



Broadband Presentation

06 November 2012

Ministry of Communications

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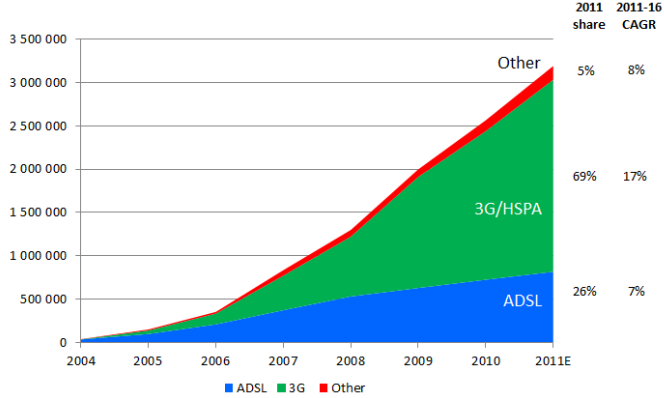


- Broadband Mapping
- Broadband Policy Review
- Broadband Strategy
- Funding Options
- Institutional mechanisms

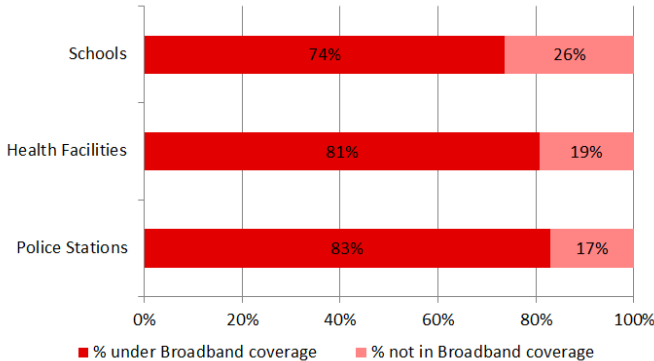
Background: The state of broadband in South Africa in 2012 (1)



- ❑ In South Africa, broadband is provided through many technologies including ADSL, fibre (FTTx), 3G/HSPA, WiMAX, WiFi, CDMA2000 EV-DO and satellite.
 - ❑ These are the same underlying technologies as used in most other nations. The main difference from others is that we have practically no cable TV installations.
- ❑ As of March 2012, there were around 3.5 million broadband connections in South Africa, with around 850,000 of these being ADSL (26%), over 2.5 million being 3G/HSPA mobile wireless broadband based (69%) and the balance using other access technologies (5%). These are for connections to PCs.
 - ❑ In addition, and in contrast, the total number of smartphones in the market exceeded 10 million in 2012.
- ❑ Market research data from national studies conducted in 2011 showed that 93% of households had mobile phones, while only 15% had fixed lines. 26% of households had a computer, while 10% had broadband internet access at home. The fixed broadband penetration was 2%, the mobile PC broadband penetration was 4% while the mobile phone broadband penetration was 10%.
 - ❑ This is the latest reputable data available and all parameters are relevant measures of broadband penetration.



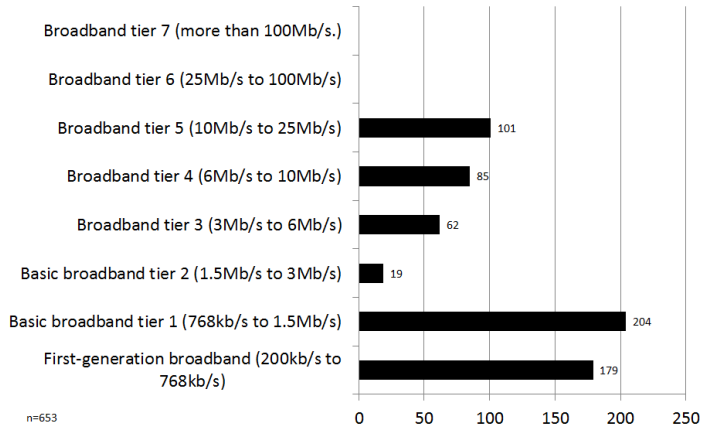
PC Broadband connections 2004 – 2012*



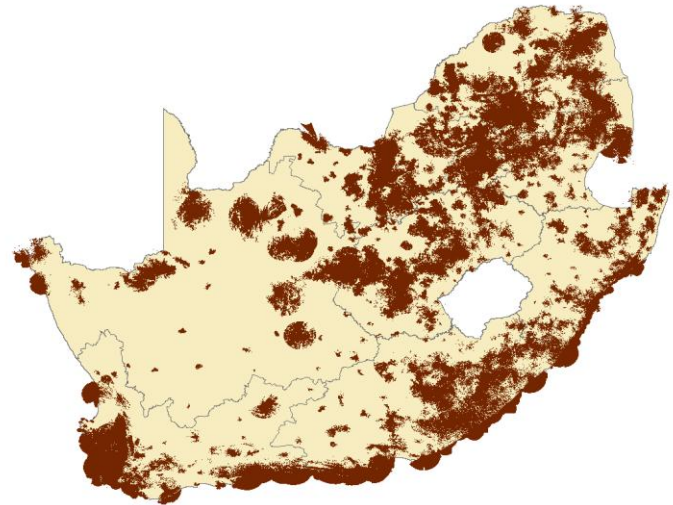
National level view of facilities outside combined broadband coverage.*

