Fibre Broadband Development Initiative

Towards a Gigabit Society in South Africa

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Digital Council

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Gigabit Society

New technologies – such as artificial intelligence (AI), machine learning, big data, Internet of Things (IoT) – hold significant transformative potential for industries and societies, and can assist in social and economic upliftment in both developed and developing countries. However, to unleash the potential of these new technologies, deep fibre fabric must be in place to connect the various elements of the digital infrastructure and the users, be they consumers, businesses or government organisations. These fibre networks must span the national long-haul, metro and access (last mile) geographies.

The technical characteristics of fibre make it an ideal technology to deliver the high connectivity speeds, gigabit throughput, low latencies, stability and consistency required by the new technologies and applications. Fibre also enables other broadband connectivity technologies – for instance, the mobile 4G and 5G technologies. Without the use of fibre for backhaul and fronthaul, these technologies are not able to deliver their full potential to the users. Therefore, the objective of a deep fibre fabric is to have fibre infrastructure deployed as deeply into the broadband networks as feasible. Without this pervasiveness of fibre, it is impossible to build a gigabit economy and a gigabit society – an environment which heavily leverages digital infrastructure and new technologies for social and economic development.

In South Africa, a lot of development has taken place over the past dozen years to build out fibre optic infrastructure and make broadband services more readily available and affordable. However, significant gaps continue to exist between those users who can access practically unlimited good quality broadband (the minority) and those who can access services only sporadically and/or poor quality services (the majority). Moreover, a lot of work is still required to provide high-speed broadband connectivity to many government offices and digitise government services.

South Africa has the potential to achieve a gigabit society status, which would be accompanied by a great improvement in social upliftment and an expansion of the economy. To achieve this, a strategy must be developed which would draw on public and private sector resources to achieve this vision.

This Position Paper

The position paper titled “Towards a Gigabit Society in South Africa” analyses the growing requirement for good quality, high-speed broadband connectivity as the adoption of new technologies and applications gains pace, and discusses the need for extensive fibre optic networks to enable the full potential of digital infrastructure. It also reviews broadband plans of countries more advanced than South Africa on the journey towards the attainment of a gigabit society.

The paper analyses the positive impact that increased fixed broadband adoption would have in South Africa from a social and an economic perspective. This impact would flow not only from the universal ability of the society and the various industries to use high-speed broadband services but also from the new digital technologies and services which a deep fibre fabric would enable and support.

The paper then reviews the current relevant policy and regulatory landscape to illustrate which building blocks are already in place, which can be used to start creating a gigabit society, and where the gaps lie. The result of the analysis is a suggested strategy on the way forward and a set of specific recommendations aimed at overcoming the existing challenges to ubiquitous fixed broadband services availability in the country.

We hope that this position paper will stimulate a further discussion within the ICT industry and the government circles, lead to wider fibre infrastructure build-out, and ultimately contribute to the creation of a gigabit society in South Africa.

We extend our appreciation to the various stakeholders who supported the development of this position paper. We also extend our gratitude to our team members who contributed key insights and extended a considerable effort in the creation of this paper.

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1. EXECUTIVE SUMMARY

South Africa has achieved considerable progress in developing digital infrastructure over the past ten years. However, this development has been uneven across the different socio-economic segments of the society. It has also been lagging behind the more advanced countries in the world. To help build South Africa's economy and improve the welfare of its people, the country needs to leverage new technologies and digital services. But to do that, the digital infrastructure must be expanded and interconnected with a deep fibre fabric.

South Africa cannot afford to erode its global competitive status. On the contrary, this status must be enhanced through greater integration into the global digital village. This will lead to social and economic upliftment.

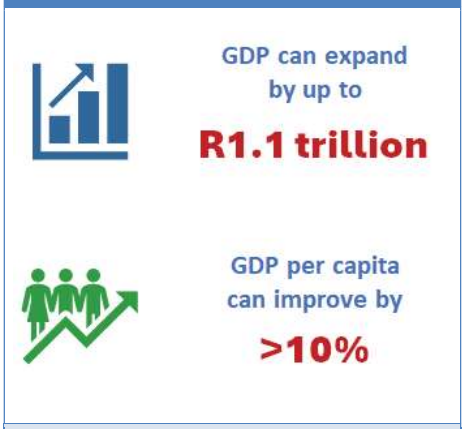
It is time for South Africa to crystallise its vision of a society where all individuals, households, business and other organisations have access to a wide range of digital services supported by unconstrained high-speed broadband over new technologies, such as fibre and 5G. It's vision of a gigabit society[1]. The next ten years will be critical for ensuring that the necessary digital infrastructure expansion takes place to turn South Africa into a digital society.

