Contents

1 Methodology

This study provides an analysis of the digital readiness of the Western Cape (WC) over the course of the rollout of the various Western Cape Government (WCG) broadband initiatives. The study adapts the framework and employs some of the indicators that the World Economic Forum (WEF) uses in the global Network Readiness Index (NRI), where South Africa ranked 75th in 2015 out of 143 countries. However this study drills down further into the access, use and adoption of ICTs, using more representative and appropriate indicators for the Province. The outcome is a more informative tool to aid the Western Cape in its planning and implementation functions.

Research ICT Africa (RIA), was appointed by the Western Cape Government Department of Economic Development and Tourism (DEDAT) to undertake a digital readiness assessment of the province. This included a provincially representative ICT access and use survey of households and individuals. This provincial baseline survey further honed in on thee underserved areas Khayelitsha, Mitchell's Plain and Saldanha Bay as the basis for an impact assessment of broadband roll out on individuals, household and the informal sector in these communities. This study was conducted in partnership with the University of the Western Cape (UWC) and University of Cape Town (UCT), both of which are members of the Cape Higher Education Consortium (CHEC).

Since the WCG Broadband Initiative drew on the Networked Readiness framework as developed by the WEF and Cornell University, the baseline analysis was intended to follow the methodology of the annual international NRI, thereby creating a regional sub-national index for the first time. However, following background research into global ICT indices, it became clear that many of the NRI sub-indices used national level data that could either not be obtained on a provincial level, or would reflect the same data being used at the national level. Essentially this would result in very similar indicators to South Africa's current NRI. Therefore, to more accurately reflect the Western Cape's digital readiness, a number of the indicators in the sub-indices were adapted and expanded.

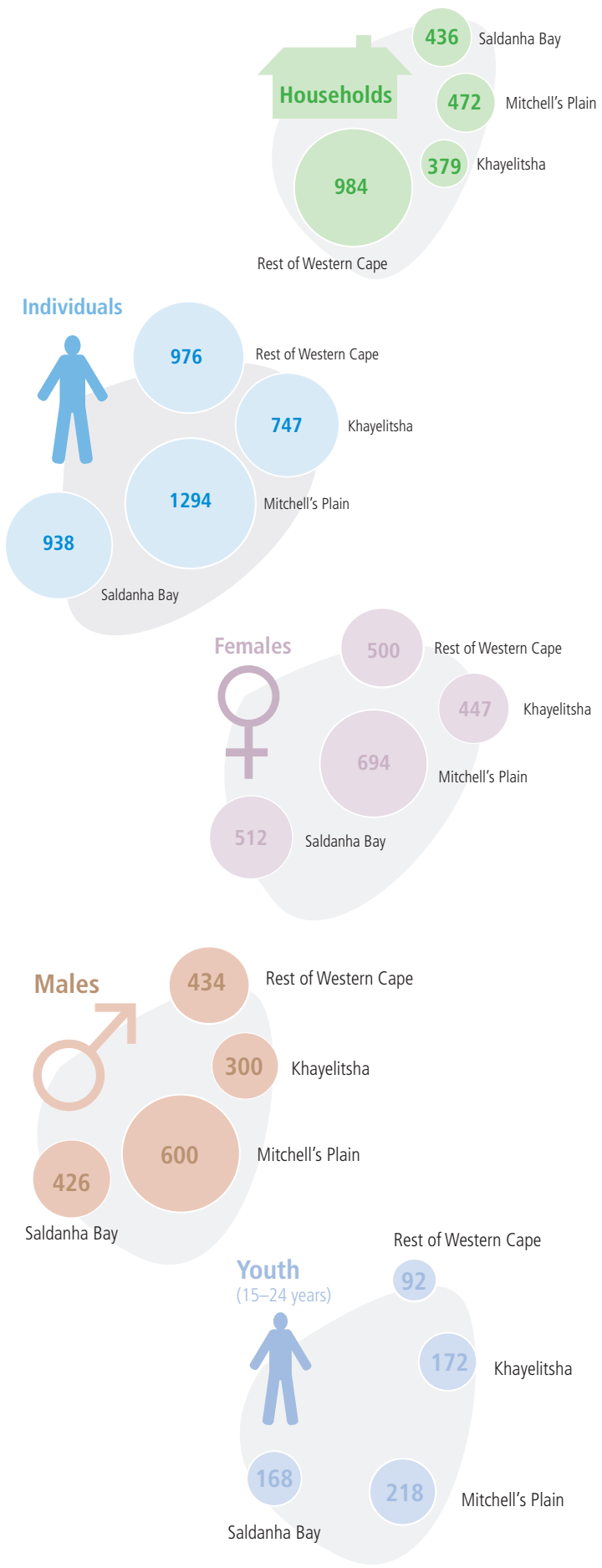
The four sub-indices of the NRI were retained (Environment, Readiness, Usage and Impact), although the indicators for social and economic impact will only be developed in a follow-up impact assessment in relation to the baseline report. Where only national indicators were available, RIA replaced dated data with more recent data from various sources, and with data gathered through provincially representative demand-side surveys of access and use at the household and individual levels. RIA further utilised the demand-side survey process to conduct an informal sector survey. This was added to data gathered through a formal business survey, which was conducted in partnership with Stats SA, to provide a more comprehensive picture of business enterprises in the province. The gathering of the informal sector survey was supported the Canadian International Development Research Centre (IDRC).

In order to understand the state of connectivity of the public sector, a government assessment was carried out incorporating administrative data, demand-side data from the access and use survey and interviews with stakeholders. This included municipalities, schools and clinics in the province, and covered their procurement methods and the development and availability of e- and m-government services. The findings from the various surveys and desk studies have resulted in indicators that have been classified and grouped into the three broader categories of policy and regulatory environment, e-readiness and use.

The complete study of the Western Cape Digital Readiness Assessment can be found at: http://www.researchictafrica.net/publications/Other_publications/RIA_2015_-_Western_Cape_Digital_Readiness_Assessment.pdf

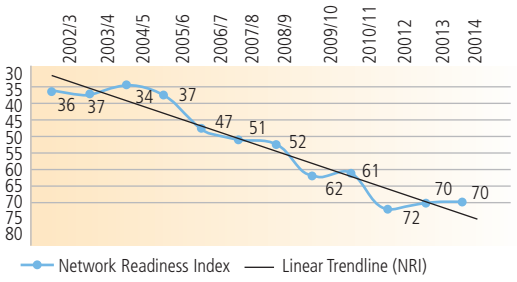
This summary report is based on the Western Cape Digital Readiness Assessment and presents some of the key findings of the study which provides an overview of the state of ICT in the Western Cape. All figures in this summary are from the full RIA report, unless otherwise cited.

Sample size and demographic breakdown (unweighted)

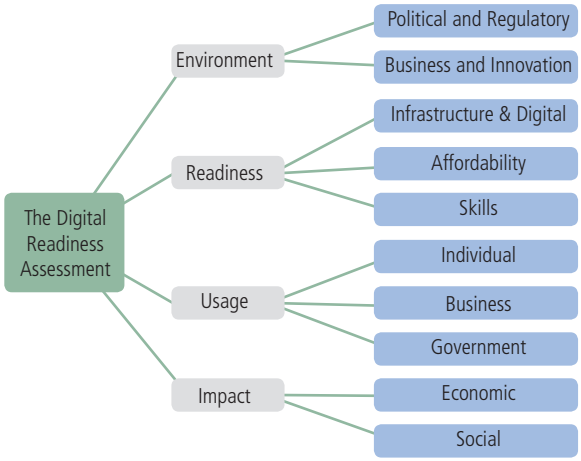


2 The Global Context

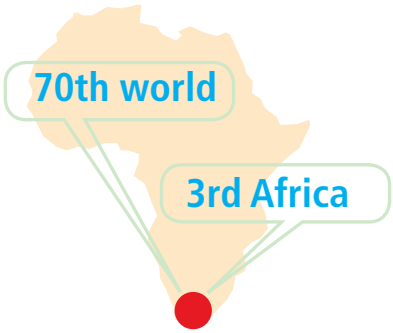
World Economic Forum (WEF) - Network Readiness Index (NRI): SA's global rankings 2002–2014



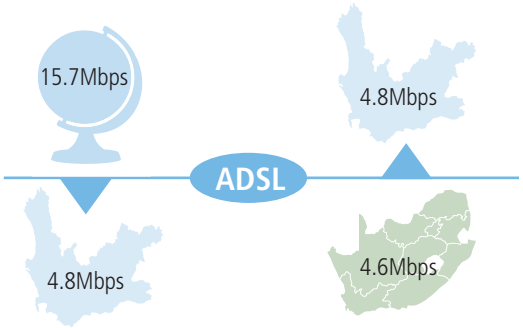
Assessment of the Western Cape Digital Readiness (Based on NRI)



SA's ranking on the WEF NRI 2014



ADSL speeds: WC vs SA vs world



World Economic Forum (WEF) Network Readiness Index

The Networked Readiness Framework, which underlies the NRI, has remained unchanged since 2002, and assesses:

- Environmental Factors: the presence of an ICT-friendly and conducive environment, by looking at a number of features of the broad business environment, some regulatory aspects, and the soft and hard infrastructure for ICT;
- Readiness factors: the level of ICT readiness and preparation of the three main national stakeholders—individuals, the business sector, and the government;
- Usage Factors: the actual use of ICT by the above three stakeholders; and
- Impact factors: The impact subindex gauges the broad economic and social impacts accruing from ICTs to boost competitiveness and well-being and that reflect the transformation toward an ICT- and technology-savvy economy and society.

Western Cape Premier, Helen Zille (2013):
"A growing economy must connect people through transport and technology. We have to learn from places like Kenya where an ICT revolution is driving strong economic growth. To emulate this, we are developing a telecommunications strategy, based on a fibre optic network infrastructure that connects government, citizens and the economy to improve productivity and access to new markets. The World Bank has calculated that the economy of a developing country grows by 1.38% for every 10% increase in broadband penetration."

The Organisation for Economic Co-operation and Development [OECD] Research states that there is growing evidence that the diffusion of ICT is seen as an accelerator of economic growth in a country. The growth and productivity enhancing effects of well-implemented investments in ICTs can lead to increased trade and to more and better employment.

An analysis of South Africa's ranking on international indices over the past decade is a useful measure of the effective use of ICT for social and economic development in South Africa. Despite several rounds of reform of the ICT sector, this has not resulted in the realisation of the primary policy objective of affordable access for all to the full range of communication services that characterise modern economies.

