA

8.7.6 Appointment and Constitution of the Board

The Board of the SABC is made up of 12 non-executive members and three executive members (the Group Chief Executive Officer, the Chief Operating Officer and the Chief Financial Officer).

The Broadcasting Act states that the Board controls the affairs of the Corporation and that the executive committee (made up of the three executive directors and no more than 11 members) administer the affairs of the Board. The executive committee is directed by the Board. The Board is the accounting authority in terms of the PFMA and as such bears overall responsibility for ensuring sound financial management.

The appointment of executive members of the Board is outlined in the memorandum and articles of association. The appointment process of non-executive members of the Board is managed by Parliament.
The Act also sets out the processes to be followed to remove non-executive members of the Board or dissolve the entire governing body. In the event of the dissolution of the Board, the Act states that Parliament can recommend the appointment of an Interim Board made up of five non-executive members for a term of no more than six months.

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Given the recent history of challenges at a Board level, it is important to discuss and review whether or not this process does ensure that the best candidates are appointed. Such a review of the appointment process is not about casting aspersions on the structures involved but a genuine attempt to analyse if the system can meet the desired outcomes. It must also be highlighted that given the role of political parties in the appointment process via Parliament, the process does not ensure that the process is free from party-political influences.

In reviewing the appointment processes, the role and functions of the Board must also be looked at to ensure that this process best assists in fulfilling these – and to consider how those appointed are held to account.

8.8 Commercial Broadcasting

The licensing framework for different services is aimed at promoting fair competition while ensuring diversity of ownership and content. As highlighted, though they are privately owned and funded, the policy and legislative framework emphasise that commercial radio and television services also have to meet defined public interest objectives, such as airing South African music and television content.

It is important in a policy review process to examine each of the commercial broadcasting sectors separately, as well as consider how they impact on each other. The possible impact of convergence and digitisation in future must also be considered.

8.8.1 Commercial Television

There is one privately owned national terrestrial free to air television broadcaster licensed currently (e.tv). E.tv (like SABC) will have the capacity to air more channels with the migration to DTT. ICASA has also indicated that it will be considering when to licence new terrestrial FTA private players after the digital migration process has commenced. Two new satellite FTA services were launched in 2013 (OpenView and FreeVision).

E.tv has to air a minimum of 45% South African content rather than the minimum regulatory requirement of 35%. The channel first broke even in 2004 – five years after its launch. It is now the third largest service in terms of audience (with a viewership of close to 69% of adult South Africans).

As noted previously, the introduction of DTT will increase the potential number of channels on air operated by either existing and/or new licensees - and therefore potentially the capacity to meet key public interest programming objectives. At the same time though, the increase in the number of channels will result in an increase in competition for audiences, advertising revenues, sponsorships and programming. This competition, in the absence of the corresponding growth in advertising revenues, will limit investments in South African content production by free-to-air broadcasters. At the same time these broadcasters will face increased competition from content services that are currently not regulated as broadcasters.

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8.8.1.1 Television Services

Subscription television services have shown extremely strong growth in audiences in recent years. This has been driven by an increase in subscribers to DSTV rather than increased competition in the sector. There were three subscription television services on air by October 2013 – satellite subscription services, DSTV, and terrestrial pay TV operator M-Net – both part of Nasionale Pers' MultiChoice – and new player TopTV/StarSat. As noted in other sections, TopTV/StarSat is the only one of five additional subscription services licensed by ICASA in 2009 to go on air. It has faced challenges – and was placed under business rescue in 2012. ICASA has recently invited applications for new subscription services and was considering these applications at the time of finalising this Green Paper.

The growth of DSTV (in terms of number of subscribers and therefore both subscription revenue and its share of adspend) is linked to its strategy to increase penetration by offering a range of different and cheaper bouquets targeting different sections of the population. DSTV has also in recent years increased the number of South African channels it airs (including the introduction of a range of Mzansi channels) – thus contributing towards the public interest objective of ensuring that South African audiences have access to South African content across all platforms. This increase has been driven by commercial imperatives rather than regulatory requirements. The four FTA channels (SABC 1, 2, 3 and e.tv) which are simulcast by DSTV are among the most popular services on the platform.

Subscriptions to M-Net have declined over the period – from 16% of the adult population in 1998 (4,1 million viewers) to under 10% in 2012 (2.41 million) . The pay-tv service has stated that this is in part due to delays in the launch of DTT as it stopped marketing the sale of analogue set top boxes pending the launch. M-Net is one of the key channel providers to DSTV. It will be able to offer an increased number of channels to subscribers with the migration to digital transmission.

Given the dramatic changes in the pay-TV market since the development of the White Paper, it may need to be necessary to review many of the policy and legislative provisions that currently apply to these services. In the 2013 parliamentary hearings on amendments to existing laws, for example, other licensees suggested that subscription services access to advertising should be further limited as they claimed this threatened the viability of the FTA services. Parliament indicated that such issues should rather be discussed through a holistic review of broadcasting related policies. The existing White Paper recognises that commercial free to air broadcasters rely almost entirely on advertising and sponsorship revenue to meet key public interest objectives. It therefore stipulated that subscription services should rely primarily on subscription fees and that free to air services must have access to "revenues that are sufficient to allow them to meet their public service obligations". Given the number of subscribers to DSTV and M-Net at the time, it was believed that this would sufficiently limit such services access to advertising. The situation has however changed and the overall subscription revenue now exceeds that of overall television advertising revenue.

8.8.2 Commercial Radio

Commercial radio broadcasters do not face the same immediate challenges in relation to digitisation as television services – though there are an increasing number of South African internet radio stations and international and local music streaming providers.

As commercial radio broadcasters are licensed to cover different licence areas, and/or to provide different formats and services, the current licensing framework is aimed at ensuring that services do not directly compete with each other. These measures are further aimed at promoting diversity of services and content available to audiences.

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There are though a number of other questions which need to be considered in this policy review process. These include the following:

- The current White Paper envisaged commercial radio services being licensed across the country. While there are now services available outside of the urban areas, and new licence applications being considered in the Eastern Cape, the viability of these stations in these secondary towns needs to be carefully evaluated..
- Private commercial radio stations are all licensed to cover relatively limited areas. (This is in part limited by spectrum availability.)
- Commercial radio stations are however still broadcasting predominantly in English (with some also including Afrikaans and others, such as Igagasi in KwaZulu-Natal also broadcasting in isiZulu).

8.9 Community Broadcasting

The current White Paper outlines the vision for the community broadcasting sector as a whole and states that it "must provide a distinct broadcasting service dealing specifically with community issues which are not normally dealt with by other broadcasting services covering the area in question. It is a non-profit sector in terms of law, and stations and channels have to involve their targeted communities in the governance and operations of services.

Early challenges faced by the sector as a whole (and community radio in particular) of slow and cumbersome licensing processes have been addressed by the introduction of the EC Act. The sections of the EC Act dealing with class licensing, while ensuring quick turnaround times for decisions on registration (60 days) may limit the ability of the regulator to scrutinise applications to ensure they meet all the envisaged objectives and requirements for the sector. ICASA, for example, is not specifically empowered in terms of the Act to refuse an application if it has, for example, not met requirements relating to community participation set out in Section 50 of the EC Act. The Act further does not empower the Authority to suspend, revoke or refuse to renew a class licence – even if the licensee has for example repeatedly violated legislative, regulatory or licensing requirements.

8.9.1 Community radio

The White Paper on Broadcasting of 1998 emphasises the need for the regulator and Department of Communications to develop a planned roll out strategy to ensure that communities in need are specifically targeted. In addition, government in 2002 took its commitment to supporting community media further – establishing as a public private partnership the Media Development and Diversity Agency (MDDA).

Much has changed in this regard since the publication of the White Paper seemingly evidence of the success of the Department of Communications programmes, the MDDA support to the sector and the policy's focus on disadvantaged areas. Whereas at the time of finalising the paper, most stations on air were either community of interest stations (for example religious or Afrikaner) or based in urban areas and many broadcast in English, the number of stations broadcasting in disadvantaged and rural communities has grown along with the listenership levels.

8.9.2 Community television

There are now six community television services on air centred around the major cities of South Africa. All of the community television services are also transmitted to a national audience via the DSTV platform. DTT policies and regulations have set aside capacity for community television channels (on Multiplex 1). The funding mix of the community stations includes advertising, donations and sponsorships.

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The greatest challenge facing the development of community television is funding. Funding constraints operate at two levels. It limits the number of communities that can launch their own services to those with access to donors or other resources, and is an ongoing challenge for those that are licensed.The cost to distribute channels in the digital terrestrial environment will also play a fundamental role in the future developments as the distribution costs together with programme costs consume most of the operational budgets.

8.10 Fair competition

Promotion of fair competition is critical to ensuring the viability of the broadcasting system as a whole, including the commercial broadcasting sector. Several stakeholders in their submissions to the Framing Paper highlighted a need to review current provisions and mechanisms aimed at reinforcing fair competition to both address challenges that may have been faced in meeting the objectives and to ensure that current provisions are updated in line with new challenges given the new converged multi-channel environment.

In terms of the current policy framework, ICASA and the competition authorities have complementary roles to play in ensuring fair competition in the electronic communications and broadcasting sectors. The EC Act further clarified the regulator's role in relation to this and set out the processes that should be followed by ICASA in dealing with competition related matters it is responsible for. The regulator has held one specifically broadcasting linked competition inquiry in terms of the Act – an inquiry into broadcasting transmission.
A number of other issues relating to fair competition in the television sector are also important to consider in a policy review process.

The issue of access to premium content is one such issue that has been considered in a number of countries. Access to premium content such as sports or movies is crucial to the success of platforms such as free-to-air, subscription and mobile television. Competition issues may arise when buyers acquire exclusive rights to such premium content that effectively lock out competition. Given convergence, there is also the potential for rights bundling across platforms (one operator bundles rights across subscription television or internet protocol television—IPTV—or mobile). Ultimately, this may deprive audiences of choice and quality. The way rights are bundled and the period of such exclusivity, are often means through which these issues are addressed by regulatory authorities (both sector specific ones and/or competition bodies.

At the same time it must be recognised that the sale of distribution rights on an exclusive basis can result in higher prices for rights holders, which in turn can support industry development in sport and content development generally.

8.11 South African music and audio-visual content

The 1998 White Paper on Broadcasting recognises that "broadcasting plays an integral role in developing and reflecting a South African identity, its character and cultural diversity within the framework of national unity". It focuses on television content across a broad range of genres and formats and on the promotion of South African music on radio. The White Paper states that South African content regulation and policy must serve both cultural and economic objectives.

The White Paper outlines the following key interventions to achieve these objectives:

- Radio Television broadcasters must provide a mix of their own productions and of programmes produced by independent South African producers.
- South African music will be prioritised in the South African broadcasting system.

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- Programming on all broadcasting services should be "predominantly South African" and the regulator should monitor compliance.
- Local independent production industries must have sufficient resources to be able to provide content competitive with the international products available.

ICASA has in line with this developed regulations setting out minimum requirements for each sector (public, community and FTA and subscription commercial broadcasters). It has indicated that it is currently reviewing requirements. They must not only meet local content obligations but also make all efforts to ensure that South African content is of a quality that will draw listeners and viewers.

At least 40% of the South African content must be commissioned from independent producers. ICASA has stated that broadcasters generally comply with the provisions, though it should be noted that some stakeholders have raised questions about whether or not its monitoring of broadcasters is effective at ensuring compliance. However, it is evident that audience demand for South African drama and other content has resulted in broadcasters focusing on these genres in order to attract viewers and/or subscribers. This has resulted in services such as DSTV recently increasing the number of local channels available – exceeding the requirements set for them.