Background: The state of broadband in South Africa in 2012 (2)

- ❑ There are several hundred broadband packages in the market for the consumer or subscriber to choose from.
 - ❑ The market is complex with many attributes to consider.
- ❑ ADSL services are only available from Telkom.
- ❑ All four of the South African mobile networks offer 3G/HSPA services at line speeds that compare favourably with our global peers viz. 21.1Mbps and 43.2Mbps.
- ❑ Compared to products on the international stage, the bulk of our broadband products are ‘first generation broadband’ or ‘basic broadband’, although the mobile broadband products could be classified in higher tiers.
- ❑ The price of broadband products varies tremendously with monthly charges ranging from under R100 per month to over R20,000 per month.
- ❑ The cost per Gigabyte (GB) varies from less than R10 per month to over R2600 per month.
- ❑ National broadband coverage is around 30% geographic coverage and 75% population coverage.
 - ❑ Including satellite services takes these parameters to 100% geographic coverage and 100% population coverage, but limited speed and affordability (access).



Spread of broadband services in RSA by broadband tier*

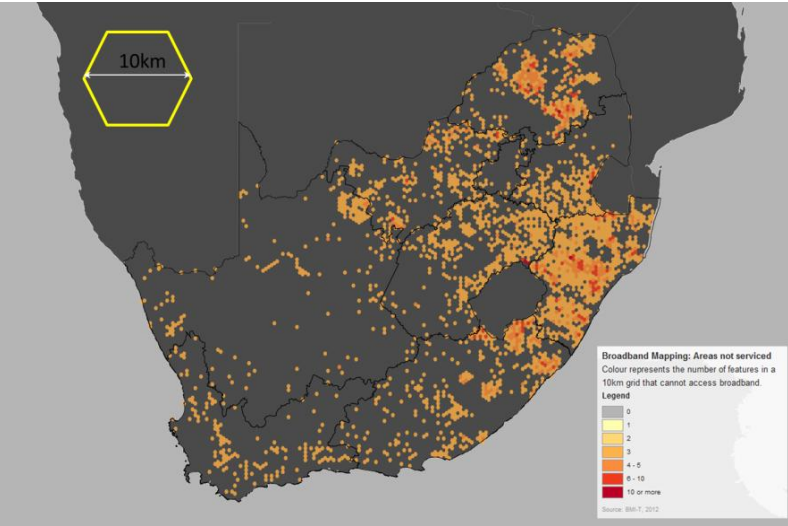
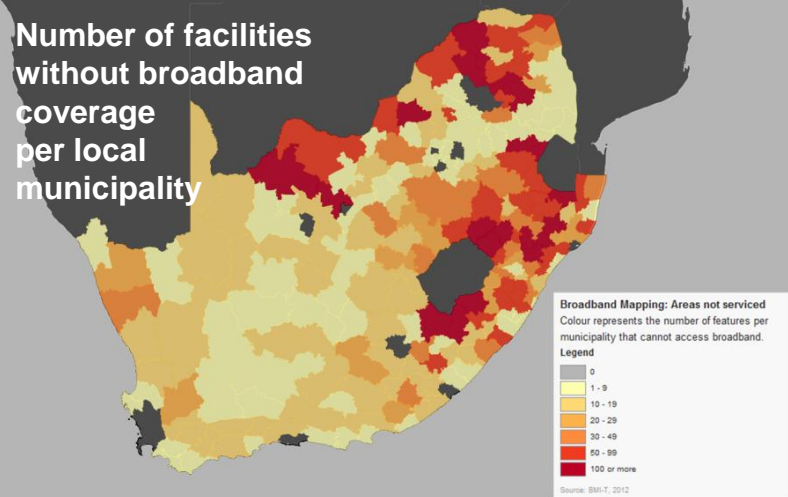


Combined broadband coverage mid-2012*

How is broadband spread across South Africa?



- ❑ Broadband mapping can be used to identify areas of the country that cannot access broadband and to illustrate this in the form of the 'Broadband Deprivation Index'.
 - ❑ Using a GIS system, the locations of schools (total 25,754), health facilities (total 3,973) and police stations (total 1,121) across the country were plotted. It was then determined which of these facilities was located such that they could access broadband services.
 - ❑ The difference between those that could access broadband and those that cannot access is called the 'broadband gap'.
 - ❑ From inspection, there are some towns with ADSL that do not yet have a 3G/HSPA or other broadband service.
- ❑ The mapping showed that as of mid-2012, 74% of schools, 81% of health facilities, and 83% of police stations can be said to have some form of broadband coverage (excluding satellite). The situation across the country varies, with the largest broadband gaps being observed in the KwaZulu-Natal, Limpopo and the Eastern Cape.
- ❑ The baseline study showed that the actual take-up of services is way lower. Affordability of services is seen as the main barrier to adoption.