South Africa has descended on all major international indices since the start of the new millennium. The country's ranking on the ITU ICT Development Index (IDI) has slipped from 72nd in 2002 to 90th in 2013 (ITU, 2002, 2013).

Although South Africa recorded a two place improvement from 2012, with South Africa ranked 70th in the world in 2014, this is after plummeting down the index over the last decade, from 36th in 2002. South Africa has lost its status as continental leader in voice and data connectivity. In Africa, South Africa now ranks third after Mauritius (48th) and Seychelles (66th), with Tunisia, Morocco and Egypt having lost their rankings among the top African countries with the disruption to their markets following the Arab Spring (WEF, 2014).

Ookla data on quality of service (download and upload speed) reveal that the average ADSL download/upload speed in the Western Cape is 4.8 Mbps, which is slightly higher than the national average of 4.6Mbps, but significantly below the global average of 15.7 Mbps. Counter to the global trend where ADSL speed is higher than mobile speed, the 8.7 Mbps mobile average download and upload speed in the Western Cape is higher than the ADSL average speed (and higher than the 6.35 Mbps national mobile average download and upload speed). Also contrary to global trends, the mobile average speed in the Western Cape is faster than the global average speed of 7.8 Mbps.

3 African Context

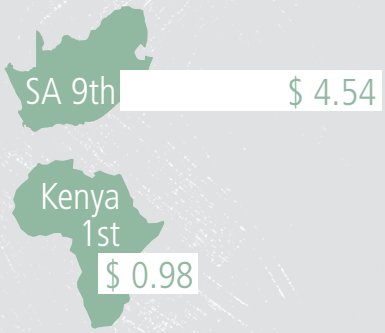
Unlike in developed markets, where fixed services are the dominant broadband platform, in Africa, mobile networks provide the primary means of broadband access. As with voice services, where massive demand was met through the wireless revolution that transformed communications on the African continent, demand for Internet use by those unable to access the limited ADSL services available on the continent has been met by mobile service providers. While the established telecommunications markets in the North, where access and ADSL-upgradable copper networks or cable networks were almost universal at the advent of broadband, in Africa most fixed-line networks reached less than 1 % of the population and access via fibre remains negligible (Gillwald and Calandro, 2014).

Although access to the internet is an important broadband statistic, the key driver for economic growth is adoption. Adoption measures the actual usage or uptake of the internet.

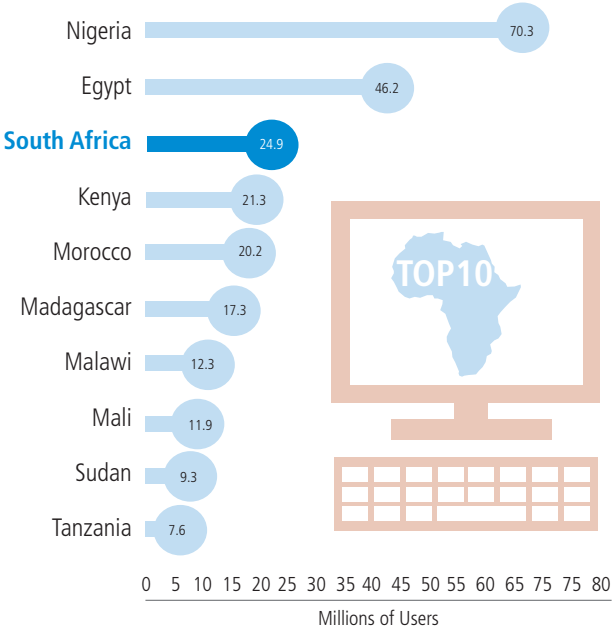
The 2011 SA Census found that only 35% of individuals in the WC had access and were using the internet.

South Africa's cheapest mobile product is 5 times more expensive than the cheapest product in Africa

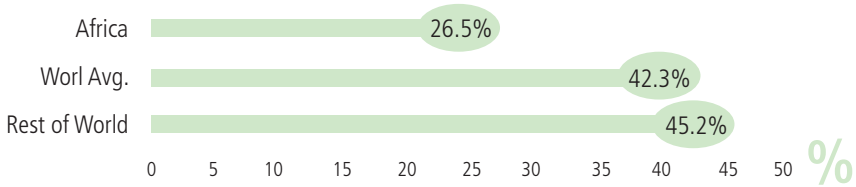
SA is lagging behind



African Countries with most internet users (2014)



Internet penetration in Africa (2014)

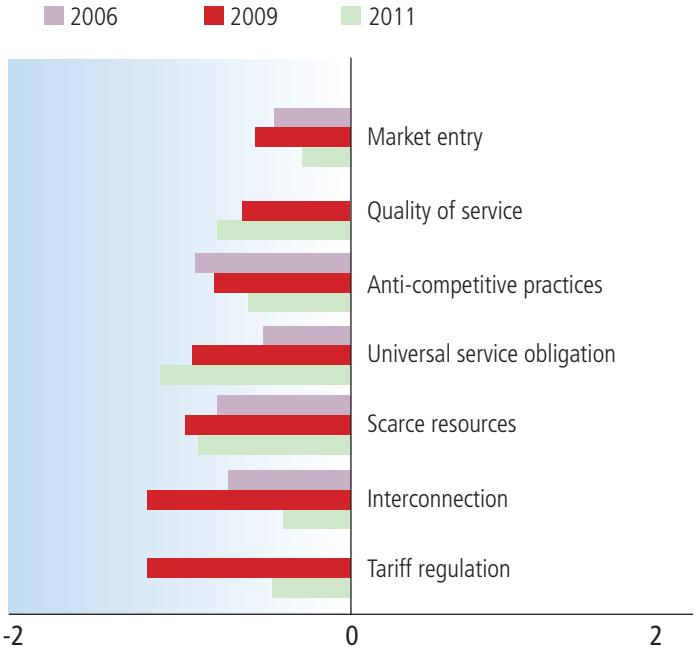


OECD mobile baskets - monthly calls, minutes and SMS's

	cheapest mobile product				
	dominant operator (by market share)		cheapest in country		% cheaper than dominant
	USD	Rank	USD	Rank	
Kenya	0.98	1	0.98	1	Dominant is the cheapest
Egypt	2.69	2	2.69	3	Dominant is the cheapest
Sudan	2.83	3	1.06	2	63%
Ghana	3.58	4	3.11	4	13%
Ethiopia	3.8	5	3.8	6	Dominant is the cheapest
Mauritius	3.9	6	3.9	7	Dominant is the cheapest
Rwanda	4.28	7	4.28	8	Dominant is the cheapest
Tunisia	5.43	8	5.27	12	3%
Tanzania	5.7	9	4.7	10	18%
Algeria	5.91	10	5.91	11	0%
Nigeria	6.8	11	5.1	11	25%
Libya	6.97	12	6.97	17	Dominant is the cheapest
Uganda	7.71	13	6.69	16	13%
South Africa	**7.82**	**14**	**4.54**	**9**	**42%**
Namibia	8.62	15	7.53	19	13%
Sierra Leone	9.66	16	9.66	21	Dominant is the cheapest
Mozambique	10.06	17	10.06	22	Dominant is the cheapest
	Prices in USD for comparative purposes				

4 Policy & Regulation

South African policy and regulatory environment is perceived to be ineffective by South African stakeholders.
(Likert scale measurement - see page 11 for explanation)



SA Connect Targets (Department of Communication 2013)

Target	Baseline (2013)	BY 2016	BY 2020	BY 2030
% of population with broadband access in Mbps (user experience)	33.7% Internet access*	50% 5Mbps	90% 5Mbps 50% 100Mbps	100% 10Mbps 80% 100Mbps
% of schools	25% connected	50% 10Mbps	100% 10Mbps 80% at 100Mpbs	100% 1Gbps
% of health facilities	13% connected	50% 10Mbps	100% 10Mbps 80% 100Mbps	100% 1Gbps
% of government offices		50% 5Mbps	100% 10Mbps	100% 100Mbps

*Research ICT Africa 2012 ICT access and use survey

The ICT policy and regulatory environment is determined primarily by national policy, legislation and practice.

Therefore several of the overall political and regulatory indicators can only be assessed at the national level. While some of these indicators have been retained, RIA contends that the assessment tool requires a stronger ICT perspective in this area. Therefore, in addition to the views gathered from the surveys, the study uses data obtained from a telecommunication regulatory environment (TRE) survey undertaken by RIA in 2012, which assesses the effectiveness of sector regulation through stakeholder perceptions of seven regulatory dimensions:

- market entry;
- quality of service;
- anti-competitive practices;
- universal service obligations (USO's);
- access to scarce resources;
- interconnection and tariff regulation.

WC does not have that much control over Policy and Regulation

National Strategy and Targets

The declaration by the Human Rights Council that access to the Internet is a basic human right is acknowledged in the National Broadband Policy, South Africa Connect, gazetted in December 2013. The national broadband policy gives expression to the vision in the country's NDP to:

Develop a seamless information infrastructure by 2030 that will be universally accessible across the country at a cost and quality that meets the needs of citizens, business, and the public sector and provides access to the creation and consumption of a wide range of converged applications and services required for effective economic and social participation. (NDP, in DoC, 2013)

As the National Develpment Plan (NDP) indicates, this widespread broadband communication system will underpin a dynamic, connected and vibrant information society, as well as a knowledge economy that is more inclusive, equitable and prosperous.

5 Infrastructure and digital content indicators

The infrastructure and digital content production category looks at the availability of ICT infrastructure by analysing a set of ICT infrastructure indicators, such as international Internet bandwidth (speed and wholesale prices), network coverage (kilometres of fibre and number of base stations), access network (percentage of the population covered by 3G/LTE and ADSL networks) and quality of service (average download/upload speed). In addition, household power connectivity (from the grid) has been investigated.

The graphic on the right shows what areas, indicators and sources have been used to assess infrastructure and content readiness.

Broadband adoption requires robust ICT infrastructure, including bandwidth and power connectivity.