The requirements for terrestrial television were developed mostly for analogue services and the approach will need to be reviewed given the multi-channel environment.

A range of other government initiatives have also focused on promoting the film and television production industries. According to research published by both DTI and the National Film and Video Foundation (NFVF), the film and television production industries have contributed to economic growth in the country. The Department of Trade and Industry (DTI) in its latest Industrial Policy Action Plan (IPAP) 2013-2016 strategic plan states that the film industry contributed R8bn to the economy between 2008 and 2012. This is a total and includes international movies made in South Africa and local productions. It states that the television industry in particular has performed strongly since 2008/2009 – growing by 13,4% from R20,326bn to R23,051bn.

A 2013 study by the NFVF states that the film and television industries together have created over 25 000 full-time equivalent jobs and contributed over R650 million to the fiscus. It should be noted though that the independent production industry was particularly hard hit by the 2009 SABC financial crisis and a number of television focused companies closed down as a result of this as they were predominantly reliant on the public broadcaster.

8.11.1 Radio

In terms of radio, the regulations state that public and community radio stations must air at least 40% South African music and commercial radio stations at least 25%. As noted in other sections, many commercial broadcasters actual licence conditions exceed these minimum requirements as they are bound to promises of performance made during a competitive licence bid.

A 2011 report from the Copyright Review Commission appointed by the Minister of Trade and Industry made a number of recommendations on issues relating to the music industry, including suggestions on the regulatory framework for radio broadcasters. Among other things the Commission recommended that:

- Definitions for South African music in the EC Act be amended;
- The regulatory quotas for music content be increased;
- Music quotas should be extended to television services as well.

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While considering the effectiveness of existing provisions, it is also crucial to look at how a policy framework can ensure continued and enhanced availability of South African content in a multi-channel and convergent environment.

8.12 Diversity of Content

One of the cornerstones of South Africa's broadcasting related policies is diversity of content; different types of content in different languages, from different sources, at a national, provincial and local level. The policy framework emphasises and encourages this through, amongst other things, the three tier system, South African content and music requirements and the emphasis on news and information programming. Diversity of ownership, content offering and services are critical considerations in decisions on licensing. The EC Act states that broadcasting services collectively should "*promote the provision and development of a diverse range of sound and television broadcasting services*" to meet the needs of all audiences.

Digitisation and convergence create more opportunities to further the principle of diversity – audiences will be able to access a wide range of content, across different platforms and channels packaged by South African and international traditional broadcasters as well as audio-visual and audio material generated by users and other content providers. Audiences will have increased opportunities to choose when, how, where and what content they view and listen to. The audio-visual industry will at the same time be able to explore new services and innovative ways to reach audiences. New technologies are also increasingly reshaping the relationship between audiences and content providers – enabling suppliers to get to know their audiences better and match content more closely to their needs. A much more engaged and intense relationship with audiences is possible.

Experiences in other countries have however shown that this abundance of content distributed over a range of platforms can threaten, for example, the development and distribution of unique programming and the cultural and linguistic diversity of content. Threats to the viability of South African broadcasters and audio and audio-visual content producers can result, for example, in an emphasis on "tried and tested" entertainment formats that appeal to a mass audience, rather than promote innovation and creativity and an emphasis on local issues. The proliferation of 24-hour news services around the world, for example has been charged with increased homogeneity rather than diversity – with different news providers focusing on the same stories and using the same images and audio clips, rather than actually increasing the range of sources and perspectives available to audiences.

Content providers (both traditional broadcasters and others) may also feel increased pressure to appeal to broader audiences and therefore not focus on reflecting and celebrating local cultural diversity and covering issues of local importance in local dialects and languages. Alternative voices moreover might be drowned out by big global companies. A policy framework needs to address these issues.

8.12.1 Promoting access to public interest content in a converged environment

The importance of ensuring easy access across all platforms and devices to public interest content becomes increasingly important in a converged environment. This will be a key means to ensure that South African audiences continue to be able to access content that is relevant to them and meets the key cultural, social, linguistic and economic needs identified in the policy objectives.

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Policies that focus on these issues are aimed at ensuring prominence of public interest content across all platforms. They include, for example, obligations requiring subscription broadcasters to carry public broadcasting content services, rules on positioning of public interest broadcasters on any electronic programme guides (EPGs) and rules to ensure that key sporting events are aired free to air.

What are called "**must carry" rules** requiring, for example, subscription broadcasters to re-transmit public broadcasting services, are prevalent in a number of countries and are aimed at ensuring that audiences have easy access to public interest content. They are intended to ensure that audiences do not have to switch platforms to access such content. Rules have also been set in some countries to ensure that public broadcasting or free-to-air channels are featured prominently on any **electronic programming guides** (sometimes referred to as" must-be-found" requirements) – and are thus easy for audiences to find.

The Electronic Communications Act states that ICASA must develop regulations to ensure that subscription broadcasters must carry "*subject to commercially negotiable terms, the television programmes provided by a public broadcast service licensee*". The regulator finalised "must carry" rules for the analogue environment in 2008. There is a need to reflect on whether or not the legislative requirements on "must carry" have had the intended effects in South Africa and have achieved the underlying objectives of these requirements. In developing a new policy framework it is also important to consider whether or not such provisions will remain relevant in a new converged environment.

The 1998 White Paper and related legislation have also put in place mechanisms to ensure that **national sporting events** are aired free to air and not only over subscription services. The policy framework highlights that a list of national sporting events should be developed in consultation with the Minister of Sport and the law states that pay-tv broadcasters may not acquire exclusive rights that stop the free-to-air broadcasting of such national events. ICASA has developed regulations to implement these provisions.

In some countries such stipulations also extend to other types of programming – for example to major cultural events in Australia. Laws and policies need to balance the need to ensure key events are aired free to air, while recognising that rights to, for example, certain sporting events, are critical to the viability of the subscription broadcasting model.

8.13 Content standards and protection of children

There is currently a co-regulatory approach to the development and enforcement of South African broadcasting content standards. The EC Act requires ICASA to develop a Code of Conduct for broadcasters and stipulates that all broadcast licensees must adhere to this unless they are "a member of a body which has proved to the satisfaction of the Authority that its members subscribe and adhere to a code of conduct enforced by that body". Such a self-regulatory code and the mechanisms to enforce compliance to it have to be approved by ICASA in terms of the law. Section 55 stipulates that advertising falls under the Code determined by the Advertising Standards Authority of South Africa.

Complaints regarding alleged breaches about the ICASA Code are adjudicated by its Complaints and Compliance Committee (CCC) – which is also responsible for deciding on complaints about breaches of licence conditions. Broadcasters have established their own self-regulatory body in line with the above provisions of the Act.

The Codes developed by both ICASA and the Broadcasting Complaints Commision of South Africa (BCCSA) are very similar. Both focus on protection of children and providing viewers and listeners with sufficient information about programme content to make decisions about

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what to watch or listen to through advisories. Content delivered over other platforms is currently regulated via a range of different bodies in line with the Film and Publications Act. Convergence raises a number of new issues in relation to ensuring audience expectations regarding classification of audio-visual content and protection of children.

Given the volume of content that will be available over different platforms and channels, many countries around the world are considering ways to strengthen self-regulatory and co-regulatory arrangements. There is also an increased focus on media literacy to equip audiences and parents with information on tools available to protect in particular children from accessing harmful content.

Inconsistent treatment of content can be confusing for those accessing the services and for those that provide services. It can also raise competition and parity issues, where, for example, some content providers are forced to fund the costs associated with regulation while competitors might not have similar costs.

8.14 Signal distribution

The 1998 White Paper sets out specific objectives for broadcasting signal distribution. While there are specific requirements in legislation for broadcasting transmission services, broadcasting signal distributors are also governed by electronic communications facilities provisions set out in sections 43-47 of the EC Act. These sections state that ECNS licensees must, on request, lease facilities to other licensees "unless such request is unreasonable". Leasing agreements must be "non-discriminatory...and not be of a lower technical standard and quality than the technical standard and quality provided by such (ECNS) licensee to itself or to an affiliate".

ICASA initiated a competition inquiry into the broadcasting signal distribution market in 2010 and has stated that it will further be looking into tariff regulation of Sentech. Broadcasting services are allowed to self-provide signal distribution on obtaining an ECNS licence. Many community radio stations have opted to self-provide their signals on this basis.

8.15 Intellectual Property

The broadcasting sector is a major developer of content and South African intellectual property (IP) rights and law apply. Content generation is set to expand in the future with the migration to digital and with increased data storage and distribution across the Internet. In fact, content and intellectual property related to that content is and will be a continued source of income generation in the future. The sector needs to encourage this development and grow and support content generation and the expansion of this industry. However, the challenges related to enforcement of intellectual property (IP) rights and copyright will increase, especially as property pirating and infringement becomes more sophisticated globally.

Control of IP should not restrict access to and sharing of content and as such policies should balance the need for content creators to realise the value of their work while not unfairly limiting access to content.

There is further a need to consider whether or not the framework in place for rights clearance is sufficiently simple to ensure audiences have easy access to broadcasters' online services or distribution of content on different platforms. Increasing the amount of content easily available legally undoubtedly assists in combating piracy.

While legislation relating to IP falls under the Department of Trade & Industry (DTI), the issue of copyright in relation to the broadcasting sector is important to any overarching policy

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framework. Other related issues include the need to, for example, protect subscription broadcasters from piracy of signals.

8.16 Conclusion

This chapter focuses essentially on asking questions on how the policy framework can ensure audiences can reap the full benefits of convergence and have ongoing access to public interest content. The focus is on how best a policy framework in a multi-channel, multi-platform environment can ensure that the key policy objectives are met.
The list of issues identified above is not necessarily exhaustive. Stakeholders are encouraged to identify other issues that the policy framework should address.

Policy Questions:

1. What new regulatory approaches should be adopted to support innovation, access to affordable services and the creation and promotion of a diverse range of high-quality South African public interest programming to all audiences?
2. Is there a need to review the definition of broadcasting services, given the changing environment, in order to ensure that identified public interest objectives for the sector are met? If so, how?
3. How should policy ensure that there is diversity of services and content and that `audiences have access to international, national, provincial and local news, information and other programming of relevance to them given that new services will not be limited to specific licence areas?
4. What key issues should be considered in relation to spectrum allocation to ensure that the public interest, cultural, social and economic objectives linked to audio-visual and audio content services are met?
5. What objectives should the SABC prioritise? How should the mandate of the SABC, as described, be funded? Are the current funding arrangements adequate to fulfill all the requirements placed on the SABC in law? What should the role of government as the shareholder of the SABC on behalf of the public be?

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Chapter 9: Universal Access and Service

9.1 Introduction

Universal access and service (UAS) refers to policies adopted by governments to ensure citizens have equal and fair access to a point of communication. A distinction is made between universal service and universal access to communication services, although the two terms are often used interchangeably. Strictly speaking, universal service is aimed at direct provision of telecommunications, broadcasting or postal services to individuals or households regardless of their geographic location. Universal access on the other hand is aimed at increasing access to communication services on a shared basis, such as on a community or village-wide level. Whilst in the past shared access has been through public pay phones, more recently universal access programmes include the installation of telecentres and cyber labs equipped with computers for Internet and broadband access.

While traditionally UAS programmes were aimed at providing fixed telephony, recently the focus has shifted to mobile telephony, Internet and broadband (fixed and wireless) services.

A distinction is made between universal service and universal access. Generally, there are three pillars to a UAS policy:

- Affordability – communication services need to be provided at affordable prices;
- Availability – communication services should be provided whenever and wherever they are needed, including in remote and rural areas;
- Accessibility – all citizens should be able to use communication services, regardless of location, gender, disability or any other personal characteristics.