Number of facilities without broadband coverage in a 10km grid 5

The importance of a Comprehensive National Broadband Strategy



- ❑ There are many broadband-related initiatives underway in RSA but these are fragmented.
- ❑ A comprehensive strategy is needed that defines the outcomes sought, has realistic and achievable objectives with immediate, medium term and longer term priorities, and the recognition that these may need to change.
 - ❑ This needs to be both ‘top down’ and ‘bottom up’.
- ❑ The National Planning Commission (NPC) has put forward its own vision for the sector in the NP2030 and notes that “public investment complements private investment, which is critical for job creation and for employment”. This is progressive and appropriate, and coordination is needed with the NPC in the formulation of policy.
- ❑ Central planning for effective planning is required due due to the complexities involved with regard to broadband rollout. This must be across department, addressing factors such as access to land, other scarce resources, licensing, funding, access to premises, electricity, and demand .

- ❑ **The broadband strategy must be comprehensive, addressing both demand and supply of broadband services and networks.**
- ❑ **Different problems will need different solutions.**
- ❑ **To achieve the best outcomes without unnecessary or wasteful duplication of resources, a central ‘framework’ is recommended that takes account of initiatives already in play or planned, and maps these onto national, provincial and local targets and needs.**
- ❑ **The strategy needs to be both ‘top down’ and ‘bottom up, involving both the private and public sectors.**

Deciding on priorities



- ❑ It is a given that access to broadband services is a necessity for the growth and social and economic upliftment of communities, particularly certain communities in rural and remote areas within the country.
 - ❑ Health, education and digitising government are key the priority sectors to increase broadband adoption and create demand.
 - ❑ Needy persons and ‘under-served’ areas in the context of broadband must be identified, defined, and the strategy prepared so as to focus on their needs within a particular time-frame, having regard to available resources (human, network, and financial).
- ❑ Gaps in broadband must be identified and addressed through public and private sector initiatives.
- ❑ Telkom has got to be involved – with an installed base of tens of thousands of kilometres of fibre and many national, provincial and local points of presence, it is a natural focus point for any strategy.
 - ❑ Telkom’s fibre network accounts for around 80% of the installed base.
 - ❑ Fibre projects being considered by provincial governments will have a major role in modernising a parallel fibre infrastructure.

- **determine national, provincial and local priorities in the short, medium and long term, having regard to need and availability.**
- **Sparsely populated areas can be addressed sensitively by ensuring network connections at public access points sufficient to provide for demand in early phases, with increased availability to households in following phases.**
- **Extensive build out by Telkom and the mobile operators covers a significant percentage of the population and satellite already covers the entire country and hence can be used as a gap filler.**

Creation of a central framework



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- A framework that harmonises the combined initiatives of Government is urgently required.

Technology perspective

- ❑ Technology moves fast, particularly in the area of access technologies.
- ❑ All of fixed, increasingly fibre-based and wireless technologies (terrestrial and satellite) have essential roles to play in achieving widespread national broadband coverage and national and international end-to-end connectivity.
- ❑ Although wireless access may present the most cost-effective and most rapid approach, wireless networks ultimately and increasingly rely on fibre connections particularly in the areas of national long distance, metro, access and fibre-to-the-tower.
 - ❑ Fibre is expensive to install, mainly due to the civils component, but deployment thereof has long running benefits.
 - ❑ Satellite and wireless backhaul can be used effectively but ultimately need to be supplemented with fibre-based transmission for high capacities.
- ❑ Wireless spectrum is the lifeblood of the communications industry. Spectrum assignments need to be smart, robust, and made under transparent governance in order to achieve the goal of timely and prompt awards of spectrum licences that are less likely to be challenged and hence delayed for years in legal or regulatory proceedings.



- **Ubiquitous fibre-based transmission facilities will be needed to handle long term broadband traffic volumes over national routes, within metro areas and ultimately in fixed access networks.**
- **Gaps in capacity and coverage should be filled by a combination of private sector and Government-supported initiatives.**



National Broadband Policy Review

Introduction



- ❑ View broadband as an ecosystem .
- ❑ Build a spirit of good public-private partnership .
- ❑ Build a strong government capacity through the establishments of public ICT institutions .
- ❑ Aim to construct the world best ICT infrastructure through promotion of competition, provision of public support on R&D and network investments.
- ❑ Make a series of master plans to formulate strategic development policies.
- ❑ Implement policy initiatives to aggregate and expand demand for broadband services through the introduction of e-government applications, promotion of e-commerce and provision of digital literacy education programmes.
- ❑ Ensure the nationwide availability of broadband services

Background



- In June 2010 Cabinet approved the National Broadband Policy implementation in South Africa.
- As part of Policy Implementation an Intergovernmental Broadband Committee was established and launched by the Minister of Communications.
- The policy did not have adequate provisions to support vision 2020 as agreed with industry stakeholder.
- The need to look at the definition of Broadband and strengthen other policy provisions necessitated the DoC to review the National Broadband Policy.
- Almost all sections of the Policy were reviewed, hence the development of the new Broadband Policy.
- The National Broadband Policy has to take into account other government policies such as:
 - ✓ New Growth Path (NGP);
 - ✓ National Development Plan (NDP);
 - ✓ National Industrial Policy Action Plan (IPAP);
 - ✓ Medium Term Strategic Framework (2009-2014)
- The PICC prioritised broadband and connectivity as part of the national programme.