Infrastructure and digital content indicators

Telecommunications infrastructure

Quality of service: average download/upload speed for mobile

National 6.35 Mbps

Provincial 8.7 Mbps

Quality of service: average download/upload speed for fixed

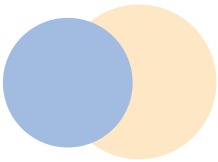
National 4.6 Mbps

Provincial 4.8 Mbps

Electricity

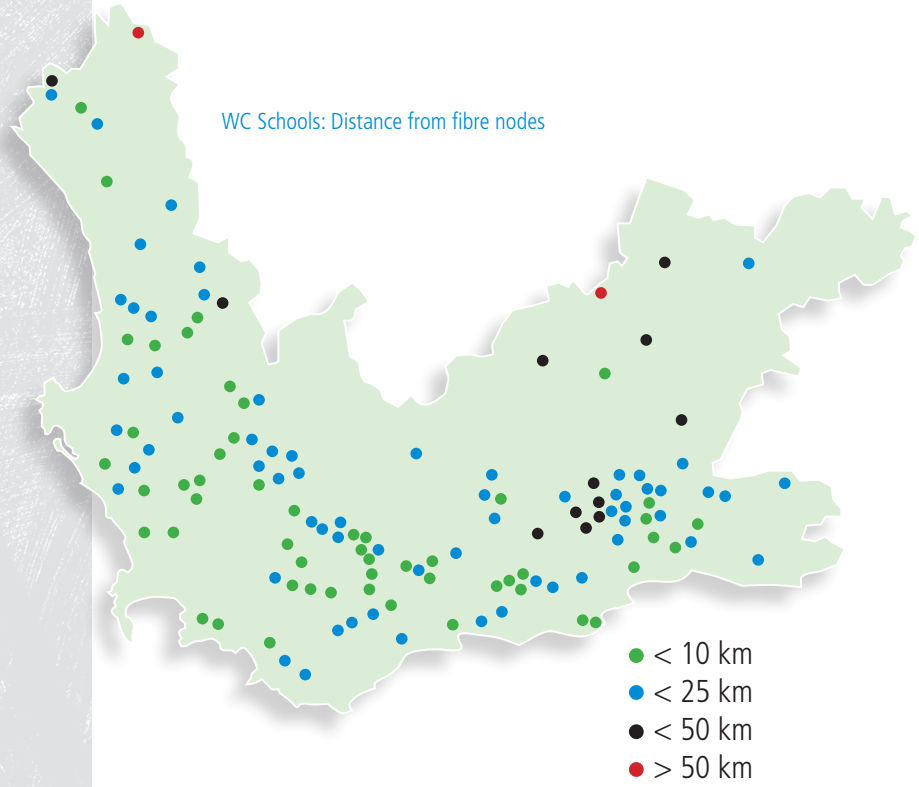
Household power connectivity from grid.

National 89.2%



Provincial 95%

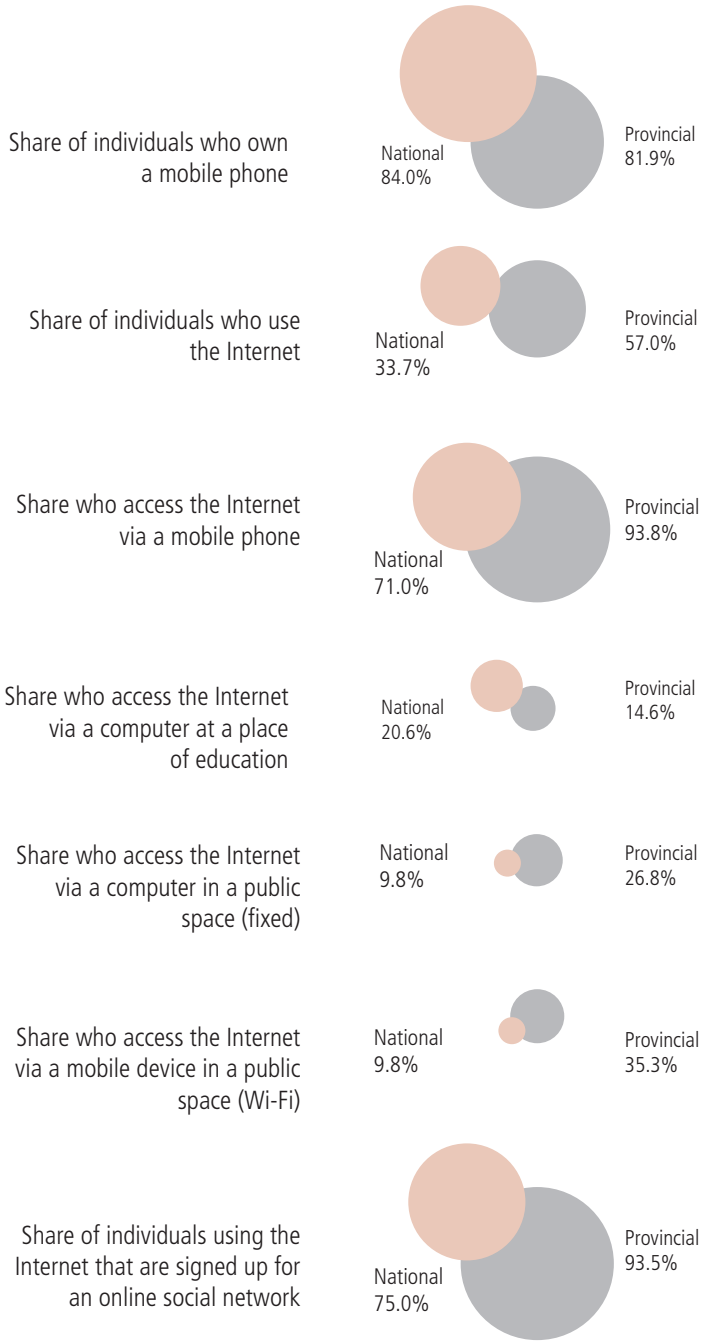
WC Schools: Distance from fibre nodes



Source: Supplied by CSIR (2014)

6 Current Internet Access in the Western Cape

Individuals use indicators



StatsSA: total WC population 6,116, 300 • total SA population 54, 002,000

Household Statistics

The analysis of household use looks at ownership of computers (laptops or desktops), Internet access at home and whether households use ADSL to access the Internet.

These indicators are in line with those used by the ITU in presenting country ICT statistics. The Western Cape performs comparatively better that the rest of the country in terms of share of households with a working computer and share of households with Internet access. However, of households with an Internet connection at home, the share accessing the Internet through ADSL is higher at the provincial level (38.9%) than at the national level (22%).

A household constitutes a person or group of persons, irrespective of familial relation, who normally live together in the same housing unit or group of housing units and have common cooking arrangements.

Field workers training in WC communities

Statistics for Individuals

Although the share of individuals in the Western Cape who own a mobile phone can be considered high at 81.9% (RIA, 2014), this figure is lower than the national figure of 84.2% (RIA, 2012a) and the global average of 85.7%, based on a study of 144 economies (WEF, 2013).

7 How people connect to the Internet

Mobile

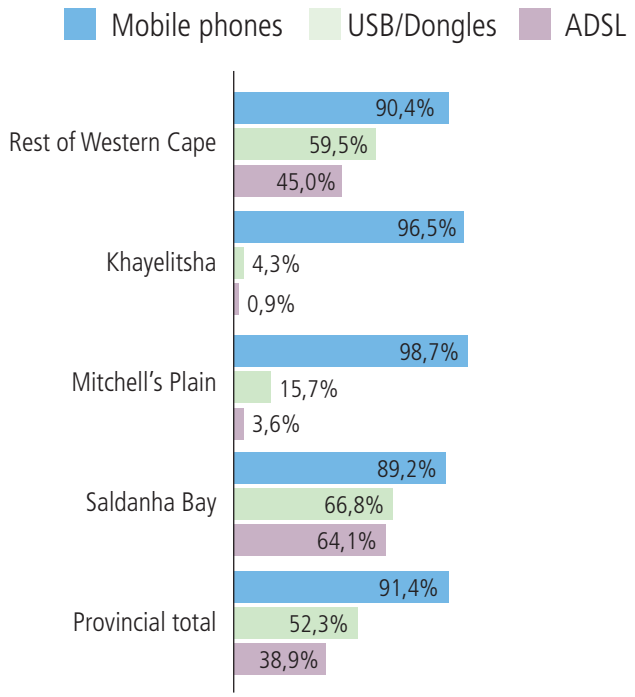
Mobile phones were found to be the predominant medium across all the areas to access the internet. In the sample areas, 91.4% of household members access the Internet through their mobile phones.

Mitchell's Plain had the highest number of households that access the Internet using mobile phones, followed by Khayelitsha and then Saldanha Bay.

Making use of USB/Dongles to access the Internet via a laptop or a desktop is not very common in Mitchell's Plain and Khayelitsha. The low ownership among households of computers with which dongles can be used may be a contributing factor to the low use of this medium to access the Internet. 13.7% of Mitchell's Plain and 5.1% of households in Khayelitsha have a working laptop.

The use of ADSL to access the Internet is comparatively lower than the other mediums. Less than 1% of households in Khayelitsha and less than 5% in Mitchell's Plain make use of the Internet at home using ADSL.

Household internet usage by medium

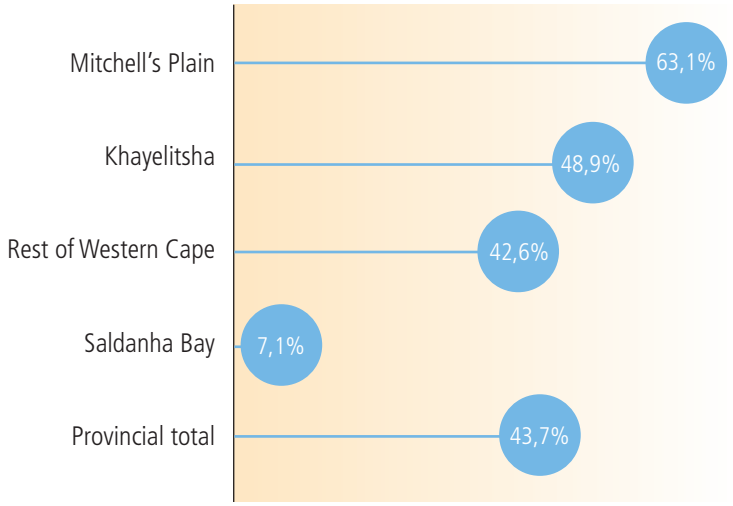


Connectivity to the Home

The Internet helps to transfer information between different points, and is considered to be a powerful tool for social and economic development. Cloud (1989) indicates that students and academics who do scientific research and prepare projects prefer using the Internet, because it is the easiest, fastest and cheapest way to access the necessary information. On the local front, it is estimated that the Internet industry alone contributes about 2% to the country's GDP, with a projected annual rise of 0.1% (Goldstuck, 2012). Although marginal compared to other sectors of the economy, ICT presents great potential for driving economic growth and productivity, with the removal of current constraints.