USAASA contends that the above pillars must be expanded to include 'awareness' of the use and benefit of communications. Another dimension is that of 'ability' to use ICT services, indicating the importance of relevant content and applications to stimulate demand.

9.2 Regulatory Framework and Past Measures to Achieve UAS

Universal service and access in a democratic South Africa was embedded in legislation as early as 1996 with the promulgation of the Telecommunications Act No 103 of 1996. This was carried over into the Electronic Communications Act No 36 of 2005 (the ECA). Chapter 14 (sections 80-91) of the ECA contains the regulatory framework for achieving UAS in South Africa. Among other things, it establishes the Universal Service and Access Agency (USAASA) of South Africa, sets out how the Universal Service and Access Fund (USAF) should be administered and empowers ICASA to prescribe various regulations required for the achievement of UAS, including the following:

- Regulations in Respect of the Prescribed Annual Contributions of Licensees to the Universal Service and Access Fund (2011)
- Regulations on the Definition of Under-Serviced Areas
- Regulations in Respect of E-Rate.

Various efforts have been undertaken in the past to achieve UAS in South Africa, including licensing operators in underserviced areas, establishing a Universal Service and Access Fund, implementing an E-Rate regime for public schools and imposing universal service obligations on licensees. These measures are discussed below.

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9.2.1 The Universal Service and Access Fund

Section 87 of the ECA establishes the Universal Service and Access Fund (USAF). Section 89 requires every holder of a licence granted in terms of the Act to make a contribution to the USAF, which must not exceed 1% of the licensee's annual turnover.

The purpose of the USAF is to subsidise various activities and sections of the population in attaining UAS including:

- Assisting needy people in meeting the cost of accessing electronic communications and broadcasting services;
- Financing the construction of communications infrastructure in underserviced areas;
- Subsidising the procurement of communication services and access to infrastructure by public schools and further education institutions; and
- Financing the establishment of broadcasting centres and electronic communication access centres.

The utilisation of funds in the USAF for some of the above purposes is dependent on the development of certain regulations. For instance, section 90 of the ECA obligates USAASA to provide incentives to electronic communications network service licensees to construct, operate and maintain electronic communications networks in under-serviced areas through the award of project grants. However, before this can happen, ICASA is required to prescribe regulations defining under-serviced areas eligible for construction payments from the USAF.

9.2.2 The Education Rate (E-Rate)

To address the affordability of accessing services by specific institutions, the ECA empowers ICASA to prescribe regulations regarding the E-Rate. According to the SADC USF implementation guidelines, an E-Rate can be used to address universal access challenges for schools that already have an infrastructure connection. However, quality bandwidth and the existence of one or several ISPs in the desired geographical areas for the schools to choose from are important factors for the success of an E-Rate programme.

9.2.3 Underserviced Area Licences (USALs)

Underserviced Area Licences (USALs) were issued in terms of the 2001 Telecommunications Amendment Act. The idea behind USALs was to extend telecommunication services in under-serviced areas, that is, those areas with a teledensity of less than 5%. As indicated above, service exclusion may arise because users may be living in areas that are uneconomical to serve or have low population density. USALs were also an attempt at promoting entry by SMEs, historically disadvantaged persons, and women in the telecommunications sector. The Minister of Communications identified 27 areas that were declared as under-serviced. USALs were subsidised from the USAF to the tune of R15 million each to roll out infrastructure over a period of three years.

9.2.4 Universal Service and Access Obligations

Universal service and access obligations (USAO) refer to various obligations imposed on licensees, related to either their service or spectrum licences. The rationale for USAO stems from the general recognition that in their absence there will be a significant number of people who are excluded from specific services, such as telecommunications, broadcasting or postal services.
There are various types of obligations that together or individually are generally referred to as universal service and access obligations. Examples include the following: universal

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service obligations, community service obligations, network rollout obligations, community service telephones and broadcasting obligations.

9.2.5 Other measures

There have been initiatives by provincial government and municipalites to increase access to services, such as the erstwhile Gauteng Online project and the deployment of fibre optic networks by various municipalities. According to the SADC guidelines, as Internet and broadband access begin to fall within the scope of universal access definitions and targets, public-private partnerships are moving beyond just network operators and government to include equipment suppliers, vendors, manufacturers, academics, civil society and communities.

9.3 Current Institutional Arrangements Driving Universal Service and Access

The responsibility for universal access and service is currently shared among different government agencies. The Department of Communications is responsible for the policy framework and has played a critical role in the community radio space as indicated in the chapter on broadcasting. ICASA, USAASA and the MDDA are the main players in terms of implementing government policy and legislation on UAS. The roles of each of these institutions are explained in more detail in Chapter 12.

9.4 Access gap analysis

An important step in extending universal access to under-serviced areas is identifying access gaps at national, provincial and local government level. In 2013, USAASA undertook an access gap study to inform a national strategy on UAS. With regard to basic 2G mobile voice telephony, the study found that existing gaps are quite small, and the areas that appear to be outside the market frontier are limited to a few provinces. The analysis indicates that commercial operators should be able to expand their coverage to reach a large majority of those locations and population centres where 2G service is not yet fully available. Moreover, where there are other non-economic barriers that have impeded network development they should be addressed on a case-by-case basis.

The study further found that in areas where there are significant access gaps in the 2G mobile market, the main factor driving these gaps is a combination of the income level of the local population and a reluctance of operators to roll out their network to areas they deem unviable. Such areas include various small settlements, dispersed population groups, and sparsely settled areas that may not have mobile network coverage.

Insofar as 3G mobile broadband is concerned, the market has been able to deliver services to a greater section of the population and continues to do so. The picture for public broadband access on the other hand is one with challenges and opportunities. Current coverage of broadband network access at the local level is in the range of about 50% of the country. According to USAASA, the exact number of towns and villages in which some form of public broadband is available – whether in schools, in Multi-Purpose Community Centres (MPCCs) or other public centres – is difficult to specify, but it appears likely that some such facilities are available in about half the population centres of the country, at least at the local municipality level. Moreover, it appears that there is room for the market to expand such public broadband coverage to at least another 25% of the country.

The study observes that in examining the underlying factors influencing the size and cost of these gaps, it is evident that backbone network connectivity has the most significant influence on the market status. To deliver any broadband level service at the local municipal level requires a high capacity backbone connection into each location. Where fibre optic

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technology is the assumed approach, the costs of extending fibre networks to all population centres, especially the most distant and dispersed areas, can be extremely high.

Moreover, beyond backbone connection, there are additional costs for local access connections, equipment, and service operations associated with local public broadband services. Where such service is provided via public telecentres or Multi-Purpose Community Centres (MPCCs), there are ongoing management and facility costs; where school or government connections are provided, similar internal operating equipment and management costs are required.

It is also important to note that programmes that emphasise affordability of computers, smart phones, and other end-user equipment can help to bring down costs while allowing more users to experience the benefits of broadband. Initiatives to expand the scope of available ICT applications and content that are of interest to local populations, including private, locally developed apps, and e-government, e-health, and e-education services, can also have a significant effect. And general training and capacity building components of any universal access programme are an essential element to generate effective utilisation and benefits.

Also, the introduction of public access broadband services in smaller towns and villages can allow for a wider dissemination of such access beyond fixed facilities. By attaching the broadband point-of-presence to a local wireless transmission network, whether Wi-Fi or a short-range microcell service, users with smart phones, laptops, dongles, or other personal equipment can obtain broadband connectivity in nearby homes and businesses, and even on a mobile basis within their communities. This type of approach can multiply the benefits of public broadband deployments many times, moving towards universal broadband access.

9.5 Emerging challenges and New Possible UAS approaches

Universal access and service has been evolving over time. Whilst the focus of UAS programmes in the past was telephony, attention is now shifting towards the Internet and broadband. There are differences of approach between developed and developing countries in terms of universal access and service policies and programmes. For instance, in the European Union a service should only qualify for US or UA investments when it has achieved majority penetration through commercial or market forces. In developing countries such an approach may not yield desirable outcomes since it may take years for market forces to be able to deliver services to a wider section of the population.

Universal service and access programmes should also pay attention to other gaps in the system, such as the availability of electricity, which would enable network services to be available on a reliable basis in remote and rural areas. If adequate power is not reliably available from an electricity grid, investments in additional, and, where feasible, renewable energy sources, such as solar energy, should be eligible for universal service and access funding.

The advent of broadband provision as a recent focus area for universal service requires attention to backbone as well as access networks and the availability of affordable terminal devices. There needs to be coordination among the three spheres of government since there are a number of broadband roll-out projects taking place at provincial and municipal levels.

The transition from analogue to digital broadcasting services requires the subsidisation of set-top boxes to allow citizens uninterrupted access to broadcasting services. In terms of broadcasting, its coverage, availability, accessibility, language and local content also need to be taken into consideration. The role of state-owned entities such as Broadband Infraco and Sentech in the universal provision of broadband services also needs to be explored and exploited.

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As the countries and technologies develop and evolve, additional services are beginning to form a new basis of expanded universal services. These include:

- broadband services
- telemedicine services
- telemetry and remote sensing, control and monitoring
- smart metering services and solutions – automated meter reading (AMR), remote power load management and consumption trends analysis

The experience of implementing UAS, coupled with lessons from international benchmarking, has highlighted the importance of the following factors:

- Maintenance - Due to past experiences within the existing community telecentres and cyberlabs, it has become even more important to consider sustainability through support and maintenance of universal service access points beyond the build-out phase. The true value and success of a communications access point is the long-term continued utilisation and successful operation and support of the facility by the intended beneficiaries.
- Training - Very often many potential users are, at least initially, intimidated by new technologies. To continue supporting a growing user base of the services available in telecentres and cyberlabs requires a fair amount of investment in attracting, retaining, and re-skilling customers and users.
- Local partnerships - Working with local partners enhances the level of trust and support the community attaches to universal service and access projects
- Diversity of services - The notion of providing a bundle of services at a single outlet tends to be a good practice as it builds an opportunity for beneficiaries to achieve a more diversified product range from a single facility.

Policy questions

1. What strategies for increasing the affordability of access to ICTs, particularly for low-income users, should be adopted and how should the cost of providing services to needy communities, government institutions particularly schools and clinics be reduced?
2. How should government take responsibility for all types of UAS across the ICT sub-sector, telecommunications, broadcasting and postal services?
3. Should the universal access and service obligations continue in their current format? Are they sufficient for addressing the universal access challenge in light of new technological and market realities in South Africa?
4. In a converged environment, should there be differences in the treatment of operators in the different sub-sectors (broadcasting, telecoms and postal) insofar as USAO and the USAF are concerned?
5. Are the roles of USAASA, MDDA and ICASA still relevant given developments in the sector?

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Chapter 10: Promoting Investment in the ICT Sector

10.1 Introduction

For government, investment in the ICT sector is a fundamental policy goal, alongside transformation, diversity, universal access, and empowerment of historically disadvantaged individuals. In order to ensure a sustainable Investment environment, it is critical for government to create an enabling policy environment. This includes establishing proper investment policy and regulations, building research and development capacity, and promoting innovation.

According to the Global Competitiveness Report 2012-2013, the five greatest obstacles to doing business in South Africa are: i) an inadequately educated labour force; ii) restrictive labour regulations; iii) inefficient government bureaucracy; iv) inadequate supply of infrastructure; and v) corruption. The same report ranks South Africa 113th out of 144 countries in labour market efficiency.