Broadband Policy



□ Vision

“to ensure universal access to reliable, affordable and secure broadband services by 2020 and encourage sustainable usage”.

□ Definition of Broadband for South Africa

“an always available, multimedia capable interactive network connection with characteristics, as determined by Ministerial Policy direction and published in Regulations by the Authority from time to time.

Policy Objectives



- ✓ To ensure universal service and access to reliable, affordable and secure broadband service by all prioritising rural and under-serviced areas;
- ✓ To articulate the Government's commitment to providing appropriate support for digital inclusion, this building an information society;
- ✓ To provide for an integrated approach in the development of broadband services;
- ✓ To ensure continued availability and expansion of broadband capacity to support of economic and social goals of the country;
- ✓ To reduce the costs of broadband services; and
- ✓ To clarify the roles of the Government, State Owned Enterprises (SOE's) and private sector in developing world-class Broadband Infrastructure for the country.

Key Priority Areas



- Supply-side measures
 - ✓ Access to international backbone networks;
 - ✓ Access to national backbone networks;
 - ✓ Local access networks;
 - ✓ Radio Frequency Spectrum use for broadband; and
 - ✓ Minimising infrastructure rollout costs.

- Demand-side measures
 - ✓ Access to end-user equipment;
 - ✓ Content and applications; and
 - ✓ Support to consumers

Access to international backbone networks



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- ✓ South Africa is part of the global economic system.
 - ✓ Therefore connectivity to the rest of the world through submarine cable system and satellite based networks enables the country to do business with the rest of the world with ease.
 - ✓ Thus the availability of reliable and affordable international backbone infrastructure is critical to support the growth of South African economy.
 - ✓ ECNS have made investment in submarine cables.
 - ✓ Government to intervene if there is a compelling case.
- Policy decision**
- ✓ Government to promote public and private sector investment in international backbone networks. This will ensure the country's continued high-level of international connectivity and reduce the costs of international bandwidth.

Access to national backbone networks



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- ✓ Existing electronic communications network (ECNS) licensees have made significant investment in backbone infrastructure.

- ☐ **Policy decisions**
- ✓ Government will continue to be a critical investor in the development of broadband networks.
- ✓ Government will encourage rollout of wholesale broadband networks in rural and under-served areas taking into account the following principles:
 - ✓ Open access; non-discrimination; scarcity of radio frequency spectrum , topography of the country ; economic and financial considerations.
- ✓ State-owned companies are central in delivering wholesale broadband networks.

Minimise infrastructure rollout costs



- ✓ Deploying broadband backbone infrastructure is an expensive exercise.
- ✓ Cost associated with this exercise makes investment decisions in underserved and rural areas difficult; making it unattractive to private sector to rollout networks in these areas.
- ✓ High costs associated with access to publicly and privately-owned servitudes.
- ✓ Delays in rights of way approvals.

- ❑ **Policy decisions**
 - ✓ Implementation of regulatory measures to promote the availability of both publicly and privately-owned servitudes to facilitate rapid broadband rollout in the urban, rural and underserved areas.
 - ✓ all major publicly funded utility infrastructures, at the construction phase to facilitate the extension of existing networks and the rollout of planned broadband networks.
 - ✓ there is a need to fastrack the finalisation of the rapid deployment guidelines on electronic communications facilities and create a one stop shop

Local Access networks



- ✓ Broadband is a utility and has to be made available universally to all parts of the country. It has to form part of basic like water, roads and electricity to be made available to all.
- ❑ **Policy decision**
- ✓ Government to support and encourage measures to encourage fibre to the premise by the private sector.

Radio frequency spectrum for broadband



- ❑ Radio Frequency spectrum is key and critical input in the provision of broadband services. Radio frequency spectrum in its nature is a scarce and finite national resource - it cannot be increased or decreased.

- ❑ **Policy Decisions**
 - ✓ Sufficient allocation and appropriate licensing of radio frequency spectrum in order to promote universal access and broadband services within the Republic.
 - ✓ The allocation of the radio frequency spectrum for broadband must be done in a manner that promotes the following principles:
 - ✓ Universal service and access;
 - ✓ Competition;
 - ✓ Black economic empowerment; and
 - ✓ Affordability.

Access to end-user equipment



- ✓ South Africa is not a major player in the manufacturing of these equipment types and has to rely on imports from overseas.
- ✓ These products attract custom duties when they reach South African shores. The duties contribute to high access cost of the equipment making them unaffordable by the majority of people.

Policy decisions

- ✓ Government to support the implement of measures to drive the cost of end-user devices down .