The results of the survey indicate that the proportion of households with a working Internet connection is highest in Mitchell's Plain, followed by Khayelitsha. Saldanha Bay recorded the lowest number of households that have a working Internet connection.

Share of households with a working Internet connection



Household use

Household with working desktop/laptop	24.5%	43.7%
Households with Internet access	19.7%	44%
Households using ADSL to access the Internet	22%	38.9%

Individual use

Share of individuals who own a mobile	84%	81.9%
Share of individuals who use the Internet	33.7%	57%
Share of individuals who access the Internet via a mobile phone	70%	93.8%
Share who access the Internet via a computer at a place of education	20.6%	14.6%
Share of individuals who use the Internet that are signed up on social networks	75%	93.5%

8 Shared Access

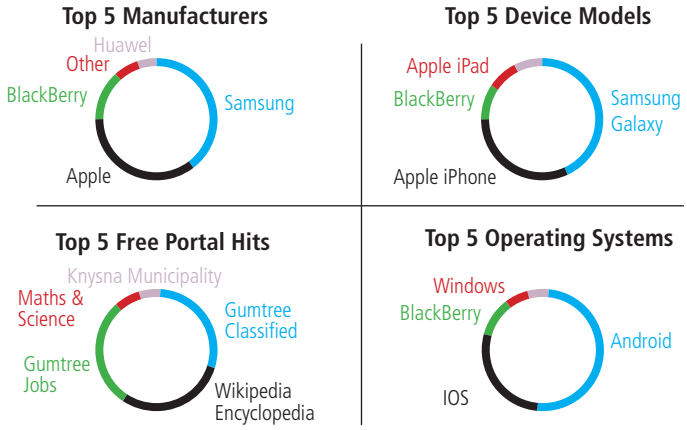
Individual use

Share who access the Internet via a computer in a public space (fixed)	9.8%	26.8%
Share who access the Internet via a mobile device in a public space (WiFi)		35.3%

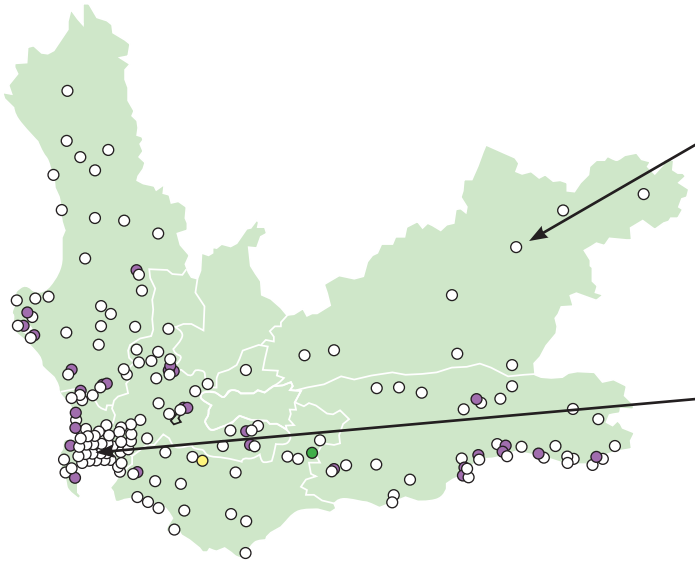
Western Cape 'Limited Free' Public WiFi Access Project (Test Pilot 2013-2014)

	Project Isizwe	Digital Village	Home of Compassion
Total no of unique users (users = devices)	8322	9681	3228
No of users (devices) per month	348290	29888	85904
No of Wi-Fi hotspot sites	8	20	25

Western Cape 'limited free' Public WiFi Access Project (Test Pilot 2013-2014) Digital Village, Garden Route only



Western Cape Broadband Initiative - Public access sites geographic spread by 2017



Source: African Ideas • www.africanideas.co.za

Public Access

The Western Cape's public access and WiFi usage percentage is relatively high in comparison to the rest of the country.

Western Cape has Prioritised Shared Access

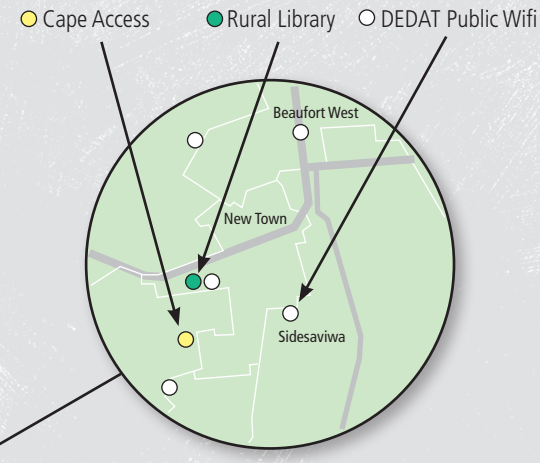
The Western Cape Government's Cape Access programme provides access to information and communication technologies (ICT) to less privileged and rural communities across the Western Cape.

The Western Cape Government's Broadband Initiative, in partnership with SITA and Neotel, is in the process of connecting 384 government facilities via WiFi hotspots. The hotspots will allow citizens access to limited free WiFi.

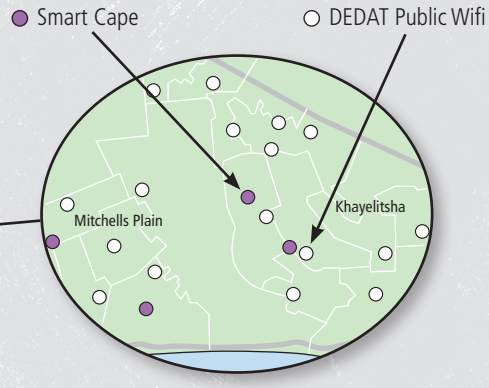
The City of Cape Town's Smart Cape initiative, ensures that all residents have free access to basic information and communication technologies.

The Rural Library Project is committed to the establishment of new, small libraries in rural areas. The local public libraries are centers of learning, community building, and civic pride.

Public Access Facilities	No. of Public Access Facilities
Cape Access	50
DEDAT Public Wi-Fi	384 (by 2017)
Smart Cape	103
Rural Public Libraries	124



Beaufort West



Khayelitsha

9 Cost of Access

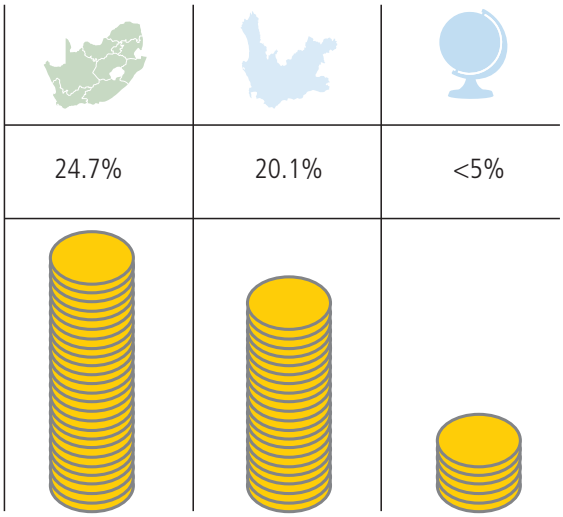
From an affordability point of view, South African retail prices for telecommunications services (voice and broadband mobile) are still very expensive for the majority of the population. By using supply-side data and applying a modified version of the International Telecommunication Union (ITU) ICT basket methodology, the monthly ICT basket as a percentage of GNI per capita is 3.1%. At a provincial level, the monthly ICT basket as a percentage of monthly earnings is 7.6%.

However, using the GNI per capita or the median of monthly earnings is highly problematic as it does not take into account the inequalities in South African society, which is characterised as having one of the highest Gini coefficients in the world. Therefore, a better indicator to assess affordability of ICT services is total expenditure on mobile services as a percentage of individual income, using ICT access and use survey data.

In using ICT survey demand-side data, affordability of mobile services becomes a big concern in the Western Cape. The share of household income devoted to mobile services is rising, which may reduce the budget for food, health or education.

On average, citizens in the Western Cape spend 20.1% of their individual income on mobile services (voice and data). Although this percentage is very high, with the ITU indicating that anything above 5% of household income is not affordable; it does demonstrate the value that users attach to communication services.

Mobile expenditure as a share of individual income

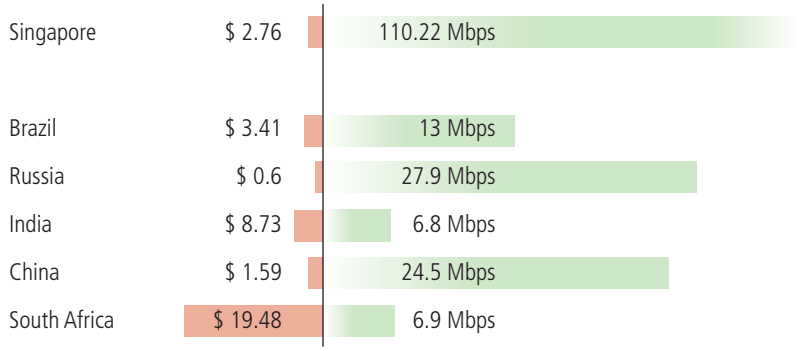


The National Department of Communication's 2020 vision states that 100% of South Africans will have access to broadband services at 2.5% or less of the average monthly income. (DoC, 2010)

Singapore is one of the leaders in the Digital space and the cost for connectivity is $2.76 at a speed of 110.22 Mbps in comparison to South Africa where the cost for connectivity is $19.48 at a speed of 6.9Mbps.

South Africa also lags behind the other BRICS countries, even though India has a similar speed to SA their cost is $10.75 Mbps cheaper.