10.2 Policy and Regulatory Framework

One of the key objectives of the Telecommunications Act of 1996 (repealed in 2006) was to encourage investment and innovation in the telecommunications sector. There have been many advances made in terms of the development of this sector particularly on the investment in infrastructure. But it has also been fraught with challenges.

The state of investment in the broadcasting industry is highly regulated in terms of limits set (both for local and foreign) and the licensing process for such services, together with the managed liberalisation. These limits were set in 1993 and they have not been revised, in spite of attempts to do so by the regulator. The infrastructure licence for broadcasting services is issued only after the Minister of Communications has issued specific policy directives.

While attempts have been made to integrate postal services into mainstream regulation as part of convergence, demonstrated by the transfer of the Postal Regulator into ICASA in 2005, the postal sector is still governed by the Postal Services Act of 1998. The postal market is divided into two, namely the reserved and unreserved markets. As mentioned earlier, only the national operator, SAPO exclusively operates in the reserved market. The unreserved market is easy to enter as no application is required. A licence is issued upon completing a prescribed registration and payment of a R500 registration fee. There are no specific clauses in legislation, licence conditions or regulations addressing sector-specific targets or mechanisms.

10.2.1 Infrastructure Investment

The past 20 years have seen the ownership of telecommunications service entities transforming into a major industry sector that offers considerable investment opportunities to private investors both domestically and internationally. BMI-T has calculated that the cumulative CAPEX since 1993 has been R132,4bn in mobile and R101.8bn in fixed networks.

There are several notable examples of foreign direct investment in the telecommunications networks in South Africa. These include the UK's Vodafone's investment in Vodacom, India's Tata's investment in Neotel, Japan's NTT's investment in Dimension Data, and the continued investment by Saudi Oger in Cell C. The regional and international investment in the SEACOM, EASSY and WACS submarine cables has benefitted the local economy.

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10.2.2 Broadband Investment

Domestic investment has been strong with Telkom, Neotel, Vodacom, MTN, and Cell C investing billions of Rands in infrastructure. Other organisations such as Dark Fibre Africa, Metrofibre Networx, and Dimension Data have also made notable investments. Some municipalities have invested in fibre and microwave telecommunications including eThekwini, City of Cape Town, City of Tshwane, City of Johannesburg, Ekurhuleni, Nelson Mandela Bay, Manguang, and uMhlatuze.

There have been some policy and policy-related moves to foster investment in telecommunications, particularly in broadband. The Department of Communications is finalising the Broadband Policy. The policy indicated that governments in other countries have substantially increased public funding to invest in the building of national broadband networks.

According to the BMI-T report (2013), some of the main reasons for the poor level of investment in electronic communications and therefore in broadband includes lack of effective competition for fixed local broadband access and absence of regulatory incentives and obligations, amongst other things.

10.2.3 Broadcasting Sector

The PwC report has predicted the following:

- A positive growth for broadcasting in South Africa for the next five years particularly in television.
- The advertising market in the next five years is set to increase at an 8,6% compound annual rate, rising to an estimated R41,2 billion in 2016 from R27,2 billion in 2011. Total television advertising is projected to increase at a 7,8% compound annual rate to R14,6 billion in 2016.
- The overall subscription household universe is growing rapidly. The number of subscribers to pay-TV channels rose by 700 000 in 2011, the largest single-year increase in South African pay-TV history. Between 2008 and 2011, the subscription household base nearly doubled. The availability of popular sports on pay-TV has proven to be a major lure.
- The industry, according to the Stats SA Report on the SA Post and Telecommunications, (2010), accounts for 5% share of the total post and telecoms revenue.
- Investment in the industry is overwhelmingly local, with about 58% of it representing historically disadvantaged groups. The early promising entrance by foreign investors seems to have fizzled out. Discounting China Star Times' impending investment into On Digital Media's TopTV, foreign ownership of broadcasting services, both radio and TV is standing at 1,3% and 6,2% respectively.

Sentech continues to dominate the terrestrial market. Pay-operators prefer to lease spare satellite capacity from foreign firms. The introduction of Freevision satellite by Sentech has added a mix to signal distribution on free-to-air. Thirty percent (30%) of local ownership is still a requirement for any infrastructure licence.

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10.2.4 Postal Sector

Although Postal is still regulated, it is less so relative to other sectors in the ICT environment. The only major restrictions are in respect of participating in the reserved market, which is the exclusive domain of SAPO. It has a 25-year licence. The following investment trends characterise the Postal sector in SA:

- There is strong competition in this sector, but investors need a certain minimum infrastructure to support delivery. It is difficult for new entrants to compete on price or service.
- The high market concentration makes it difficult for new entrants to enter the market.
- There are a significant number of transnational companies operating in the sector. However, due to the lax regulatory environment, the exact number, and the size of their business activities are not known.
- Despite BBBEE being a legislated policy, there are no figures to illustrate the level of compliance in the sector, particularly in the unreserved market where everyone operates.
- There is a poor regulatory environment (monitoring and enforcement) which presents huge risks for potential investors. The inconsistency in the number of operators in the unreserved markets seems to suggest the prevalence of illegal operators.

10.2.5 E-Commerce and IT

South African companies are competing at a global level with regard to the pre-payment, revenue management and fraud prevention systems. The IT market is expected to increase from US$9,3 billion to over US$13 billion in 2014. However the industry falls behind online retail developments of the developed market. It is experiencing slow growth compared with other BRICS countries, at approximately 1,5%. E-commerce continues to grow, with Africa and Middle East projected to have a 22% increase in Business-to-Consumer (B2C) commerce by 2016. South Africa is projected to show slower growth than its peer BRICS countries. So e-commerce remains at a rather nascent stage in South Africa, with uptake limited to certain sectors of society. Current impediments, if not urgently addressed, will stagnate any future development in this sector.

10.2.6 Electronics Manufacturing

The electronics industry revenues in South Africa amounted to R57,5 billion in 2002. South Africa's contribution to the world output in the electronics sector is insignificant, amounting to no more than 1%. The 'rest of the world', referred to in the same figure includes Brazil, other South American countries, Russia, Africa (excluding South Africa) and the Middle East.
Manufacturing is a capital intensive business. Mass volume products are required to sustain the industry. During the discussions on Broadcasting Digital Migration, manufacturers lamented the need to implement market stimulants such as government seed orders and subsidies to further revitalize the industry. Other than the dti's limited incentives, no other support mechanisms exist especially for emerging firms.

Lessons from Brazil, China and the US have demonstrated the importance of a sizeable domestic market if the local electronic industry is to be sustainable. Many industry players have found it difficult to penetrate foreign markets due to protectionist industrial policies.

10.2.7 Incentive schemes and packages

While South Africa has introduced various incentive packages to boost investment, only a few are relevant and/or specific to the ICT environment.

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The **Film and Television Production** incentive came into effect in 2008 to support the local film industry to contribute to South Africa's economic development, build South Africa's international profile and increase its creative and technical skills base through attracting large-budget films, TV productions and post-production work to South Africa. Although there has been a notable increase in the number of productions approved annually, the incentive seems inadequate to drive major investment. This is because it is still a rebate rather than a direct funding mechanism to induce investment, and the threshold for eligibility is very high for TV and emerging content creators.

The other two incentives, **Manufacturing Investment Programme** (MIP) and **Business Process Outsourcing** (BPO) are only in relation to ICT support sectors such as manufacturing.

10.3 Research, Development and Innovation

Investment in the production of local knowledge, and ICT goods and services

The Department of Science and Technology (DST) has been proactive in promoting development, research and innovation (RDI) through various strategic policies, programmes and plans as demonstrated through the ICT Strategy adopted in 2007. Furthermore, the DST has also developed the ICT Research, Development and Innovation Roadmap to support the country's strategic objective in increasing the impact of ICTs on society and in developing the economy.

Innovation extends beyond R&D activity. It goes beyond the confines of research laboratories to users, suppliers and consumers everywhere – in government, business and non-profit organisations across borders, across sectors and across institutions.

For the ICT industry, IP is not only a significant enabler, it is also an instrument of trade. IP can serve as a real barrier to entry for small and medium enterprises. The Global trade in IP licence is worth more than 600 billion pounds sterling and in countries such as the UK, it accounted for 137 billion pounds in 2008.

IP ownership is an outcome of Research & Development. Despite its designing and manufacturing capacity, the R&D Intensity of South Africa is still below the global norm of 2%, having been stabilised at around 0,92% of GDP over the past few years.

The dti's study on the Economic Contribution of Copyright-Based Industries in South Africa revealed that the direct contribution of the copyright-based industries to the economy, in terms of value-added, is 4,11%, while their total indirect contribution, in terms of output, is 5,49% (known as the production-induced effect). On the other hand, with regards to employment, the total direct effect is 4,08%, while its production-induced effect would be 14.52%. Countries such as Brazil and China have supported R&D and IP investment through: incentives; implementing quotas for local technology and local content applied to spectrum licensees; consortia to promote the development of local technologies and contribution of gross revenues by operators to fund technological development in the ICT sector.

10.4 Attracting Investment

Transforming the ICT industry

In South Africa, transformation is a critical policy goal to achieve representative participation in the economy, particularly in the ICT sector, which has historically been dominated by one group. However, transformation is not an issue of race alone. It has to be looked at from a

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broad industry make-up in terms its ownership, decision-making, business practices, staffing and products, and the society within which it operates.

Statistics SA shows that employment of previously disadvantaged persons in the ICT occupations has progressed relative to the period before 1994. With the exception of Postal, the broader ICT sector represents ownership by historically disadvantaged groups (black, women, youth and people with disabilities) as required by the ECA. The ICT Charter Code has been finalised, although the ICT Council, intended to oversee implementation and measure progress, has yet to be set up. Government has committed to set aside finance to support the Broad-Based BEE process and has revised the mandate of the National Empowerment Fund (NEF) to ensure the effective and efficient utilisation of resources.

The SANEF 2013 *Report on Media Transformation* found that the print and digital media had failed to sufficiently transform in terms of ownership, management control, skills development and employment equity, especially with regard to women and the disabled. The industry achieved more in areas such as socio-economic development, preferential procurement, and in certain cases, enterprise development.

Approach to Foreign Direct Investment as a Balancing Act

Foreign Direct Investment (FDI) is an important channel for obtaining access not only to much-needed investment, but also for the development of technology and skills. In a country such as South Africa, with high levels of economic inequality, poverty and skewed skills sets, FDI is critical, even more so because of limited capital in the domestic markets. Although foreign companies have been part of South Africa over the years, they have largely been concentrated in extractive industries such as mining.

In the ICT sector, the approach to FDI has largely been a balancing act, navigating through pressures of modernising and growing the economy on the one hand, and transforming the apartheid economy on the other. BEE has to be advanced amid the limited capital on the domestic market.

10.5 ICT SMMEs

Public sector support initiatives that have been put in place to support SMMEs in general include:

- Easing the regulatory and compliance burden on small enterprises through reduction of tax compliance burdens for small enterprises,
- Access to finance through the establishment of financial products and services, comprising loans and incentive grants that play an important role in enabling access to finance for small enterprises;
- Business development services;
- Youth enterprise development through the National Youth Development Agency (NYDA) Fund;
- Support for women-owned enterprises; and
- Incubation and technology acquisition and transfer services, as well as skills development measures. As part of their sectoral skills-development mandates, various sector education and training authorities (SETAs) have developed and are implementing small business skills-development programmes.

In addition to the above, various other private sector, NGOs, and tertiary education initiatives exist to support SMMEs.It is estimated that SMMEs account for up to 99,3% of the privately owned enterprises in South Africa. According to Statistics SA, there are 428 540 formal and economically active SMMEs in the country. Of the total formal sector SMMEs, only 6 737 are

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operating in the ICT sector. This implies that ICT SMMEs accounted for approximately 1,6% of the total formal small enterprises in South Africa in 2008. SMMEs currently contribute 35% to Gross Domestic Product (GDP). They also contribute 54% to formal private sector employment. Moreover the potential of SMMEs to resolve the country's development challenges such as employment and economic growth is immense.