Access to content & applications



- ✓ The availability of compelling digital content is critical to the adoption of broadband services. The development, availability and use of local content will lead to increased adoption of broadband services thereby a competitive local content industry.
- ❑ **Policy decisions**
- ✓ To increase uptake and usage government needs to develop its own local content across all South African languages to ensure that government services are available to citizens electronically. This content will be used by citizens to access and interact with Government and will further stimulate the demand for Broadband services.
- ✓ With the advent of broadband technologies - applications become possible or are enhanced beyond their current capabilities. Therefore an innovation programme to support the development of local applications will be implemented.

Provide support to consumers



- ✓ Access to affordable broadband services by consumers is critical to increase uptake and usage, thus guaranteeing demand.
- ✓ Consumers require affordable end-user equipments, applications and content to take up broadband services.
- ✓ Such interventions prioritise supporting the needy persons as defined by the Universal Service and Access Agency of South Africa.

- ❑ **Policy decisions**
- ✓ Provide incentives to encourage uptake of Broadband in all sectors of society by Government and Private operators by for example: implementing subsidized premises equipment, low cost computers etc.
- ✓ Implement campaigns to educate and create awareness with regard to the benefits of broadband.
- ✓ Implement a Digital Literacy Programme to increase the skills base of individuals, business and government.



Role of Government

National Government

- ✓ Roles of various national departments have been clearly defined.
- ✓ National, provinces and municipalities should work together in realising the objectives of this policy. Central coordination of broadband initiatives in order to streamline and maximise the government investment.

Provincial Government

- ✓ To align their broadband strategies with national Broadband Policy and Strategy;
- ✓ To define the provincial broadband requirements to enable connectivity and access;
- ✓ To establish broadband implementation focal points within established Intergovernmental Relations fora;
- ✓ To collaborate with SOCs in connecting the provincial governments and their entities with Broadband services and enabling the distribution of e-government services to drive the demand for Broadband and promote uptake and usage;
- ✓ To invest in the development of local content and Broadband awareness to support uptake and usage of Broadband service; and
- ✓ Reform of the USAF to cater for broadband.

Role of Government



❑ Local Government

- ✓ To align their strategies with the provincial strategies and national policies;
- ✓ To define municipal broadband requirements to enable connectivity of municipal offices;
- ✓ To ensure the provision of electronic communication network services in cooperation with the provincial and national government;
- ✓ To facilitate approval processes with regard to rights of way;
- ✓ To collaborate with provinces and SOC's in connecting the local government offices and its entities with Broadband services and enabling the distribution of e-government services to drive the demand for Broadband and promote uptake and usage; and
- ✓ To invest in the development of local content and Broadband awareness to support uptake and usage of Broadband services.

Role of SOC's



- ❑ **Role of state-owned companies and government entities**
- ✓ To provide electronic communications networks services in line with the provincial and municipal broadband infrastructure requirements.
- ✓ ICASA will review and amend all regulations having impact on the provision of broadband services.
- ✓ Administer the Universal Service and Access Fund in support of broadband.

Benefits of Broadband



- ✓ Economic development and growth
 - ✓ electronic commerce;
 - ✓ creating new jobs;
 - ✓ attracting new industries;
 - ✓ providing access to local, provincial, national, and global markets;
 - ✓ Reduce carbon emissions; and
 - ✓ Attract foreign direct investment.
- ✓ Increase access and improve delivery of essential social services
 - ✓ Improved quality of education;
 - ✓ Improved quality of health services; and
 - ✓ Improved quality of government services.
- ✓ Minimise the digital divide
 - ✓ Targeted investment in rural and underserved areas by ensuring that all these areas enjoy similar levels of broadband connectivity and information.



APPROACHES TO THE BROADBAND IMPLEMENTATION STRATEGY



Background

- ❑ The National Broadband Policy for South Africa makes provision for:
 - ❑ The development of a National Broadband Strategy (NBS); and
 - ❑ The Broadband Implementation Plan

Objective of Broadband Strategy



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- Accelerate broadband infrastructure rollout;
- Increase adoption rates of broadband services and literacy levels; and
- Stimulate demand for broadband services in the entire country.

Core Pillar 1



National wholesale open access Broadband Network (NBN) rollout

- The NBN must address the two aspects.
 - improving broadband capacity in high economic impact areas; and
 - providing capacity to the general population especially in rural and underserved areas so as to provide broadband speeds to be defined in a regulation.
- The NBN must provide link to the low economic impact areas and high economic impact areas.
- The NBN will include national, provincial and local components and operated on open access and non-discriminatory principles.
- Develop regulations on the cost sharing model of the network.
- Capacitate ICASA to fulfill its critical mandate in terms of this strategy.

Core Pillar 2



Establish rules to enable rapid rollout of infrastructure

- Establish a special committee to facilitate all approvals required in the deployment of the wholesale network;
- Pool government servitudes into a special single entity to facilitate their access;
- In order to address the cost of civil works, municipalities shall develop new and/or amend by-laws in support of the dig once principle;
- Amend national building regulations to ensure that broadband networks are integral part of any building; and
- Develop a national standard on electronic communications network service rollout in the Republic.