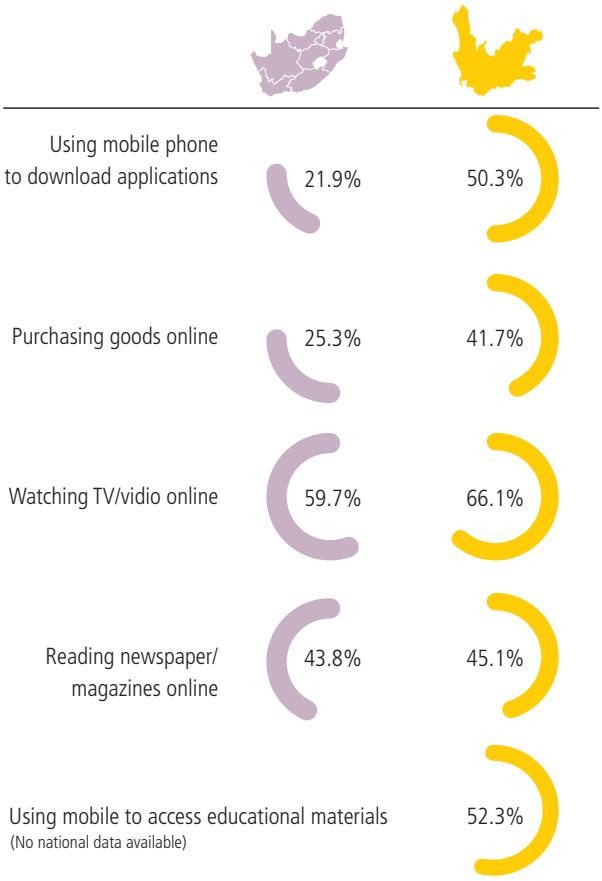
Cost and speed comparators: $ per Mbps



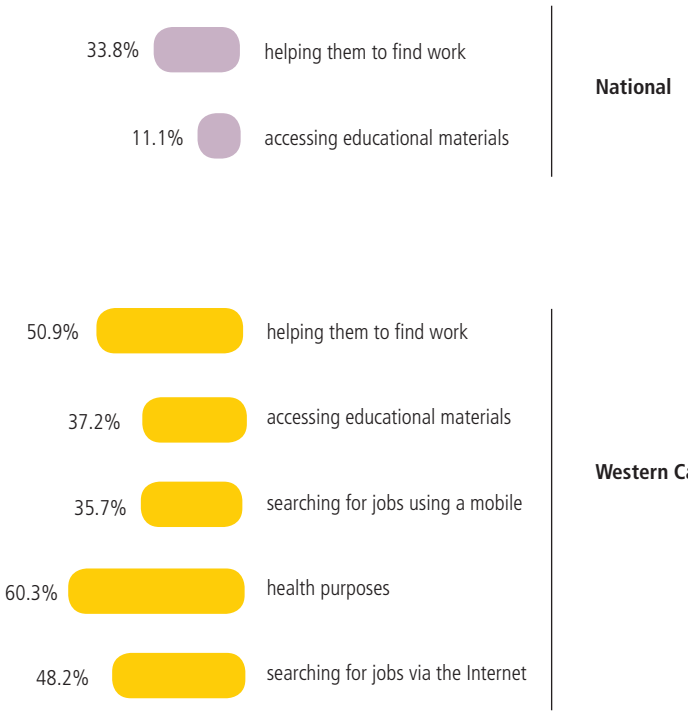
Source: Net Index March 2015

10 What Individuals do on the internet

Individual access to digital content



Individuals who use their mobile phones for:



Individual Access to Digital Content

Demand for digital content and software development is boosted by a growing demand for Internet. The ICT access and use survey data reveals that 52% of mobile phone owners in the Western Cape use the phone to access digital content, such as educational materials, while 50% use the phone to download applications (RIA, 2014). Of those with access to the Internet, about 66% stated that they watch TV/video online, 45.1% read newspapers or magazines online, and 41.7% indicated that they have purchased goods online.

These figures for the province are relatively close to the national figures, particularly in the case of watching TV/ video and reading newspapers or magazines online.

Accessing educational materials

Individuals Well-being

It is on individuals' well-being that ICT appears to have the greatest impact. The share of individuals who make use of ICTs (the Internet or mobile phones) to access information in areas such as job search, education issues, however, is fairly low. However, this shows there is signaficant scope for growth in these areas.

11 Business (formal & informal)

Low Use of Technology for Productivity

The assessment of business use of ICTs draws on the formal business perception survey. The formal business survey asked businesses to rate the benefits of ICTs in enabling new organisational and business models, and the extent to which companies have sophisticated ICT-based supply chains. The answers to these questions produced an average ranking for the Western Cape of 0.09 on the Likert scale (see below) in assessing business-to-business ICT use. This rating is very low compared to the national average of 1.6 and a global average of 1.0 as recorded by the World Economic Forum (WEF, 2013).

On the other hand, the Western Cape scores higher in terms of business-to-consumer ICT use at 0.94 than the WEF national figure of 0.8 and the global average of 0.5. While this is a positive score for the province, it is below 1.0 and, therefore, is considered average. Business-to-consumer use of ICT looks at the extent to which businesses use the Internet for selling their goods and services; how widely social networks are being used for business activities and the extent to which sophisticated marketing tools and techniques based on ICT are used.

Likert scale – a psychometric scale commonly involved in research; the term is often used interchangeably with rating scale. The range of values (negative to positive) used depends on the number of original value points. In the case where there are 5 points, the likert scale will range from: -2 to +2 (hence having 5 points as per the original). And with 7 points, the likert scale will range from -3 to +3, hence having 7 points as per original.

ICT as an enabler of new business models

Category	Indicator	National	Provincial
Business-to-business ICT use	ICTs to enable new organisational models	1.6	-0.2
	Sophisticated ICT-based supply chains in place		0.53
	ICTs to enable new business models in the Western Cape		-0.05
Business-to-consumer ICT use	Business use of the Internet for selling goods and services	0.8	1.06
	Use of virtual social networks		1.27
	Use of sophisticated marketing tools and techniques based on ICT		0.48

Business use

Business-to-business ICT use	1.6	>	0.1
Business-to-consumer ICT use	0.8	<	0.94

Formal business outcomes

ICT as an enabler of new business models	1.6	0
Use of the Internet for e-commerce	1.6	1.1
Capacity to innovate in ICT	1.6	0.1

Informal business outcomes

Financial transaction with suppliers using online banking	3.3%	2.3%
Financial transaction with customers using online banking	4.1%	3.8%
Communicate with suppliers via mobile phone	34.5%	38.3%
Communicate with customers via mobile phone	24.9%	24.1%
Advertising products through social media	3.7%	6.8%

12 Education and Skills Development

Highest level of education attained by individuals

Level	Khayelitsha	Mitchell's Plain	Saldanha Bay	Rest of Western Cape
None	1.3%	1.3%	3.6%	3.1%
Primary	4.3%	12.6%	17.1%	23.2%
Secondary: matric	72.1%	81.8%	57.5%	37.5%
Secondary: advanced-Level	18.2%	2.2%	13.5%	13%
Tertiary: diploma or certificate	3.3%	1.1%	6.1%	11.5%
Tertiary: BSc or BA	0.7%	0.3%	1.0%	6.6%
Tertiary: master's	0.0%	0.1%	0.6%	4.9%
Tertiary: PhD	0.0%	0.0%	0.0%	0.2%

Skills indicators


Category	Indicator	National	Provincial
Formal business survey			
Quality of education	Quality of education in general	0.1	-0.19
	Quality of maths and science	-2	-0.62
StatsSa/WCED/ RIA Survey			
Enrolment & educational attainment rate	Secondary school enrolment rate	89%	72%
	Share of individuals who have completed secondary education as the highest level	65.3%	60.5%
	Pass rate for matric	78.2%	85.1%
	University graduates as percentage of enrolment	17.4%	24.4%
	Share of individuals who have completed tertiary education as the highest level	13.2%	17.6%
Census Data/ RIA Survey			
Literacy levels	Adult literacy rate	83.7%	90.9%

South Africa has seen an increase in the number of people with schooling. In 1996, 19.1% did not have any schooling; by 2011, the figure had dropped to 8.6% (Stats SA, 2012). Similarly, the number of individuals who completed secondary school increased from 16.3% in 1996 to 18.6% in 2007 and 28.9% in 2011. The number of individuals with a tertiary education increased from 7.1% in 1996 to 11.8% in 2011 (Stats SA, 2012).

The education and skills indicator was assessed, as it plays a role in building a knowledge-based society, and it can also reflect the economic and social status of a particular household and the community as a whole. If the livelihoods of households are increased, they could afford to send their children to school and give them an opportunity to advance their education, skills and abilities.

The study assesses the skills sets in the Western Cape by making use of both supply-side and demand-side data. Quality of education, outputs and overall literacy levels are employed in the assessment of skills of citizens in the province.

At the national level, the proportion of children of school-going age (7 to 17 years) who are actually in schools is high, at nearly 97% in 2011 (Stats SA, 2012). In the 2014 survey conducted by RIA, 41.4% of households in the province that have children of school-going age (6 to 14 years) indicated that none of their children attend school. In Saldanha Bay, about 13% of households surveyed indicated that none of their children attend school. This figure is as high as 33.9% for Mitchell's Plain and 43.1% for the rest of the Western Cape.

According to the survey, in the Western Cape 2.6% of sampled individuals never attended school. This result is similar to that of the 2011 census, which reported only 2.7% with no formal education/schooling in the province. The number of individuals who never went to school is low across all areas, and this could be because of the free basic education in place, meaning individuals have access to primary education. Khayelitsha recorded the lowest share of individuals who have primary schooling as their highest qualification (4.3%). Secondary level as the highest attained is higher in all areas, and more so in Mitchell's Plain and Khayelitsha, while tertiary education is predominantly low in all the areas.

While the number of WC citizens with formal education is low and in-line with the national average, the high rate of families who's children are not attending school reveals that children may only be attending schools for a short period of time. Limited schooling would hurt these children's chances of gaining the skills necessary to leverage the internet for their economic and social benefit.

13 e-Government

The are 25 municipalities in the WC, grouped into 5 rural districts and 1 metropolitan district.

Website Presence

There has been an improvement in municipal web presence since the South African Local Government Association (SALGA) (2010) survey, which found that, nationally, the majority of municipalities did not have functioning websites. At the municipal level, local governments were in line with the Municipal Act, which requires that government websites must be kept up to date.

In the WC, 93.3% of local government sites satisfied this requirement (only two municipalities did not comply). As at the provincial level, language availability was an issue, with only six municipalities having the option of selecting a local language other than English (which was Afrikaans). Deployment of e- and m-Government services was found in only 13% of the municipalities, which indicated the need for deployment of these services. A common available service was an SMS platform where citizens could report crime tip-offs and request emergency information in the case of a natural disaster.

Citizen Facing Services

e-Government services are classified as 'government-to-citizen' and 'government-to-business'. These e-Services are implemented to improve service delivery and make it more 'citizen-centric', allowing for greater accountability by government to its citizens. The government may supply the services, but the question remains as to the extent to which citizens actually make use of the e-Government platform. Following the classification of e-Government services, uptake of such services was assessed from the perspective of formal businesses, informal businesses and individuals/households.