Given its opportunities, the ICT sector provides a fertile ground for SMMEs incubation, development and promotion. In analysing the state of SMMEs in South Africa, the ICT SMME Enterprise Development Strategy (2008) said the following:

There is inadequate information regarding the economic activities, the sizes of SMMEs in the ICT sector and their peculiar challenges, including business models. Therefore, policy interventions are often broad and influenced by general SMMEs environment in South Africa. This has made targeted interventions difficult. More scoping work is required to understand ICT SMMEs for future policy intervention.

Policy Questions:

1. Given this Economic Climate, how can the South African ICT Industry attract and sustain the Investments?
2. How do we grow the domestic market amid the high levels of imports without undemanding our trade agreements and what other industry-specific support mechanisms both (direct and indirect) should be implemented so that the sector rejuvenated to create jobs and revive South Africa's excellence?
3. The value of IP does not necessary lie in its registration but its use. How can we promote the use of local IP to drive innovation in the ICT sector?
4. Considering the economic climate characterised by limited domestic capital, how can South Africa balance FDI and local ownership of ICTs, particularly in those highly regulated sectors such Broadcasting and Telecommunications services?
5. How can we re-engineer ICT SMME development so as to enable them to participate across the entire ICT value chain.

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Chapter 11: Skills Development for the Future

11.1 Overview

The knowledge economy or society requires profoundly new ways of thinking, working and living. These include building new capacities for the entire nation. These capacities are inevitably associated with the ability and use of ICT, and are often referred to as e-skills.

The rapid development of ICT over the past 20 years has seen many career paths become obsolete in secretarial services, booking services, finance services etc. Many new jobs using and developing new ICT-based applications are being created. Guiding South Africans, especially young people and equipping them with skills that cater for these new opportunities, building an astuteness to rapidly appropriate the new programmes and devices into local benefit i.e. 'e-astuteness' and encouraging and supporting ICT entrepreneurs, are vital for the future of South Africa.

11.2 Legislative and policy framework

Developing the human resource capacity of the country was an integral part of government policies on the sector to address inequalities and to grow the economy. In reviewing the sector's White Papers regarding training and skills development the following issues were raised:

- Transformation of the workplace to become representative of the demographic profile of South Africa with a specific focus on those previously disadvantaged.
- Accreditation of people in the sector. The South African Qualifications Authority (SAQA) and National Qualifications Framework (NQF) will recognise skills and compliance and will be monitored by the Ministry.
- Human resource directorates will be established.
- Training activities were identified for workers, technicians, artisans, tertiary institutions and schools.

The ICT Charter has had a direct impact on the sector and the SAQA and NQF guidelines have been developed. In terms of broadcasting, neither the HR fund nor the directorate was established. However, there have been some important developments: the National e-Skills Plan of Action (NeSPA) has been developed and the Human Resources Development Council of South Africa (HRDCSA), the e-Skills Council, the MICT Seta, Knowledge Production Hubs, and the National e-Skills Dialogue Initiative (NeSDI) were all established to prioritise skills development.

11.2.1 National Development Plan 2030 (NDP)

The NDP has created a vision and has identified targets to be obtained by 2030 in order to eliminate poverty, reduce inequality and spur the economic development of the country. Education, training and innovation are considered key priorities for South Africa's development and life-long learning is to be encouraged. The focus is on developing capacity and skills amongst South Africa's people. Currently, too many people are unemployed (24,7%) and this is especially so amongst South Africa's youth (70,9% of 15-34 year-olds). Education and skills are key to changing this. Currently, only 3% of 20 to 24-year-olds are enrolled for further education and training programmes.

The National Development Plan calls for an e-literate society by 2030. It further highlights the three priorities namely:

- Raising employment through faster economic growth;

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- Improving the quality of education, skills development and innovation; and
- Building the capability of the state to play a developmental and transformative role.

11.2.2 National e-Skills Plan of Action (NeSPA), DoC

Taking into account the WEF report and the call of the NDP, the Department, through its e-Skills Institute, cited amongst others the following shortcomings/opportunities for developing the required e-skills human capacity:

NDP Priority Area	NeSPA 2013 Action
***Pillar 1*: Unite around a common pillar to fight poverty and inequality**	Developing e-social astuteness across society is an essential component in developing a united approach to fight poverty and inequality. Without this essential ingredient it is difficult to see how society can be effectively engaged in dealing with these key issues facing South Africa.
Pillar 2*: Active citizenry *(e-participation, e-democracy)	Developing active citizenry in current times when more than 90% of poor people in townships have access to a cell phone is heavily dependent upon a national approach that recognises the essential value of new forms of ICT including social media. In turn this is then dependent upon a National e-Skills Plan of Action.
***Pillar 3*: Inclusive economy**	An inclusive economy simply cannot be developed without a clear recognition of the impact of increasingly powerful, mobile, accessible and affordable modern ICT devices. Without a plan to develop capacity (e-social astuteness) right across society to use these devices effectively as customers, clients, consumers, businesses, SMMEs, families and communities, an inclusive economy will remain an elusive dream.
***Pillar 4*: Build capabilities**	An evaluation of addressing poverty and inequality identifies capabilities to socially appropriate ICT for local benefit as an essential requirement. Hence the delivery of a national collaborative and integrated plan to e-skill South Africa lies at the very heart of capacity building for more equitable prosperity.
Pillar 5: A capable and developmental state	A capable and developmental state in a modern world clearly requires a state that is e-ready. Achieving a capable and developmental state simply cannot be realised without a concerted effort to address the issues underlying South Africa's e-readiness rankings.
***Pillar 6*: Leadership throughout society to work together to solve problems**	Developing leadership across the breadth and depth of society to solve problems is heavily dependent upon the effective use of modern ICT to bridge socio-economic divides, share discussions across wide groups, build consensus and deliver collaborative approaches. Without a well-developed e-social astuteness across the full spectrum of social media, it is difficult to see how a collaborative approach to problem-solving can be developed.
An economy that will create more jobs - NDP proposes to create 11 million jobs by 2030 -	e-skilling peoplefor employment and entrepreneurship.

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NDP Priority Area	NeSPA 2013 Action
Improving infrastructure	e-skilling (including building e-social astuteness) for the infrastructure planners and operational staff.
Transition to low-carbon economy	e-skilling (including building e-social astuteness) for sustainability development.
An inclusive and integrated rural economy	e-skilling (including building e-social astuteness) for rural communities and small-scale farmers.
Reversing the spatial effect of apartheid	e-skilling (including building e-social astuteness) the townships' population for Digital Inclusion.
Improving the quality of education, training and innovation	Giving educators and learners various e-skills (including building e-social astuteness) at all levels of education Early Childhood Development (ECD), primary, secondary, tertiary).
Quality health care for all	Providing e-health skills.
Social protection	e-skilling (including building e-social astuteness) citizens and government officials for using ICT in social protection services
Building safer communities	e-skilling (including building e-social astuteness) citizens and the safety and security related government officials regarding effective use of ICT for building safer communities.
Reforming the public services by professionalising them	Providing e-government and e-governance skills.
Fighting corruption	Providing e-Government and e-participation skills for greater transparency.
Transforming society and uniting the country	Providing e-Skills (including building e-social astuteness) for digital and social inclusion.

11.3 Institutions involved in skills development

The following are institutions involved in skills development:

- SETA (Sector Edcuation and Training Authority):
- Media, Information and Communication Technologies Sector Education and Training Authority (MICT Seta);
- National Association of Broadcasting of South Africa (NAB); and
- the e-Skills Institute.

11.4 Employment and skills gap

Approximately 180 000 people are employed in the sector, of which roughly 15 000 are software developers. There are nearly 8 000 companies in the ICT sector, most of them employing fewer than 50 people.

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11.4.1 Skills Gaps in the ICT Sector

An assessment of the industry conducted by the MICT Seta identified the immediate needs in each sub-sector with the IT sub-sector experiencing the greatest skills crunch. Software developers, programme developers, mobile apps development, computer network and systems engineers, ICT system analysts, computer network technician and call-centre agents are all in demand. In telecommunications, ICT business development managers are needed, in electronics, electrical engineering technicians, software developers, IT and network engineers, in advertising, multimedia designers, and in broadcasting, authors and radio journalists.Other skills identified include that of ethical, security, spectrum management, business analytical skills and e-leadership capabilities.

11.5 e-Skills for the Future & Global Trends

NeSPA 2013 identified key global trends that will affect South Africa, and pinpointed ways that the ICT sector could develop in the country: These trends included the following:

- The developing world – with more than half the world's population – provides the biggest opportunity for 'new-use' users for many ICT providers and developers.
- ICT development is converging, becoming more mobile, more affordable and more accessible in ways that suit developmental agendas for many countries.
- There can be no sustainable progress in developing equity of life chances in developmental states without the effective social appropriation of ICT.
- The rate of ubiquitous development of ICT is moving past the current capacity (for effective deployment and adoption) and attitudes of many societal, organisational and service delivery structures.
- Collectively these trends are irrevocably changing the fundamentals of many services, businesses, educational approaches, the praxis of governance and the way in which life is led. These impacts are likely to be greatest in places with large equity gaps.

11.6 Teacher Training, Curriculum Development & Further Education & Training Sites (FETS)

11.6.1 Teacher and Lecturer Training

The future of the classroom whether it be in schools, colleges, universities or private institutions will be very different from the form the previous generation knew, with the move across to digital online teaching and knowledge and information sharing via the Internet. There is also the potential to centralise teaching where one teacher's training of a class can be distributed to multiple classes simultaneously with in-class teachers becoming facilitators. In the near future, teachers need to be equipped with the necessary ICT skills to utilise the online e-education platforms and undergo routine ICT skills training.

11.6.2 Curriculum Development

The Department of Higher Education & Training (DHET) together with the MICT Seta can facilitate, monitor and evaluate innovations in future curriculum development that support diversity in skills. This is only for the ICT Sector and again only for the levy payers.

The Institute, comprising e-SI, Nemisa and the Institute for Space and Software Applications (ISSA), together with business, government, civil society and education embarked on a process towards developing an e-skills National Curriculum and Competency Framework (NCCF) that looks at targeted needs against the NDP, and then maps and links pathways to attaining those skills to meet the needs.

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This plan includes building an e-Skills curriculum and a competency framework and aims to focus on e-Literacy/e-astuteness as the foundation level. This is the ability of an individual to use digital devices and services in their day-to-day activities, whether it is at work, home or for personal interactions.

11.6.3 Further Education & Training (FET)

A comprehensive Turnaround Strategy has been developed by the DHET for the 50 FET Colleges, which includes all 264 campuses. The aim is to improve the quality of both the teaching and the learning taking place at FET colleges. The overall capacity building will improve the employment prospects of these graduates and thus have a positive impact on the economy as a whole. Currently 13- 25% of students enrolled at FET colleges drop out each year with Level 2 of the National Certificate Vocation experiencing the highest dropout. The NDP aims to increase graduation levels to 75% in 2030 from the 40% experienced in 2010.

A comprehensive and thorough evaluation of new courses and curricula is required that include careers in the ICT sector.

11.7 Workplace Training

The MICT Seta asked its members to assess what held back graduates (school, college, technology, and university graduates) from progressing either in a job or to further studies. Several patterns emerged with regards to the shortcomings related to generic skills sets. The gaps include: business management skills; language proficiency skills; work ethics; critical thinking skills; life skills; communication skills; computer skills and financial skills.