Socio-Economic Impact of Fixed Broadband

Access to broadband is recognised as a key enabler of social and economic development. Broadband infrastructure has the power to revolutionise the way we live, work and learn by enabling digital services. The ability to exploit digital opportunities will determine whether or not a society can achieve a sustainable and inclusive long-term growth path. High-speed fixed line broadband is an enabler of social cohesiveness, and an enabler of competition, improved provision of government services and ultimately economic growth and job creation.

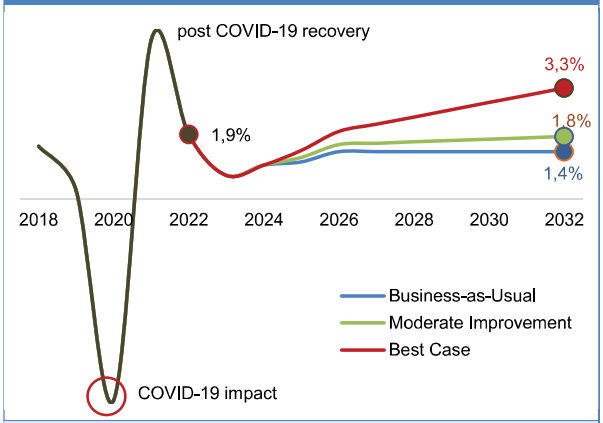
The gigabit economy will play an increasingly important role in the economic development of South Africa. Over the next ten years, South Africa could see 6.6 million homes connected to fixed wireline broadband (i.e., fibre), increasing the current connectivity level more than threefold. A concerted strategy to increase fixed wireline broadband penetration can result in the South African economy growing at over 3% per annum, with the GDP expanding by R1.1 trillion by 2032, with the potential for further spillover effects creating additional value and economic opportunities. Real GDP per capita would increase correspondingly. This is illustrated below.

Exhibit 1.1: GDP expansion uplift between 2023 and 2032 due to fixed broadband



Source: Africa Analysis calculations

Exhibit 1.2: Real GDP growth scenarios forecast (annual % change), 2023 to 2032



Source: Africa Analysis calculations

[1] A gigabit society is a socio-economic ecosystem based on universally available and accessible high-speed, high-quality broadband which enables access to the creation and consumption of a wide range of converged services required for effective economic and social participation.

All sectors of the economy will see a positive impact of increased fixed broadband penetration through their expansion, although some will benefit more than others. The largest social benefits will be in government service delivery, and in health and education – key areas of an inclusive economy.

Key to achieving ubiquitous e-Government services will be closing the digital divide through fixed broadband connectivity which is proven to have significant benefits particularly to the youth, women and children, opening opportunities for social and economic inclusion.

A fixed broadband connection installed today remains a social asset for years to the come. The ability for children to access online education and online healthcare will transcend and remain throughout their lives. Fixed broadband today represents an ever-increasing social benefit into the future.

Strategy Needed to Achieve Gigabit Society Status

Through its SA Connect (broadband) policy South Africa defined broadband infrastructure deployment targets to achieve ubiquitous connectivity by 2030. However, the intended implementation of a deployment programme based on existing policies is already behind schedule and insufficient. Even if the current SA Connect targets are achieved by 2030, the broadband requirement in terms of the speed and quality of connectivity then will be much greater than what is now envisaged. This will be driven by the requirements of a gigabit economy and a gigabit society.

An overarching national strategy is required to pull together the disparate digital infrastructure development initiatives and programmes to realise effective co-ordination of tasks and streamline the process. The long-haul backbone, metro backhaul and expanded access broadband infrastructure, along with other digital infrastructure facilities need to be fully integrated.

The proposed objectives of a new strategy for digital infrastructure deployment are:

1. Create a ubiquitous and seamless digital infrastructure, universally available to consumers and businesses at prices which will allow meaningful and competitive use of that infrastructure.
2. Position optical fibre as the enabler of high-speed broadband connectivity; the gigabit network connecting all digital infrastructure elements.
3. Stimulate demand for gigabit broadband services across different sectors of the society and various industries, so that it can be leveraged for social and economic development.