Core Pillar 3



Radio Frequency Spectrum use for Broadband

- Radio frequency spectrum is a limited and national scarce resource.
- Its demand is increasing due to rapid development of wireless technologies and services.
- The management of this resource must bring greater economic value to the country.

- Actions to be undertaken:-
 - Investigate how suitable frequency bands for broadband can be used for increased availability in areas that lack access to broadband or have low capacity and quality broadband;
 - Efficient allocation of radio frequency spectrum to single or multiple operator(s) to build, own, operate and maintain a wholesale open access broadband network in rural and underserved areas; and
 - Develop innovative ways to maximize the economic value of high demand spectrum to finance the rollout of infrastructure in rural and underserved areas.

Core Pillar 4



Connect all schools, health facilities, and public institutions

- Provide broadband connectivity to 4 200 health facilities
- Provide broadband connectivity to 26 000 schools
- Provide broadband connectivity to all government institutions

- Actions to be embarked on:-
 - Conduct an audit to ascertain health facilities, schools and public institutions with or no broadband connectivity;
 - Develop and implement health facilities, school and public institutions connectivity plan in line with the implementation plan; and
 - Determine the types of health, education, and government services that would benefit from broadband as well as the bandwidth requirements.

Core Pillar 5



Capacity building

- By 2030, South Africa will have the capacity to develop and grow in a global knowledge economy.
- The strategies to be employed here are aimed at building competitiveness of the domestic economy and increasing its productive capacity.
- Broadband must also facilitate innovation and commercialization of digital technologies, process and materials.

- Actions to be undertaken:-
 - Implement a digital literacy programme aimed at capacitating all citizens, businesses and industry to support the uptake and usage of broadband services in the country; and
 - Develop and implement a National Broadband Support Scheme in order to provide access to affordable broadband services by residences and businesses in rural areas and underserved areas.

Core Pillar 5....



- ❑ Leverage the state procurement of computers and other electronic products to attract original equipment manufacturers (OEMs) into the country;
- ❑ Utilize existing incentive schemes to attract OEMs into the country;
- ❑ Develop of technology parks in special economic zones in order to attract domestic and foreign direct investment ; and
- ❑ Address import duties on certain electronic products used to access broadband services.

Core Pillar 6



Content and applications development

- South Africa will have to adapt and develop local digital content and appropriate applications.
- This will in the long-run address social inclusion, thus bridging the digital divide.

- Actions to be embarked on:-
 - Implement a national digital content programme aimed digitizing education and health content, cultural and heritage content in all official languages;
 - Support the availability of government services in digital format;
 - Support the development of creative industries focusing on animation, games, documentary, films and music;
 - Support research and development in applications to support the provision of local content; and
 - Utilise the existing innovation programmes to support the development and commercialization of local applications appropriate for the provision of e-education, e-health and e-government services.