On-the-job training and short courses have been identified as the approach to take for workplace training. Advances in technology require on-going learning in the workplace to continuously improve efficiencies. This requires self-learning, and both informal and structured on-the-job e-Skills transfer between employees.

11.8 Adult Training

The Department of Higher Education and Training (DHET) is currently reviewing policies and programmes to restructure adult basic education and training (ABET). This includes being more responsive to needs and expanding programmes and access to these programmes. The MICT Seta will need to consider these policies and plan accordingly for ABET programmes in the sector

11.9 Promoting Innovation and Supporting Research & Development

Greater access to technology opens up a world of possibilities, and with South Africa's mobile penetration of 136% and Internet access of 35% we are on the cusp of being able to grow and develop our e-astuteness. With more people accessing smartphone technology, Internet access will increase and with it access to information that can inspire and grow potential and knowledge across all ages.

To promote innovation, a thriving and coordinated research focus is needed, which in turn promotes further innovation. The unstructured and fragmented research that has characterised South Africa's approach has not been able to address its capacity needs.
A fully integrated and coordinated framework is required that aligns to the priorities of the NDP and the national skills plan. To this end an aggregated data analysis of South Africa's needs and skills gaps in relation to new global technological trends is urgent.

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Policy Questions:

1. How can South Africa maximise its human e-Skills capital to take advantage of new technologies to become a more effective part of the Knowledge Society?
2. What strategies can be put in place to meet the sector's human resources needs?

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Chapter 12: INSTITUTIONAL ARRANGEMENTS

12.1 Roles and Responsibilities & Institutional Arrangements

12.1.1 Policy, Regulation and Service Provision

Policy making for a fast-paced sector requires a number of balances to ensure that the activities of different players are coordinated towards achieving definite ends. The roles and responsibilities of these different players are defined in current policy and legislation and are intertwined, requiring the different institutions to act in collaboration to achieve specific policy objectives outlined in the various laws governing the sector.

This section examines the roles and activities of the different public authorities at each stage of policy making and its execution. It identifies policy gaps and asks questions about further measures that could be included in the implementation of policies, laws and regulations.

12.1.2 Sharing of responsibilities

There are four responsibilities to be shared in line with the policy frameworks that have been put in place. The first is the responsibility to define the final goals to be achieved in the interest of citizens. Government, which produces national policy and introduces bills in Parliament, is the clear driving force in the formulation of the policy ends. Parliament, which passes legislation and holds government to account for fulfilment of policy, plays the primary role in defining the legislation that emanates from policy.

The second responsibility is choosing the means to deliver the desired ends. The regulator and government are the key players. The regulator determines the regulatory regime in accordance with the legislation, licence operators, imposes licence obligations, and interacts with the public. Government issues policy directions from time to time in accordance with legislation, and drafts amendments to the laws for parliamentary consideration.

The third responsibility involves enforcing compliance by everyone with the regulatory and licensing schemes. The regulator establishes the rules of the game and is the lead agency empowered to take action in cases of violation of licence conditions or regulations.

The fourth responsibility is the policy review, such as the current process that involves all role players. Periodic reviews are required because the effectiveness of policy may depend on many aspects, including market conditions that can change rapidly, policy ends that do not take into account prevailing conditions, disruptive technologies, or events or regulations that are not sufficiently strong to manage the sector. The judiciary reviews policies, legislative provisions and activities of various role players in situations where concerned participants resort to the courts for redress.

12.1.3 Policy Instruments

All the White Papers acknowledge that all organs of state, regulatory agencies and service providers must operate within a framework that takes into account the constitutional, legislative and other frameworks provided in law. The policy framework must take into account the following factors:

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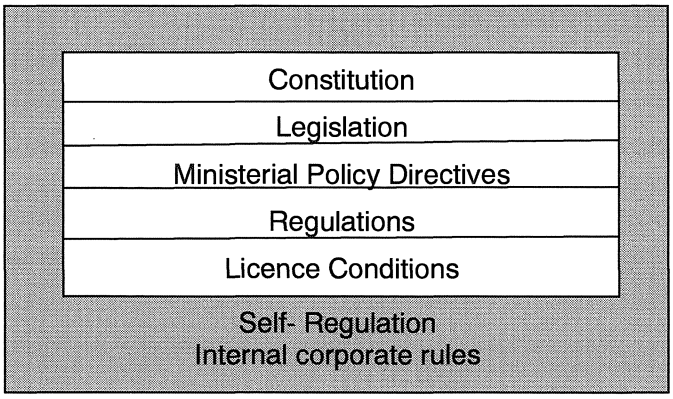

The Constitution is binding on all role players and is the basis of legislation and all activities in the communications sector. In particular, the Constitution directs the sector policy to uphold and extend the rights of all South Africans as enshrined in the Bill of Rights.

Legislation translates the major policy principles into a legislative framework. Legislation sets the objectives of the communications sector in law, assigns roles to the different players, establishes the procedures that define major activities and provides for enforcement mechanisms.

From time to time, Ministerial Policy Directives are issued for consideration by the Regulator. These Policy Directives must be in line with legislation. Regulations are developed by the Regulator to direct network operators and/or service providers to behave in a particular manner concerning a determination and are issued after a public consultation process involving the operators and other interested parties.

Licence conditions are issued to an individual operator or a class of operators in case licences are not significant and can be licensed through a registration process The licence conditions contain the parameters of the services to be offered, universal service obligations that are expected from the licensee, and the fees that must be paid to use the radio frequency spectrum.

Self-regulation refers to undertakings made by industry associations, which the industry itself monitors and enforces according to codes of behaviour that are established by the industry associations and submitted to the regulator. Internal corporate rules and policies govern the conduct of the network and/or service providers in their internal operations but many, such as human resources policies, must be submitted to the Authority so that it can monitor transformation and other conditions that may be attached to the licence.

12.2 Review of the roles of different Institutions involved in policy

12.2.1 Parliament

Section 43 of the Constitution vests the legislative authority to pass and amend laws in Parliament. Parliament therefore plays a critical role in translating major policy principles into legislation. The legislation in turn assigns responsibility to government, regulatory authorities and service providers. Parliament, acting through the Portfolio and Select Committees on Communications, holds the government, regulatory authorities and other public entities involved in the sector to account in terms of their annual performance plans, budgets and audits. Parliament has also on many occasions conducted inquiries into the various activities of the communications sector involving public, private and community operators.

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The ICASA Act of 2000 provides for the appointment of the Council of the regulator by the Minister on the advice of the National Assembly. The Broadcasting Act of 1999 provides for the appointment of the Board of the South African Broadcasting Corporation by the President. In this role, Parliament manages the appointment process and makes recommendations to the President.

The Broadcasting White Paper of 1998 dealt extensively with the different roles that Parliament should play in accordance with the Constitutional provisions. Both the Telecommunications and the Postal White Papers provided for Parliament to undertake legislative activities arising out of the policy processes.

The Information and Communications sector is now recognised as an important enabler across various spheres of social and economic activities. The draft Broadband Policy envisages a national strategy to promote the use of broadband technologies in the educational, health, social security, environmental, police and other sectors.

E-Government as part of the Broadband Plan will deliver through electronic services the activities that are governed and regulated by the sector-specific agencies. The draft plan identifies the need for effective coordination and alignment between the agencies responsible for the ICT sector and those who will be responsible for delivering e-services. As an example, e-health services must conform to health standards and communications standards. This will require collaboration between the ICASA and the equivalent regulatory body in health services. This raises questions about how Parliament will oversee the planning and implementation of ICT systems that affect a cross-section of Portfolio and Select Committees. The current system of Parliament entails Portfolio Committees organised on a sector basis, whereas in the future differently structured committees may be required to deal with the new electronic and online services that will be offered in addition to the current offline services.

12.2.2 The role of government

The Constitution vests government with executive powers to run the affairs of the country. Government, through Cabinet, develops national policies whose major principles are captured in draft Bills for submission to Parliament. Government accounts to Parliament for the implementation of the responsibilities assigned to it by Parliament and law. Government also oversees the functioning of public entities and the provision of public services. The Minister of Communications is charged with shareholder responsibility on behalf of government in all State Owned Entities in the communications sector. But the Minister of Public Enterprise exercises this function in the case of Broadband Infraco. The Minister of Communications is responsible for political oversight of the Department of Communications on behalf of Cabinet.

Section 3 of the Electronic Communications Act empowers the Minister to make Ministerial and Policy directives on matters of national policy applicable to the ICT sector and in line with related legislation. There are several areas in which the Minister may make policy directives, including radio frequency spectrum, universal service and access policy, and the application of new technologies.

Since the last White Paper was drafted 15 years ago, there has not been any formal policy and market reviews despite an early identification in the white papers that technological changes were going to affect the provision of telecommunications, broadcasting and postal services in a fundamental way. Many laws have instead been drafted and passed by Parliament in an ad-hoc way.

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The lack of development of an all-encompassing national strategy to guide the deployment and adoption of modern communications technologies in the country has been blamed for the poor performance in all tracked indicators. As indicated earlier, the Draft Broadband Policy identified the stimulation of demand for broadband services as important for the successful roll-out of broadband services. The Draft envisages government playing the role of service aggregator to acquire and procure services, network capacity, content and applications for the public sector. The demand-side measures will also see government connecting all government offices and providing a portal for interacting with the public.

The second sphere of government responsibility is the use of modern communications tools to deliver services in the most efficient manner possible. There are skills and resources shortages that make the delivery of services using communications means not only cost effective but the most efficient, taking into consideration the developmental stage of the South African public service. Experience from other countries that have succeeded demonstrates that only a well-coordinated and planned introduction of e-government strategies can overcome initial obstacles and lead to successful implementation. Initiating pilots, evaluating the results and rolling out of large-scale projects requires project management skills such as were deployed during the preparations for the 2010 World Cup. A clear institutional arrangement must be developed within government to enable information sharing on planned projects, the establishment of teams that can jointly plan to develop common networks, platforms and applications, and joint funding of these activities.

12.3 The Roles of the Regulatory Agencies

12.3.1 The Role of the Independent Communications Authority

ICASA was established as an independent communications authority regulating the telecommunications and broadcasting sectors by the ICASA Act 2000 in line with section 192 of the Constitution. Section 192 provides for the establishment of an independent regulatory authority to regulate broadcasting in the public interest and to ensure fairness and diversity of views broadly representative of the South African society. The Postal regulator was merged with ICASA in 2006 to provide for the regulation of the postal sector.

ICASA derives its mandate and operations from the ICASA Act of 2000, the Electronic Communications Act of 2005, the Broadcasting Act of 1999 and the Postal Act of 2006. As a public entity, ICASA is subject to the Public Finance Management Act (PFMA) and the Promotion of Administrative Justice Act (PAJA).

Research indicates that the cost to communicate in South Africa remains high even though the regulation of the sector to provide reasonable prices for services is one of the key objectives of policy and statutes. The competition framework outlined in section 10 of the Electronic Communications Act was introduced to give power to the regulator to intervene in situations where significant market power was evident, resulting in high prices and dominance abuse. The determination of markets and the outline of pro-competitive measures in situations where there is no effective competition are provisions contained in law but they have not been implemented in the past seven years.

ICASA has taken action to lower the termination rate mobile operators pay to each other for the termination of calls and identified the need for intervention in the digital broadcasting signal wholesale distribution market to ensure fair pricing.