Mobile Friendly Content

Citizen use of online government services may be an indicator of constraints or success in online service delivery. This is a summary of the use of e-Government services by individuals with mobile phone or other access to the Internet. In spite of the government launching e-Services, the provincial survey shows that uptake is low. The highest figures were recorded for obtaining information from government organisations online and downloading or uploading forms on government websites.

Western Cape ICT municipal connectivity

82% of WC Municipalities are connected at a minimum of 4 Mbps.

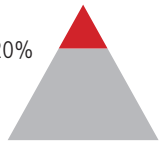
WCG will connect all buildings at a minimum of 10 Mbps

Western Cape municipal web presence

Category	% of Municipalities
Presence of functioning website	100%
Updated in the last three months	93.3%
Multilingual websites	23.3%
Deployment of e- and m-Government services	13%
Portal	100%

Western Cape government ICT provincial connectedness

Government employees with access to the Internet 20%
Total number of WCG employees = 8500



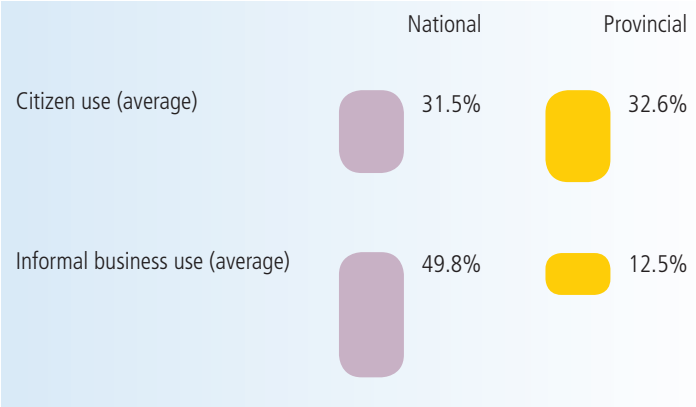
Individual use of e-Government services

Share using a mobile phone/Internet	Provincial
Use of mobile phones to access government services	30%
Use of the Internet for getting information from government organisations	40.9%
Use of the Internet for interacting with government organisations	29.9%
Use of the Internet for downloading/uploading forms from/to a government website	42.6%
Use of the Internet to transact financially with government organisations	19.5%

Informal business use of e-government services

Indicator	Provincial
Use of the Internet to transact financially with government	7.1%
Use of the Internet to download or upload documents or forms or applications from or to government	21.4%
Use of the Internet for interacting with government organisations	7.1%
Use of the Internet for obtaining information from government organisations	14.3%

Use of government websites



Informal Business

There was minimal use of e-Government services by the informal businesses surveyed. Although these businesses were not provincially representative, certain inferences can be drawn about the lack of use of e-Government services by the informal sector. Barriers cited by individual users, such as lack of relevant content and language issues, may also be faced by informal businesses. The government may need to assess the extent to which the information it provides caters to informal businesses, and whether it is accessible via mobile platforms, as most informal businesses seem to have access to a mobile phone.

Government Largest Single Consumer of ICT

With regard to government use of ICT, the Western Cape does not perform well when connecting with its citizens. Governments in some of the most network-ready countries, such as Scandinavia, South Korea, Japan and Singapore, are often role-models for ICT adoption. However in less developed economies the public sector tends to lag behind the formal private sector, and is frequently a late adopter. In addition the mass of their populations, who tend to be poor and not well educated are also late adopters. Although the government is the largest single consumer of ICT, the public sector at national level has tended to reflect developing country trends, with some pockets of ICT excellence, such as the South African Revenue Services, one or two provincial governments and the larger metros developing ICT strategies.

Public sector adoption and application in South Africa is generally regarded as far behind the corporate sector, scoring poorly on e-government indices such as that of the UN (93 out of 198). The Western Cape scores relatively well in the use of e-government in this digital assessment, with evidence drawn from a municipal ICT readiness survey and a provincial web analysis. This score reflects a sustained ICT programme with the City of Cape Town metro for over a decade and a strong provincial strategy over the last few years, including a progressive broadband plan for a connected province.

15 Digital Content Creation

Digital Content Production

The content and media industry in the Western Cape is flourishing. A study conducted by RIA in 2012 on mobile use at the 'base of the pyramid' reveals that the entrepreneurial environment in the Western Cape Province has many success stories, as many start-ups in the mobile applications industry are based in the province (RIA, 2012). In particular, some of the most successful applications for health (Cell-Life), entertainment (be Bozza!), social networking (Mxit) and mobile money (SnapScan) have been developed by start-ups based in Cape Town. According to PwC (2013), the City of Cape Town is a preferred destination for investment in companies dealing with software design and development. In addition, the Western Cape has four universities and a highly attractive environment and variety of lifestyle options (PwC, 2013).

According to the ICT satellite account for South Africa, 2006–2011, the national domestic output of content and media in 2011 was R15,745 million (Stats SA, 2014). In this regard, respondents to the formal business survey revealed that there are no undue limitations on the availability of online content, such as censorship or restriction to freedom of expression online.

Individual Access to Digital Content

The ICT access and use survey data reveals that 52% of mobile phone owners in the Western Cape use the phone to access digital content, such as educational materials, while 50% use the phone to download applications (RIA, 2014). Graphic on page 10 provides information about what individuals do on the net.

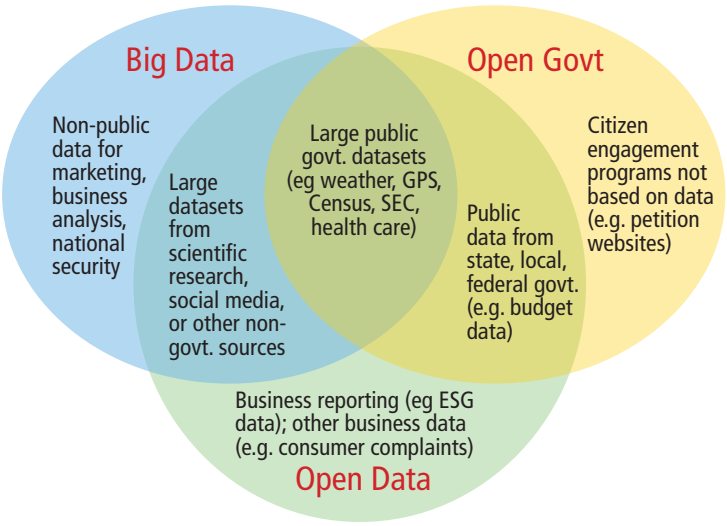
Although the literature on the 'base of the pyramid' generally uses as its measure those individuals living on less than USD2.50 a day, this report adopts the 2012 South African National Planning Commission Development Plan poverty datum line, which is defined as households with income of less than R432 per month per household member, which is roughly equal to USD52.50 as at 2012.

The role played by data in the economy and society is changing. The growth of the internet and the rise of 'big data' mean that access to large data sources in a usable form is an increasingly important feature in open and competitive economies. Innovators and entrepreneurs are using these large data sets to design new kinds of products, enhance their competitiveness, build social capital and engage in civic life.

The City generates a significant amount of data that is useful to citizens. However, this information is often hidden from view in line department archives or is difficult to access. Various data access policies and procedures within the organisation similarly impede public access to information. The City and its agencies have numerous websites and portals. However, these are often not user friendly and the information they contain is sometimes out of date and not in machine readable format.

City of Cape Town Open Data Policy Problem statement

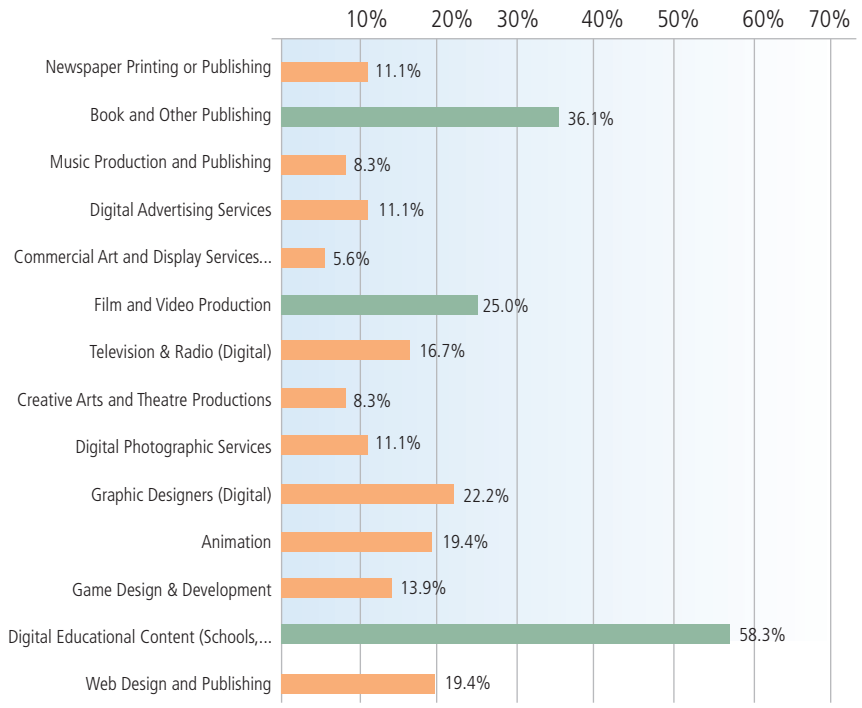
Open Data



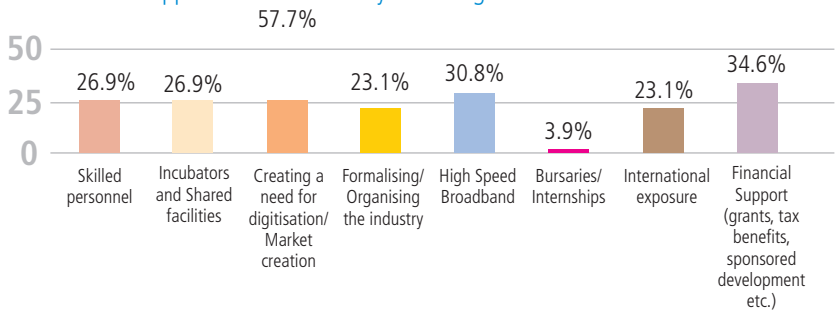
Open Data: Accessible, public data that people, companies and organisations can use to launch new ventures, analyze patterns and trends, make data-driven decisions, and solve complex problems. President Barak Obama stated, "Open Data is going to help launch more businesses…It is going to help more entrepreneurs come up with products and services that we have not even imagined yet."