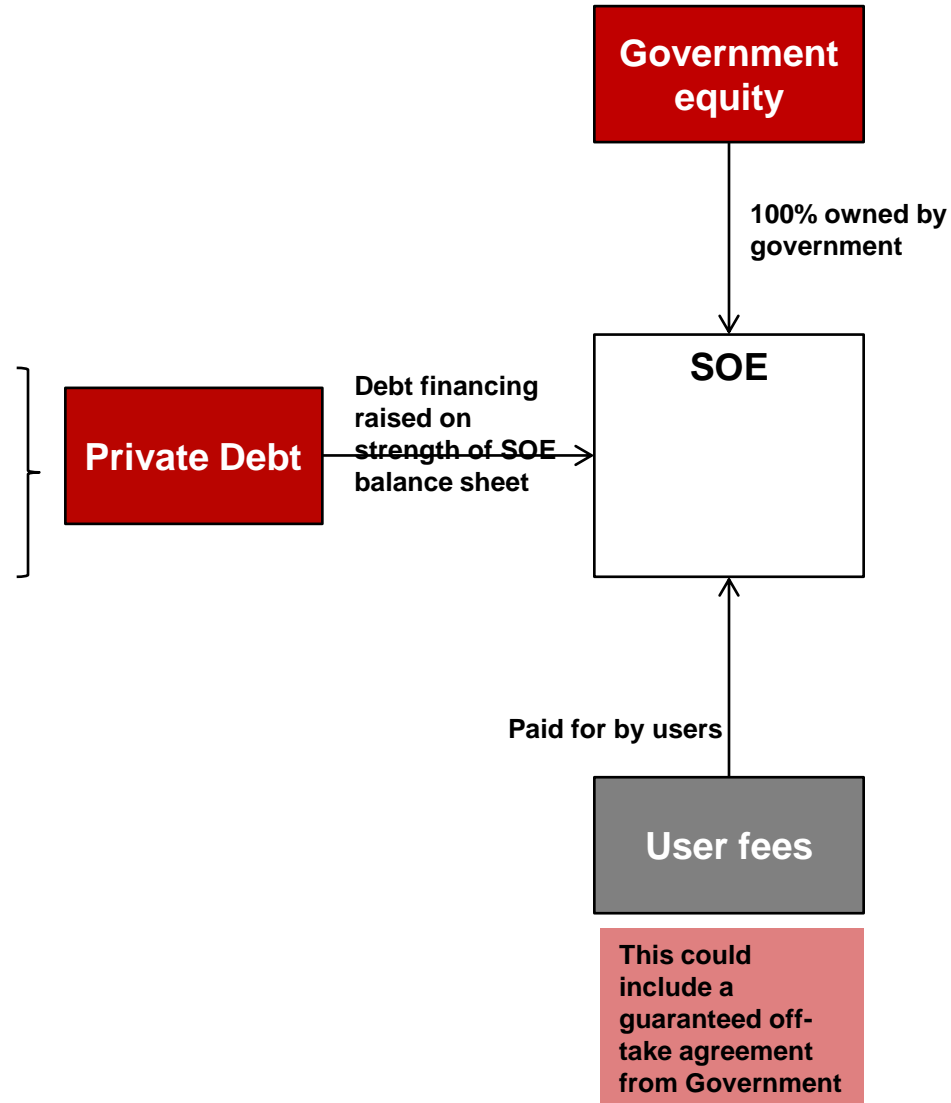


BROADBAND FUNDING OPTIONS BEING CONSIDERED

Government could capitalise an SOE to invest in broadband



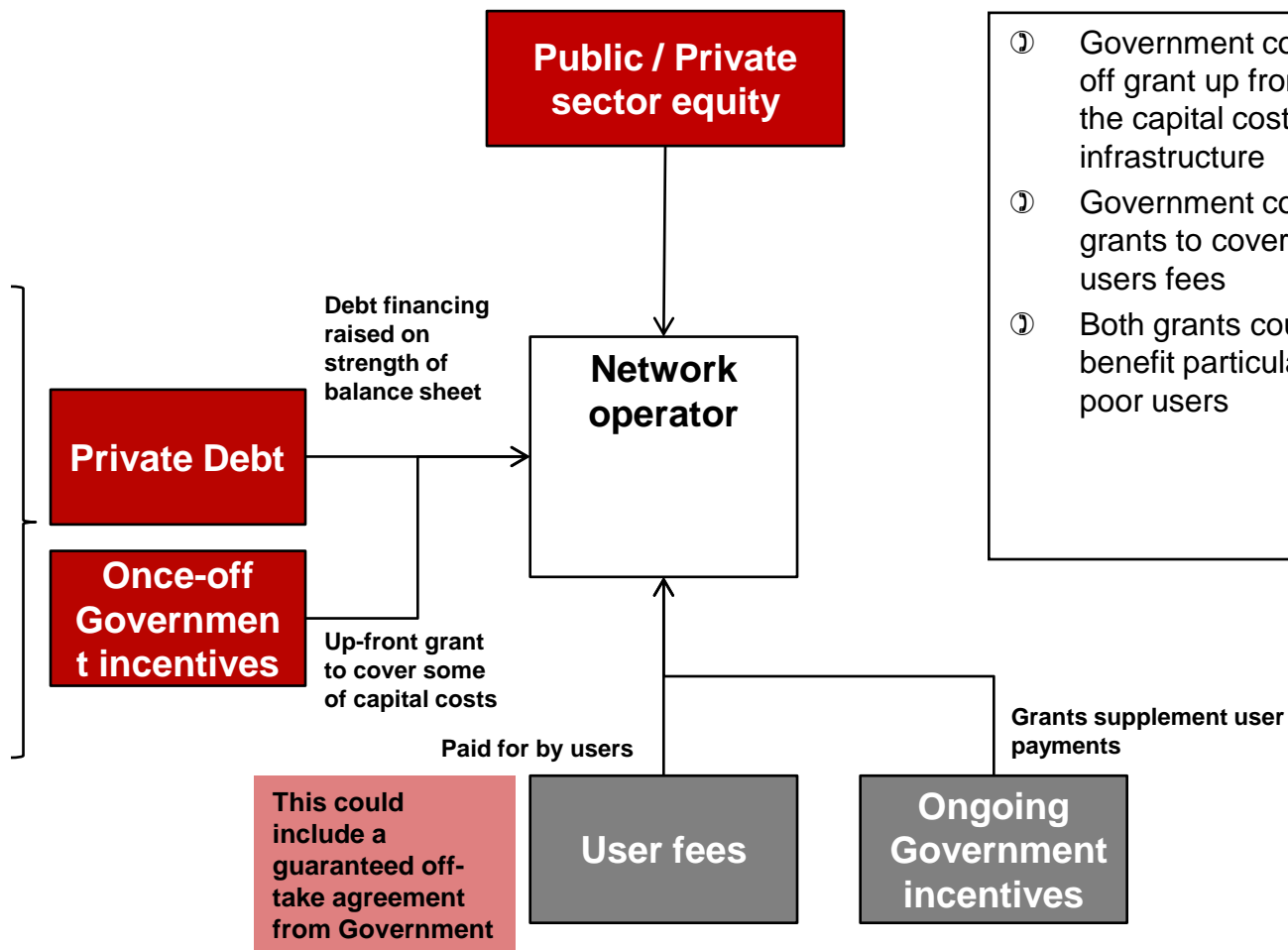
- Public sector investors (PIC/DBSA)
- Institutional investor or sovereign wealth fund
- Banks
- Export Credit Agencies
- Multilaterals