Under current legislation the Minister is also empowered to issue, from time to time, policy directives to the Independent Communications Authority regarding any matter the Minister feels ICASA must consider and act upon in the implementation of the law. These directives are an important instrument enabling government and ICASA to respond to technical and

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other developments that may not have been anticipated in the original legislation. As the convergence of technologies gather pace, the ability of both the Minister and ICASA to take appropriate action timeously will become important. Before the Minister issues the directive, he or she must first consult the Authority, notify the public of the intentions to issue a directive, and solicit public comment. After this, the policy directive is issued to ICASA, which must consider it. Yet the statutes governing ICASA require it to again publish draft regulations based on the directive for public input. The consultation required is lengthy and repetitive, effectively preventing timeous and effective decisions. An amended law could allow for a quicker process if the public consultation processes were combined, and the draft regulations were published at the same time as the initial policy directive. In some cases the outcomes of a policy directive or even of legislative clauses have yielded results that are contrary to the policy aims. This raises the question of whether ICASA should not be required to consult the Minister prior to finalizing the regulations. This would enable the Minister to confirm that the regulations are in line with policy objectives that the directive originally sought to address. Such a consultative process becomes more important, taking into consideration that there is no room for government participation in the consultation processes of the Authority.

12.3.2 Constitutional Independence of ICASA

Despite the Constitutional requirement for an independent regulatory authority, which is reflected in the founding legislation, discussions about the meaning of independence have arisen depending on decisions made and activities undertaken by the regulator or government.

There have been many Constitutional reviews and judgements in South Africa concerning the conditions under which constitutional independence can be exercised and therefore how it is guaranteed. In its first review, considering the provisions for the independence of the Public Service Commission, the Reserve Bank, the Auditor General and Public Protector, the Constitutional Court observed that independence must be considered "against the background of the nature of the particular institution" taking into consideration its particular powers and functions. The Court ruled though that factors relevant to independence related to provisions for appointment, tenure, and removal from office as well as institutional independence.

These judgements suggest that constitutional independence relates to such factors as financial independence, institutional independence and administrative independence with respect to matters directly related to the institution's mandate, appointment procedures for its officers and their security of tenure. The current provisions that established ICASA were crafted to meet these constitutional independence tests.

The changing technological environment and market uncertainty has thrown into focus the roles and responsibilities of various players, as well as the definition of independence. The 2005 Canadian Review of the Telecommunications Policy Report considered the question of independence from the policy perspective in a similar manner to the persistent question about the relationship between policy and regulation in South Africa. This Review Panel concluded that the independent regulator was bound by legislated policy and that "statute is the formal expression of a legislative policy, therefore before a statute can be drafted, the policy sought to be implemented by it must be determined."

The Review discussion document indicated that even different regulators could be required to regulate some activities that now fall in the ambit of ICASA in the South African environment. "*Around the world today, it is generally accepted that the best approach to allocating governance and operating functions within the telecommunications sector is as follows:*

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- Governments, including ministries and cabinets, develop telecommunications and ICT policies and implement them through laws, fiscal measures and government programs.
- Regulators implement the policies and laws, acting in an objective professional and transparent manner, independent of the interests of any specific service provider.
- Network operators and service providers (which are generally non-government companies) build and operate networks and provide services within the policy and regulatory framework.

12.3.3 Funding of ICASA

Funding ICASA has become a serious discussion point since the enactment of the Electronic Communications Act of 2005. This Act mandated ICASA to put in place a number of pro-competition measures, including the identification of markets and developing pro-competition strategies and interventions.

The discussion on technological trends indicate the need for a stronger regulator to manage the convergence of communications and other technological developments that could increasingly bring about uncertainty in the sector.

The Draft Broadband Policy identifies a strong and capable regulator as a necessity in order to ensure interconnection and the regulation of the open access environment that the policy seeks to put in place.

The coming together of markets that were historically separate, the emergence of the internet as a dominant medium of communications, and the new innovative applications and services will require a strong, transformed and effective regulator to ensure:

a) There is a level playing field between unequal entities using different technological platforms;
b) Technological neutrality and net neutrality;
c) Fair and equal treatment of new entrants and the opening up of the market; and
d) Effective consumer protection.

Research by the Department of Communications in 2012 concluded that there is a need for the sources of funding to be diversified in order for ICASA to have funding certainty and taking into consideration other burdens on the national fiscus. This study reported that, internationally, there are three broad approaches to funding of similar regulatory bodies:

1. Formal allocation in the government budget.
2. Reliance on market sources of funding (through collection of fees), but still dependent on government to approve budgets. The government approves the amounts allocated to the regulator each year and this is either retained by the regulator from fees collected or allocated to it from a "kitty" made up of funds collected by the regulator.
3. Self-funding and control of funding - in this instance, the regulator keeps all fees and revenues earned in the execution of its duties and independently determine its own budget.

However, most regulators use a hybrid of one or more models depending on the prevailing financial management legislation in the country as well as the founding legislation of the particular regulator. According to the ITU's World Telecommunication Regulatory Database 2005, of the 119 countries that provided information on the breakdown of their regulatory authority's financing sources, 66% indicate that they rely on a combination of sources for their funding whilst only 33% rely on a single source of funding.

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ICASA requires a funding model that reinforces its independence from all stakeholders (including industry and government) and ensures sufficient funding for the effective execution of its mandate.

Such a funding model would:

- Ensure stable and predictable cash flow.
- Allow for financial flexibility.
- Allow for the recruitment and retaining of skilled staff.
- Incentivise pro-competitive regulation.
- Enhance ICASA's credibility.

12.4 Universal Service and Access Agency (USAASA)

The Telecommunications Act of 1996 established the Universal Service and Access Agency of South Africa (USAASA). Section 82 of the Electronic Communications Act 2000 provides for the functions of the Universal Service and Access Agency.

Chapter 10 discusses the concept of universal service and access in the future in more detail, as well as the operations of the USAASA, and the possible funding models.

The Electronic Communications Act provides for USAASA to recommend to the Minister what constitutes universal access by all areas and communities to the electronic communications services and electronic communications network services. The Agency is further charged with the responsibility to monitor the extent to which universal access and service have been achieved.

The Act provides that the Minister may require recommendations from the Agency in relation to policy on any matter relating to universal access and service. It also directs the Agency to inform ICASA of any matter relating to universal service and access.

The Act also provides for the Agency to manage the Universal Service and Access Fund. In terms of this law, ICASA determine the basis and manner of the contributions of licence holders to the Universal Service and Access Fund. The Minister is required to determine the threshold of contributions as a percentage of annual turn-over. ICASA should identify under-serviced areas and review the list of under-serviced areas at least twice a year. The Minister is required to determine the types of needy persons.

12.5 The .zaDomain Name Authority

The Electronic Communications and Transactions Act of 2002 provides for the establishment of the Domain Name Authority. The Domain Name Authority is established as a section 21 company and its overall mandate is to manage and administer the .za namespace. The Authority is also charged with the responsibility to resolve disputes arising in the domain name space. There are several disputes over the use domain and registered trademarks.

The Domain management arrangements in South Africa have many independent operators who administer second-level domain names including the State Information Technology Agency. In addition to these entities, the Internet Corporation for Assigned Names and Numbers (ICANN) has overall responsibility for managing the Domain Naming System (DNS). It administers the root domain, delegating control over each Top Level Domain (TLD) to a ccTLD administrator, such as .za Domain Name Authority (DNA). Because the DNS is not centralized, the administration of the second-level domain is further delegated to the above-mentioned registry operators who administer the DNS with a great degree of independence. Some countries have third and fourth-level domain administrators' names.

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Policy Questions:

1. How can the provisions for ministerial policy directives be improved without undermining the independence of ICASA? What changes would safeguard the regulator's independence and at the same time ensure transparent interaction between ICASA and government? What other mechanisms could be used to ensure alignment between policy and regulation?
2. Is the existing structure of ICASA appropriate to regulate the converged environment? How should ICASA be funded?
3. The provisions dealing with universal service and access are contained in all the communication laws and policies. Is the institutional arrangement between the decision makers adequate to fulfill the universal service and access provisions?
4. The provisions of the Electronic Communications Act on Universal Service Fund separate the management of the Fund from the determination of under-serviced areas. The definition of needy persons is also separated from the management of the Fund. Is this the best mechanism to promote effective use of the Fund? What measures can be developed to foster cooperation?
5. The domain names are taking on increasing importance as their commercial value rises, and as global internet and e-commerce increase. Cyber-squatting took on global proportions until regulatory regimes dealt with the registration of names by persons not entitled to them. Should South African names that are intrinsically of national importance or relevance be treated differently from corporate or brand names for reasons of public interest.

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GLOSSARY OF TERMS AND ACRONYMS

ABET	Adult Basic Education and Training
ACA	Association for Communication and Advertising
ASGISA	Accelerated and Shared Growth Initiative for South Africa
AM	Amplitude Modulation – used for radio broadcasts
ADSL	Asymmetrical Digital Subscriber Line
ARs	Audience Ratings
ASA	Advertising Standards Authority
ATFT	The Association for Transformation in Film and Television
ATR	Annual Training Report
ATSC	American Telecommunication Standard Council
AUSTEL	Australian Telecommunications regulatory authority
B2B	Business to Business
B2C	Business to Consumer
Barriers to Entry	Obstacles that impede a firm's ability to enter a market, and may include factors such as regulations, technology and economics
BBBEE	Broad-Based Black Economic Empowerment
BBC	British Broadcasting Corporation
BCCSA	Broadcasting Complaints Commission of South Africa
BER	Bureau for Economic Research
BIIC	Broadband Inter-Governmental Implementation Committee
BITF	Black Information Technology Forum
BOT	Build-Operate-Transfer
BPO	Business Process Outsourcing
BRIC	Brazil, Russia, India and China
Broadband	an ecosystem of high capacity, high speed and high quality electronic networks, services, applications and content that enhances the variety, uses and value of information and communications for different types of users.
BUSA	Business Unity South Africa
CAGR	Compound Annual Growth Rate
C-band	The frequency band from 4-6 Ghz - used mainly for distribution of television signals to terrestrial relay transmitters.
CCC	Complaints and Compliance Committee (of ICASA)
CCTV	Closed Circuit Television
CEPD	Centre of Education Policy Development
CERTS	Computer Emergency Response Teams
CHAMSA	Chambers of Commerce and Industry South Africa
CoLabs	e-Skills knowledge coordination and production hubs
CompCom	Competition Commission of South Africa
COSATU	Congress of South African Trade Unions
CPA	Consumer Protection Act, Act 68 of 2008
CPE	Customer Premises Equipment - refers to telecommunications equipment, of various specifications, that is installed at a customer's site
CRASA	Communication Regulators' Association of Southern Africa
CRSP	Community Radio Support Programme
CSIR	Council for Scientific and Industrial Research
CSIRTSs	Computer Security Incident Response Teams
CSO	Community Service Obligations
CSSA	Computer Society South Africa
Cyberspace	The Internet/ electronic/ digital environment

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CWU	Communication Workers Union
DAB	Digital Audio Broadcasting
DAC	Department of Arts and Culture
DBE	Department of Basic Education
DECT	Digital European Cordless Telephony
DHET	Department of Higher Education and Training
DoC	Department of Communications
DoL	Department of Labour
DPSA	Department of Public Service and Administration
DPT	Department of Posts and Telecommunications
DVB	Digital Visual Broadcasting
DTH	Direct to home
DTI	Department of Trade and Industry
DTT	Digital Terrestrial Television
Deregulation	When a highly regulated broadcasting environment is reassessed and a number of rules and regulations are reduced, making it easier for interest groups other than the state to participate, own and control a broadcasting station.
Duopoly	A special type of Oligopoly. It is a market in which there are two producers of a commodity competing with each other
DVB-T	Digital Video Broadcasting - Terrestrial
ECD	Early Childhood Development
ECNS	Electronic Communications Network Service
Economies of scale	Occurs when a single producer can supply the entire market at an average total cost of productions that is lower than what can be achieved by two or more firms; e.g. Eskom, Telkom
Economies of scope	Occur when there is a decrease in average total cost made possible by increasing the number of different goods produced
ECS	Electronic Communications Service
ECTA	Electronic Communication & Transactions Act of 2002
EDI	Electronic Data Interchange – transfer of data from one system to another
EIF	Electronics Industry Federation
Electronic Communication	Communication made by means of a data message
Encryption	A mechanism for changing the broadcast signal in a systematic way so that the picture would be unintelligible without a suitable decoder. The procedure is highly mathematical and very secure. Encryption usually infers a higher degree of security than "scrambling", which is a simple rearrangement of parts of the signal according to some simple formula and it's therefore less secure.
EE	Employment Equity
e-SI	e-Skills Institute
ETQA	Education and Training Quality Assurance
FCC	Federal Communications Commission (USA-based)
FET	Further Education and Training (Colleges)
Fleetcall	Private company- one of two licensed to provide national radio trunking in South Africa
FILM	Film Industry Learner Mentorship
Fixed Line Operator	Fixed line operator "means Telkom and any other company that provides a licensed telecommunication service by means of a telecommunication system consisting mainly of fixed lines.
FM	Frequency modulation
Foot Print	The area of the earth's surface in which a particular satellite signal can be received.