16 Digital Content Creation

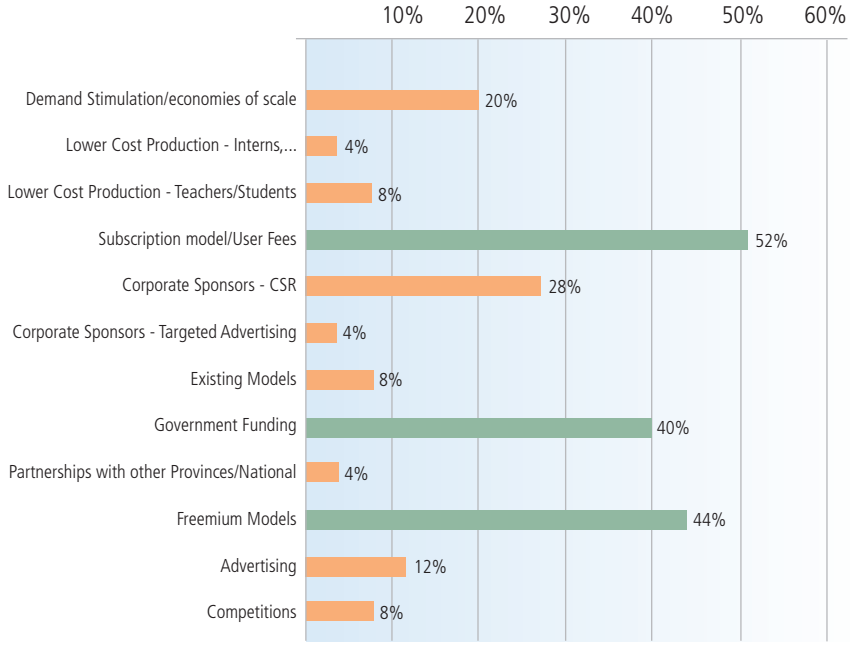
Companies who responded fell into the following categories:



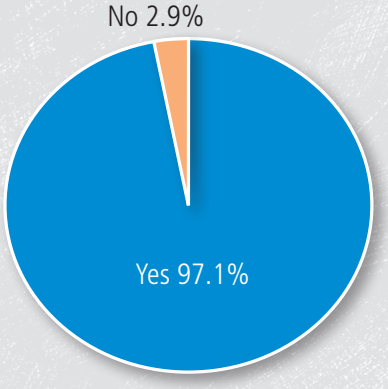
What kind of support does the industry need to grow?



Funding and monetisation opportunities for the industry



In late 2014, the Western Cape Department of Economic Development and Tourism (DEDAT) issued an RFI regarding the Digital Content Creation industry. The purpose of this RFI was to gain an understanding of what local actors in the digital content creation space in the Western Cape were currently engaged with, and what their view was of what the WCG DEDAT could do to support and enable them.



The majority of companies (97%) felt that the WCG could assist their organisations to grow, of a sample of 73 companies.

Traffic light representation:
The values for different indicators come from different quantitative and qualitative systems, and often are not reducible to a single figure or value. Therefore the concept of a traffic light has been deployed in order to indicate the relative status of the province on a particular indicator (together with a descriptor of the benchmark used to assess the status).

This makes it easy to identify relative strengths and weaknesses in the various categories.

'**Green**' is used as an indication of a performance that is better than the benchmark available – a national figure or global average – on that particular indicator.

'**Amber**' is used to signify a performance that is average or not moving swiftly in a negative or positive direction, but which will alert policy-makers to the need for improvement.

'**Red**' is used to indicate performance that is below the national or global average, or that the province is on a downward trend from a once positive position; this identifies an indicator that needs immediate attention and intervention.

The indicators across the following two pages make use of a 'traffic light' system

Category	Area	Indicator	Traffic Lights
Policy & regulatory environment	ICT policy and regulatory environment	Effectiveness of ICT policy and regulatory environment	🔴
	Law-making bodies	Effectiveness of ICT law-making bodies	🟡
	Laws relating to ICTs	Effectiveness of ICT laws	🟡
		Effectiveness of municipal regulations on cable trenching	🟡
	Broadband plans & Internet governance	Broadband Plan	🟢
		Cyber security	🔴
		Open data	🟡
	Intensity of competition in local markets	Effectiveness of national competition law	🟡
	Independence of the judiciary	Level of independence of the judiciary	🟡
	Capital	Availability of venture capital	🟡
Business & innovation	Availability of latest technology	Awareness of latest technology	🟡
	ICT as input cost	International IP-Transit (per Mbps)	🟢
		Local IP-Transit (Metro Ethernet)	🔴
		Input cost of ICT (capex spending as a percentage of total expenditure)	🟡
		Input cost of ICT (opex spending as a percentage of total expenditure)	🔴
Infrastructure & digital content	Telecommunications infrastructure	International Internet bandwidth (speed/wholesale price)	🟡
		Coverage (mobile 2.5G+)	🟢
		Coverage (3G)	🟡
		Access network (% of the population: ADSL)	🔴
		Quality of service: average download/ upload speed for mobile	🟢
		Quality of service: average download/ upload speed for fixed	🟡
		Quality of service: business perception	🟡
		Internet bandwidth capacity: business perception	🟡
	Electricity	Household power connectivity (from grid)	🟢
		Reliability of electricity: business perception	🟡

Category	Area
	Digital content
	Individual access to digital content
	Competition
Affordability	Telecommunications prices
	ICT expenditure
Skills	Quality of education: business perception
	Enrolment & educational attainment rate
	Literacy levels
Use	Household use
	Individual use

The indicators used for this assessment provide a baseline against which the Western Cape's progress towards digital readiness can be assessed in the future. Currently 22 are green (mostly relating to broadband infrastructure, but including many that will continue to require attention to retain positive performance status), 35 are amber (which suggests the mere ticking over of things in many areas, several of which need to be green to meet digital readiness thresholds) and 14 are red (indicating underperformance),

Indicator	Traffic Lights
Digital content production	🟡
Digital content restriction: business perception	🟡
Software development	🟡
Using mobile phone to download applications	🟢
Using mobile to access educational materials	🟡
Purchasing goods online	🟢
Watching TV/video online	🟢
Reading newspapers/magazines online	🟡
Mobile sector competition (HHI)	
Mobile cellular tariffs	🟡
Fixed broadband Internet (1GB)	🔴
Prepaid broadband tariffs (1GB)	🟡
Mobile prices (prepaid voice and prepaid broadband) as a percentage of GNI per capita	🔴
Mobile prices (prepaid voice and prepaid broadband) as a percentage of monthly earnings	🔴
Mobile expenditure as a share of individual income	🔴
Quality of education in general	🟡
Quality of math and science	🟡
Secondary school enrolment rate	🟡
Pass rate for matric	🟢
University graduates as percentage of enrolment	🟡
Adult literacy rate	🟢
Households with working desktop/laptop	🟡
Households with Internet access (%)	🟡
Does the household use ADSL to access the Internet?	🟡
Share of individuals who own a mobile phone	🟢
Share of individuals who use the Internet	🟢
Share of individuals who access the Internet via a mobile phone	🟢

Category	Area	Indicator	Traffic Lights
		Share who access the Internet via a computer at a place of education	🔴
		Share who access the Internet via a computer in a public space (fixed)	🟡
		Share of individuals who access the Internet via a mobile device in a public space (Wi-Fi)	🟡
		Share of individuals who use the Internet that are signed up on social networks	🟢
	Business use	Business-to-business ICT use	🔴
		Business-to-consumer ICT use	🟡
	Government use	Connectedness	🟢
		Provincial web presence	🟢
		Business use and perception	🟡
		Citizen use (average)	🔴
		Informal business use (average)	🔴
Outcomes	Formal business outcomes	ICT as an enabler of new business models	🟡
		ICT as an enabler of new organisational models	🟡
		Use of the Internet for e-commerce	🟡
		Capacity to innovate in ICT	🟡
	Informal business outcomes	Financial transaction with suppliers using online banking	🔴
		Financial transaction with customers using online banking	🔴
		Communicate with suppliers via mobile phone	🟢
		Communicate with customers via mobile phone	🔴
		Advertising products through social media	🟡
	Individuals outcomes	Individuals who search for jobs using a mobile phone	🟢
		Share of individuals who agreed their mobile phone helps them to find work	🟢
		Share who agree they use mobile phone to access educational materials	🟢
		Share who agree they use mobile phone for health purposes	🟢
		Individuals who search for jobs using the Internet	🟢

19 Conclusion and Recommendations

The Western Cape has several positive provincial endowments that can be used to leverage its position as a competitive region and a developmental model nationally and internationally.

Of the large number of amber indicators, several reflect that performance is not bad, but needs to be smarter, quicker or better in order to achieve digital readiness status. More generally, attention needs to shift from infrastructure to the people for whom it is intended. This can be done in some of the following ways:

- ensuring open-access terms for public networks, or public investments in private networks, to enable third-party traffic that could encourage competitive services, which would drive down costs, stimulate demand, extend consumer choice, enable citizens' participation and build the critical mass necessary to enjoy the network effects associated with economic growth and development;
- prioritising the development of skills – school, tertiary and specialised – to support the widespread adoption of ICT associated with improved efficiency and innovation;
- creating jobs by incentivising the location of international company headquarters and business process outsourcing in the Province by driving down the input cost of communications, and ensuring competitively priced services and diversity of choice;
- continuing to engage on national ICT policy and regulation in order to overcome existing policy and regulatory bottlenecks at the national level in order to increase competitiveness and ICT market efficiency that will reduce the costs of services and improve national and international quality of service;
- prioritising m-government services over e-government services, which may be used by only a very small portion of the population, and these should also be integrated with mobile money and banking services that will enable individuals, households and small businesses to transact with the government and participate more effectively in interactive online services;
- publicising the innovative deployment of ICTs within the government, which could serve as a role-model to businesses and consumers in the province who, from the formal and informal business surveys, appear to be unreceptive to ICT innovation;
- improving the level of co-ordination between universities, the private sector and innovation hubs, in order to attract more venture capital to the region, which, in turn, would stimulate growth in the creative and software industries;
- retaining highly skilled human resources by making the Western Cape a regional hub for technology development and innovation, by incentivising the collaboration and engagement of the four tertiary institutions in the Western Cape, amongst themselves, and with business and the provincial government; and
- leveraging existing excellence located in the province, such as the large ultra-high-speed networks required by Square Kilometer Array (SKA) and the universities, to create a global big-data centre of excellence that will stimulate R&D, innovation and evidence for effective policy and planning.