To achieve these objectives, several challenges will need to be addressed, the main ones being:

- Fragmented and lengthy application procedures for permissions to deploy infrastructure.
- Infrastructure sharing to make optimal use of public infrastructure and reduce the unnecessary duplication of digital infrastructure.
- Updating of building codes to make provision for pre-deployment of fibre infrastructure in new developments.
- Energy and security which have a negative impact on user experience and increase service provision costs through frequent power cuts, as well as vandalism and theft of critical communications infrastructure.
- Co-ordination of infrastructure deployment plans and activities across the different government layers and institutional capacity to support broadband infrastructure deployment activities.
- Existing digital divide and affordability of meaningful broadband services.
- Education to ensure that all members of the society have in the future sufficient skills and are digitally literate to fully function in a gigabit society.

The historical connectivity targets need to be revised, taking into consideration the future connectivity requirements and the ability of all stakeholders to use broadband connectivity to meaningfully participate in the digital society. Countries which are more advanced than South Africa in terms of defining and achieving broadband connectivity targets can provide guidance for a revision of such targets in South Africa.

These new targets are required to achieve the gigabit society status within the next twelve years. Proposed new high-level target indicators are provided below as a core element of the strategy to achieve that goal.

Exhibit 1.3: Suggested new broadband connectivity targets for South Africa

Indicator	By 2026	By 2030	By 2035
Fixed broadband penetration	37%	58%	83%
Gigabit fixed broadband ready	20%	40%	70%
Households fibre ready	55%	65%	75%
Note: Gigabit fixed broadband requires 10G PON or 5G FWA ready infrastructure.			
Source: Africa Analysis			

Private and public sector partnerships will need to be forged to develop requisite funding mechanisms to fund the digital infrastructure needed. Various intervention measures, both supply-side and demand-side, will need to be introduced to drive deployment and uptake of services, as well as incentives for the private sector entities to build out the networks and offer services in areas of marginal profitability.

Recommendations and Strategy Implementation

South Africa already has in place a legal framework – policies, plans, legislation and regulations – to guide future broadband infrastructure development and service provision towards a gigabit society vision. This legal framework makes provision for broadband infrastructure deployment to achieve ubiquitous connectivity by 2030. However, it may have to be reviewed and adjusted to ensure that the environment enabling rapid deployment of gigabit infrastructure is optimised to expedite the deployment and uptake of services.

A number of recommendations are suggested to create a policy and regulatory framework supportive of achieving a gigabit society in South Africa. These are summarised below.

Exhibit 1.4: Recommendations to achieve strategy implementation

1	Revision of Policy Targets to Encompass Gigabit Economy Milestones	The targets set out in SA Connect and the NIP2050 policies require review and updating to ensure that they will meet connectivity requirements ten years from now and beyond.
2	Co-ordination and Co-operation: An All-of-Government Approach	A co-ordinated approach involving all of government and the private sector is required to optimise realisation of benefits flowing from gigabit broadband.
3	Digital Infrastructure One Stop Shop	A single platform for all applications needed for digital infrastructure deployment would alleviate much of the delays and resource wastage. (Similar to the South Africa Energy One Stop Shop)
4	Fees and Tariffs	To achieve faster deployment and more affordable broadband services, the cost of digital infrastructure deployment needs to be reduced. The cost of permissions should be reduced.
5	Aerial Fibre	Through the RDNCC and SALGA, local government should be educated on the benefits of aerial fibre and the necessity of this mode of deployment in making fibre-based access affordable.
6	Infrastructure Sharing	Reforms to the existing electronic communications facilities leasing regulatory framework should be pursued through proposed amendments to the ECA.
7	National Building Regulations	Amendments to the NBRs should be effected to include mandatory requirements for in-building reticulation for fibre deployment in new developments and fibre pre-provisioning in new buildings.
8	GIS Database	Accurate, accessible records on the location and details of broadband infrastructure are critical to enabling and enforcing infrastructure sharing and protecting existing infrastructure.
9	Incentives	(1) Deepen partnerships with the private sector through aggressive implementation of SA Connect. (2) Include infrastructure-based obligations in the planned 2024 spectrum auction.
10	Legislative Amendments	Finalise amendments to the ECA, 2005 relating to access to and leasing of electronic communications facilities, as well as the regulation of wholesale pricing for such access.
11	Rapid Deployment Regulations	RDR should be completed by ICASA as required by the National Policy on Rapid Deployment. They must promote national interest and take into consideration national policy.

Source: Africa Analysis

- End Executive Summary -