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FOSS	Free and Open-Source Software
FPB	Film and Publication Board
FRD	Foundation for Research and Development
Frequency Band	A specified range of frequencies for use by one or more radio communication services
Frequency Band Plan	A table setting out the allocation of various frequency bands.
FTA	Free-to-Air broadcasts that can be received without any encryption process required.
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GCIS	Government Communication and Information Services
GDP	Gross Domestic Product
GFC	Gauteng Film Commission
GII	Global Information Infrastructure
GITOC	Government Information Technology Officers Council
Grandfather Clause	A clause ensuring that the existing rights of present broadcasters are carried over and continued in a new regulatory dispensation
GSM	Global System for Mobile Communications
HE	Higher Education sector
HEMIS	Higher Education Management Information System
HET	Higher Education and Training (Institution)
HIV/AIDS	Human Immune Virus / Acquired Immune Deficiency Syndrome
HRD	Human Resource Development
HRDCSA	Human Resource Development Council of SA
HRDSSA	Human Resource Development Strategy of South Africa
HSRC	Human Sciences Research Council
IBA	Independent Broadcasting Authority
IBRD	International Bank for Reconstruction and Development (World Bank)
ICASA	Independent Communications Authority of South Africa
ICT	Information & Communications Technology – a term used to describe the convergence of information technology and communications.
IDC	Industrial Development Corporation
IDC	International Data Corporation
IFC	International Finance Corporation
ILO	International Labour Organisation
Information-based economy	A country where ICT is used to develop economic foundations and market transactions
Infraco	Broadband Infraco (Pty) Ltd
INMARSAT	International Mobile Satellite Organisation
INTELSAT	International Telecommunications Satellite Organisation
Interconnection	Link between two telecommunications systems so users of either system may communicate with each other
IP	Intellectual Property
IP	Internet Protocol (address)
IPAP	Industrial Policy Action Plan
IPRs	Intellectual Property Rights
ISAD	Information Society and Development (Plan)
ISO	International Standards organization
ISOE	Institute of Sectoral Occupational Excellence
ISP	Internet Service Provider
ISPA	Internet Service Providers Association of South Africa
ISSA	Institute for Space and Software Applications
IT	Information Technology

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ITU	International Telecommunication Union – the United Nations specialised ICT agency based in Geneva, Switzerland
JCSE	Joburg Centre for Software Engineering
Kbps	Kilobits per second – a measurement of uploading/downloading speed across a network
KPA	Key Performance Area
Ku-band	The frequency band 11-14Ghz, intended for direct-to-home television broadcast
Leased Circuits	Circuits leased under the facilities leasing agreement
Local Content	Programming content that is developed and produced specifically for South African audiences by South African producers, taking into consideration the diversity of South African culture
Local Loop	The communication channel, connecting customer with the nearest exchange, or long-distance transmission facility. It is normally used for the transmission of basic telephony and data, or the communication channels interconnecting telecommunications terminals within a restricted (local) area, usually for high-speed communication (e.g. MAN).
Long Distance	Circuits used to interconnect local exchange areas with other local exchange areas, or with other networks abroad.
LMDS	Local Multi-point Distribution System
Mbps	Megabits per second – a measurement of uploading/downloading speed across a network
MDDA	Media Development and Diversity Agency
MDGs	Millennium Development Goals
MTSF	Medium Term Strategic Framework
MICT SETA	Media, Information Communications Technologies, Sector Education Training Authority
MMDS	Microwave Multi-point Distribution System
M-Net	Electronic Media Network – private JSE-listed company offering a television service utilising encoded subscription
MPCC	Multi-purpose community centres
MTN	Mobile Telephone Networks – private mobile cellular company
MW	Medium Wave (band) – radio frequency between 300 and 3000 khz
MOOC	A massive open online course
Monopoly	Where one supplier of either services or goods, dominates an industry with little room for a competitor to enter the market.
MPCC	Multi-Purpose Community Centre
Competition	A market in which many firms compete with each other offering similar but sufficiently different services or products.
MoU	Memorandum of Understanding
MTSF	Medium Term Strategic Framework
NAB	National Association of Broadcasting of South Africa
NCA	National Credit Act
NCCF	National curriculum and competency framework
NDP	National Development Plan
NEETs	Not employed, not in education and not in training
NEMISA	National Electronic Media Institute of South Africa
NEPAD	New Partnership for Africa's Development
NeSPA	National e-Skills Plan of Action
NFVF	National Film and Video Foundation
NQF	National Qualifications Framework
NSA	National Skills Agency
OECD	Organisation for Economic Co-operation and Development

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OER	Open Educational Resources – materials available for teaching and learning that are free of royalties and license free
PAPU	Pan African Postal Union
PBS	Any broadcasting service provided by the South African Broadcasting Corporation (SABC) or any other statutory body and also provided b any person who receives his or her revenue, either wholly or partially from license-fees.
PCBS	Public Commercial Broadcasting Service are commercial services of the public broadcaster.
PIAC	Presidential International Advisory Council
PICC	Presidential Infrastructure Co-ordination Committee
PoC	Programmes of Cooperation
POPI	Protection of Personal Information Bill
PSTN	Public Switched Telephone Network. Wired data network operated by Telkom
PTN	Private telecommunications networks
PTO	Posts and Telecommunications Organisation
PTT	Posts, Telegraphs and Telephones
R&D	Research and development
Radio	Electromagnetic waves that are propagated in space without artificial guide and having frequencies of lower than 3000 GHz
Radio apparatus	A telecommunication facility that is capable of transmitting or receiving any signal by radio
RAMS	Radio Audio Measurement Survey
RASCOM	Regional African Satellite Communications Organisation
RBT	Ring Back Tone
RDP	Reconstruction and Development Programme
ResNES	Research Network for e-Skills
Resale Carrier	An operator that leases capacity from facility-based operators & resells it
RFS	Radio Frequency Spectrum
RiSA	Record Industry of South Africa
RPL	Recognition of Previous Learning
RRO	Reprographic Reproduction Organisation
SA	South Africa
SAARF	South African Advertising Research Foundation
SABC	South African Broadcasting Corporation
SABS	South African Bureau of Standards
SACCI	South African Chamber of Commerce and Industry
SACEM	Society of Authors Composers and Publishers of Music
SACVEN	Sociedad de Autores y Compositores de Venzuela
SADC	Southern African Development Community
SAEPA	South African Express Parcel Association
SAMPRA	South African Music Performing Rights Association
SAMRO	Southern African Music Rights Organisation Limited
SAPO	South African Post Office
SAQA	South African Qualifications Authority
SARRAL	South African Recording Rights Association Limited
SASFED	SA Screen Federation
SATAWU	South African Transport and Allied Workers Union
SATRA	South African Telecommunications Regulatory Authority
SATCC	Southern African Transport and Communications Commission
SCKC	Smart Community Knowledge Centres
SCPP	Societe civile des Producteurs de Phonographiques
SDF	Skills Development Facilitator

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SDL	Skills Development Levy
SETA	Sector Education andTraining Authority
SKA	Square Kilometre Array
SIC	Standard Industrial Classification
Signal	Includes signs, sounds, writing or information of any kind
SIP	Strategic Integrated Partnership or Special Infrastructure Project
SITA	State Information Technology Agency
SME	Small and Micro Enterprises (less than 50 employees in the MICT SETA's context)
SMMEs	Small, Medium and Micro Enterprises (less than 150 employees in the MICT SETA's context)
SMS	Short Message Service
SOCs	State Owned Companies
SOEs	State Owned Enterprise(s)
SOCAN	The Society of Composers, Authors and Music Publishers of Canada
SPPF	Societe civile des Producteurs de Phonogrammes en France
SPEDIDAM	Societe de perception et de distribution des droits des artistes interpretes de la musique
SPRE	Société de Perception de la Rémunération Equitable
SSA	Société Suisse des Auteurs
SSP	Sector Skills Plan
Station	Any separate radio apparatus or a combination thereof
StatsSA	Statistics South Africa
SUISA	Cooperative Society of Music Authors and Publishers in Switzerland
SUISSIMAGE	Swiss Authors' Rights Cooperative for Audiovisual Works
TA	Telecommunications Act
Tariffs Rebalancing	Setting the tariffs for telecommunications services in line with the costs of providing them, so that cross-subsidies from calls to rentals, from long-distance to local services, and from international to national services, are eliminated.
TBVC	Transkei Boputhatswana, Venda and Ciskei state
Telecommunication	The emission, transmission or reception of a signal from one point to another by means of electricity, magnetism, radio or other electromagnetic waves, or any agency of a like nature, whether with or without the aid of tangible conductors
Telecommunication facility	Includes any wire, cable, antenna, mast or other thing which is or may be used for or in connection with telecommunication
Telecommunication service	Any service provided by means of a telecommunication system
Telecommunication System	Any system or series of telecommunication facilities or radio, optical or other electromagnetic apparatus or any similar technical system used for the purpose of telecommunication, whether or not such telecommunication is subject to rearrangement, composition or other processes by any means in the course of their transmission or emission or reception
Telkom	Telkom SA Limited – a company
Terrestrial	Broadcasting utilizing transmitters on earth as opposed a satellite, which is celestial
TPMs	Technical Protection Measures
Transnet	Transnet Limited – a company
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UK	United Kingdom

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UN	United Nations
UNCITRAL	United Nations Commission on International Trade Law
Universal Access	Universal access to telecommunication services as determined from time to time in terms of section
UPU	Universal Postal Union
USA	Universal Service Access
USAASA	Universal Service Access Agency of South Africa
USAF	Universal Service and Access Fund
USAO	Universal Service Access Obligations
USP	Universal Service Provider
VANS	Value Added Networks - a data communication system in which special service features, such as protocol conversion or access to databases enhance the basic data transmission facilities offered to the customer.
VANSA	Visual Arts Network South Africa
WASPA	Wireless Application Service Providers Association
WCT	WIPO Copyright Treaty
WEF	World Economic Forum
WHO	World Health Organisation
WIPO	World Intellectual Property Organisation
WITSA	World Information Technology and Services Alliance
WPPT	WIPO Performances and Phonograms Treaty
WSIS	World Summit on Information Society
WSP	Workplace Skills Plan
WTO	World Trade Organization

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