In the Western Cape the Infrastructure initiatives are well underway. The focus is now on demand access and usage. Progress of initiatives will be measured against this baseline assessment.


AFRICAN IDEAS
We work with our clients
to identify & implement
'big lever' projects which
set the necessary ripple
in motion to drive change
& transformation
throughout an eco-system
Innovation
Development
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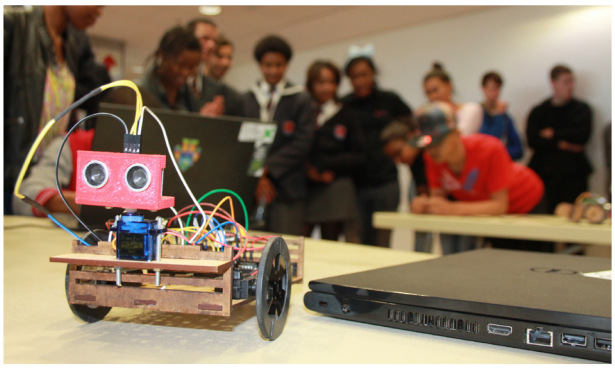
Action



Western Cape's Strategic Framework & Implementation

The Western Cape economy is moving from one based principally around the production and distribution of physical goods to one driven primarily by the production and application of knowledge. As such, the Western Cape is currently characterised by many initiatives in the ICT/Knowledge economy space. In many of these initiatives, the presence of a well-functioning, robust and accessible telecommunications infrastructure is a prerequisite.

Western Cape's Vision

The vision is that of a Western Cape where every citizen in every town and village has access to affordable high speed broadband infrastructure and services, has the necessary skills to be able to effectively utilise this infrastructure and is actively utilising this in their day to day lives.

Western Cape's Implementation Plan

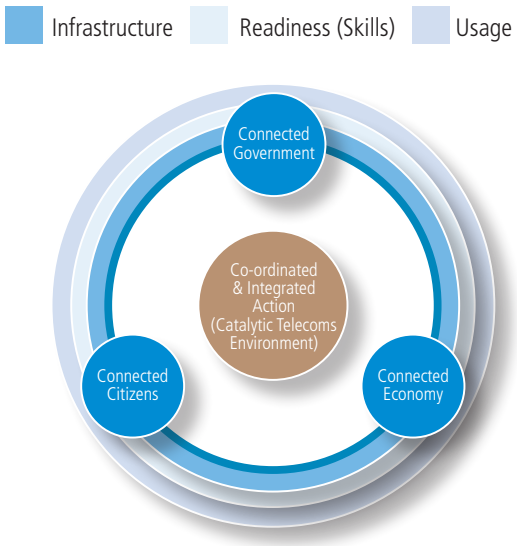
The WCG has acknowledged the importance of ICTs in social and economic development and, specifically, the vital role of broadband. In 2012, it launched the WCBI in order to address the needs of the public and private sectors and to devise strategies to meet them. These strategies have been instituted through a range of interventions addressing household, business and government needs.

The Western Cape Broadband Initiative (WCBi) aims at co-ordinating and integrating government action to radically improve the provision of telecommunication infrastructure, skills and usage within the Province.

The key government connectivity project aimed to aggregate government demand and utilise government as an anchor client to ensure the development of a modern, robust, high speed, fibre based broadband network across the Western Cape.

The government connectivity project will see about 2 000 government sites, including schools, libraries and health facilities connected by 2016. The connectivity to these sites will be enhanced in 3 phases, to ensure that by 2022, the province has a 10 Gbps fibre based backbone running through the entire province (both urban and rural).

This is an approximately three billion Rands project which will be rolled out via a strategic partnership between WCG, the State Information Technology Agency (SITA) and Neotel (Neotel was appointed via a competitive, public tender process). The contract has already been concluded in 2014 and the rollout has commenced.



WCG implementation phases for broadband rollout

	Phase 1	Phase 2	Phase 3
	2014 - 2016	2017 - 2021	2022 –
Duration	3 years	5 years	2 years
Cumulative Duration	3 years	8 years	10 years
Access speeds per site type			
Large Sites	1Gbps	10Gbps	10Gbps
Medium sites	100Mbps	1Gbps	10Gbps
Other Sites (90%)	10Mbps	100Mbps	1Gbps
Medium of connectivity			
Backbone network medium	Fibre & Wireless	Mainly fibre, limited wireless	100% fibre
Access network medium (Metro)	Fibre & Wireless	Mainly fibre, limited wireless	95% fibre
Access network medium (outside Metro)	Mainly wireless	Some fibre, mainly wireless	Mainly fibre, some wireless

Department of Economic Development and Tourism (DEDAT) Stream 2 Projects 2015

Connected Leadership

Broadband Research and Monitoring

Following the implementation of the Broadband Initiative, the Western Cape is experiencing a dramatic improvement in the rollout of broadband infrastructure and concurrent readiness and usage initiatives. In order to monitor, learn from and scope interventions, research will be undertaken every few years to assess impact. This report is the first baseline analysis for the ongoing monitoring and evaluation of Broadband in the Province.

Cape Digital Foundation

The Cape Digital Foundation will initiate, co-ordinate and drive the implementation of initiatives aimed at stimulating the usage and uptake of broadband services across all aspects of society. The foundation will be independent and neutral, comprising diverse stakeholders from government, academia, business and civil society, and therefore will help to address social issues through broadband in a unified way.

Connected Citizens

ICAN

ICAN stands for Interactive Community Access Network, which are multipurpose Community ICT Access and Knowledge Centres aimed at getting mass adoption of technology to improve people's lives through facilitating ICT access, content and skills development. The aim is to expand this network by using an entrepreneurship model across the Western Cape, with the first Proof of Concept being delivered in Elsies River, a community in the Cape Flats. An ICAN centre is a physical facility containing various focused interactive zones. The focused zones are:

- ICAN Learn
- ICAN Study
- ICAN Communicate
- ICAN Create
- ICAN Play

Through the ICAN project communities will be able to access digital literacy and e-educational and blended learning opportunities. A schedule of subsidised training will be available through the ICAN centres, including accreditation/ certification of certain courses. Training opportunities will range from basic e-literacy to application development and video productions.

Public Access Wi-Fi Hotspots

In order to provide limited free internet access to citizens, Wi-Fi hotspots are being installed at specific government buildings, offering access to online government services, m-training, job portals and the Internet. This is a partnership with Neotel and was negotiated as part of the contract that is connecting almost 2,000 Provincial Government sites. A total of 384 hotspots will be set up across the province, with each citizen receiving a free allocation of 250MB per month.

The project aims to develop a model for the sustainable provision of public Wi-Fi.

Public Internet Competition

The aim of the Wi-Fi competition is to stimulate the use and adoption of technology through a quarterly competition as well as market the Internet. The competition has 2 components namely: 1) the development of new ideas and innovations using technology and the internet and 2) uplifting stories from the 36 communities describing how the Internet has positively impacted lives. The prizes are R12 000 and R2000 respectively.

Internet Champion Programme

To ensure that digitally marginalised citizens are able to optimally use the Internet and to drive the adoption of technology and develop basic skills, Internet Champions will be stationed at the public access Wi-Fi hotspots to introduce the general public to the Internet, and offer basic usage guidelines.

Two Internet Champions with devices will be deployed to each hotspot for 3 months to create awareness and mobilise the local community, using digital content and online tracking.

Connected Households

The aim of this project is to address the critical shortcoming of last mile access to affordable, high quality broadband in South Africa, particularly in middle and low income areas. Following initial analysis, a pilot project implementing a household-level network is taking place in Saldanha Municipality. The aim is to develop a replicable model for last-mile connectivity and to investigate smart grids, device proliferation, and leveraged educational opportunities. In addition, the Department is also exploring alternative approaches to last-mile access stimulation in other areas across the Western Cape.

E-Skills Platform

This is a collaborative project between DEDAT's Broadband unit and Skills Development unit in order to improve skills development, support a vibrant and innovative e-content cluster, and drive broadband usage in the Western Cape. The platform incorporates a Skills Intelligence Platform to foster collaboration between relevant stakeholders; a Learning Management System to deliver e-learning content and courses; a Career Awareness Platform to match interests and skills to career paths; and a Content Publishing Platform that acts as a marketplace between creators and users of content. Key considerations include identifying gaps in the content creation 'ecosystem' and designing appropriate government interventions.

Connected Business

The Khayelitsha Barn

The Barn is an ICT incubator which was established in Woodstock and has successfully supported ICT SMME's for the past 15 years. To capitalise on its success, the Community Barn in Khayelitsha has been developed as a proof of concept to test the model in a different community environment. The Barn provides an integrated set of interventions and programmes that assist ICT entrepreneurs from idea and concept phase, through business plan development and growth towards a stable and sustainable business that is able to create employment and generate economic wealth.

Key objectives include:

- Assisting the creation of new enterprises, with viable business plans
- Assist entrepreneurs who have committed to a business to develop sustainably

The Barn Khayelitsha officially launched in March 2015.

Design Technology Centre

The Design Technology Centre will provide a physical space to test, model, prototype and develop broadband-enabled products and services, allowing evaluation of potential commercial and social value.

Through this design technology centre, industry can prove the readiness of new services and applications for broadband infrastructure. The design technology centre will enable industry and research partners to have access to both a test bed emulation network for testing advanced applications, as well as the Western Cape's broadband network and centres as the projects come on stream.

This centre aims to improve the competitiveness of broadband-enabled businesses. This centre will form part of the Design Park, which is a project run in collaboration with the Design Sector/Fringe project.

Intellectual Property Management for Digital industries

Associated to the e-skills project and its goals around content stimulation are issues related to Intellectual Property protection within digital industries. Unfortunately, businesses in South Africa are hampered from being internationally competitive as the international legal domain and internal banking regulations continue to be unfairly biased to the disadvantage of developing countries. A detailed legal and business analysis will assist in understanding the barriers faced by local digital businesses and enable DEDAT to understand how best to address these issues.

Broadband for Business Toolkit

This project aims to develop a targeted campaign and incentive package to increase the awareness and benefits of broadband in order to improve business competitiveness through the uptake of broadband.

Business Broadband Purchasing Collective

Broadband costs remain a significant barrier to broadband uptake. Research suggests purchasing collectives can yield economies of scale and improve uptake, as they bring together clusters of buyers and facilitate investment in infrastructure, particularly for bandwidth intensive industries. The Department will assist the East City design precinct to set up a purchasing collective to facilitate fibre-to-the-premises in this district.

Proposed WCG sites to be connected to high speed broadband