Government could incentivise operators to offer services in rural areas

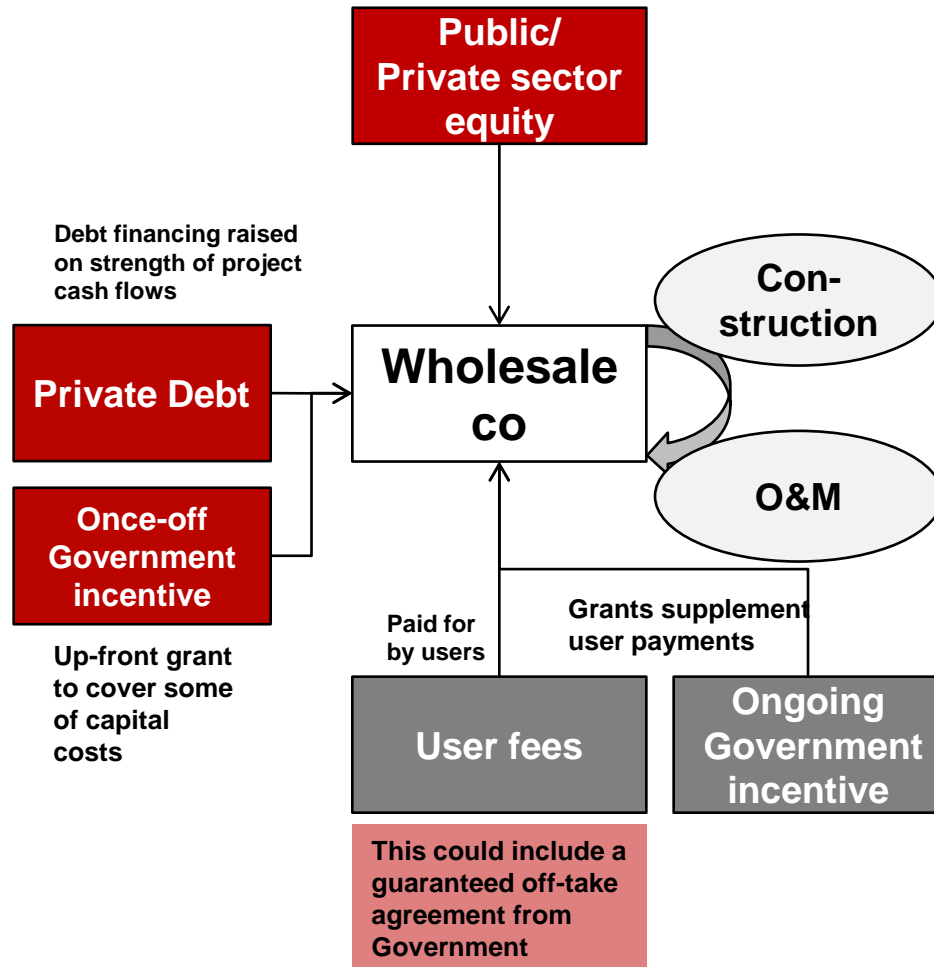


- Public sector investors (PIC/DBSA)
- Institutional investor or sovereign wealth fund
- Banks
- Export Credit Agencies
- Multilaterals



- 1 Government could provide a once-off grant up front to cover some of the capital cost of the infrastructure
- 2 Government could provide ongoing grants to cover all / part of the users fees
- 3 Both grants could be targeted to benefit particular user groups, e.g. poor users

Equity and incentives provided by Government could be ring-fenced in an SPV



- ① Government could provide a guaranteed off-take agreement to improve the revenue certainty of the SPV
- ① If necessary Government could provide ongoing grant to cover the cost of services that are not commercial



Implementation mechanisms

- The interventions identified in the policy and strategy requires coordination amongst entities and stakeholders.
- Inter-Ministerial Committee (IMC) on Broadband.
- A dedicated National Broadband Programme Management Office (BPMO) to serve as an operational base for centralized management of broadband projects across the country.
- It will consists of five (5) Action Teams focusing on:
 - Broadband Infrastructure Rollout;
 - e-Government;
 - Broadband Awareness;
 - Economic Development; and
 - Policy and Regulatory.
- The Terms of Reference for each Team will be developed.
- Each Team is led by an expert and consists of representatives required in the delivery of the action.

Way Forward



- The revised Policy to be presented to Cabinet approval.
- Policy will be gazetted for public consultations.
- Commencement of government/industry collaboration on the development of the Broadband Strategy, including funding mechanisms.
- Envisaged to obtain Cabinet approval before the end of the 2012/13 financial year.
- Complete Broadband Strategy including funding mechanisms.
- Develop Broadband Implementation Plan.



THANK YOU