



Draft Consultation Document on Spectrum Outlook

28 April 2022

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1. Introduction

SENTECH thanks the Independent Communications Authority of South Africa (“Authority”) for the opportunity to make further submission on the *Draft Consultant Document on Spectrum Outlook* (“*Spectrum Outlook*”) as published in Government Gazette No. 45690 Notice 738 of 2021.

2. Terrestrial Broadcasting Frequency Plan

The Terrestrial Broadcasting Frequency Plan 2013 (TBFP 2014), as amended in 2014, outline Annexure I and J of the regulations as the VHF and UHF frequency plan, with the latter referring to post-restacking. The Digital Migration Regulations (Government Gazette No. 36000, Notice 1070, 14 December 2012) and the Promotion Of Diversity And Competition On Digital Terrestrial Television Regulations (Government No. 37929, Notice 682, 22 August 2014) both refer to Annexure H of the TBFP, with latter repealing Mobile Television Regulations (Government Gazette No. 33125, Notice 318, 16 April 2010). To date, the Authority does not have a regulatory framework regarding the licensing of the seven multiplex plan, Annexure J of the TBFP 2013 and assignment of spectrum for Annexure I of the same regulations.

SENTECH is currently participating in the analogue switch-off programme and simultaneously undertaking part of the restacking process. As indicated during the Authority’s JSAG processes, there are still a number of issues with respect to Annexure J of the TBFP 2013 that must be addressed. The challenges highlighted does not prohibit the commencement of discussions on the future assignment of additional multiplex capacity for new services in line with the TBFP 2013.

3. Confusing Cannibalism with Convergence

The Authority must be cognizant and appreciate the principle and intention of including the formation of an independent authority to regulate broadcasting under chapter 9 of the Constitution: State Institutions Supporting Constitutional Democracy. It is on this basis that SENTECH is concerned that the discussions on efficient use of radio frequency spectrum is unnecessarily premised on the principle relating to the optimisation of financial outcomes. The Authority must not ignore issues or arguments on regulatory parity as they are established on principles of “fairness and equality that are fundamental values in our society” (Sherille, 2004). It is therefore divergent to the principle of regulatory parity to compare dissimilar services, *ceteris paribus*, whilst not acknowledging the public interest regulatory framework for broadcasting necessitated by the Broadcasting Act.

Additional to the regulatory parity principle, one (1) of the primary object of the Electronic Communications Act (EC Act) is the promotion and facilitation of the “convergence of telecommunications, broadcasting, information technologies and other services contemplated” in the legislation. The principal arguments advanced by mobile network operators (MNOs) on convergence implies the cannibalisation of the existing terrestrial broadcasting infrastructure through the allocation of the spectrum for IMT services to provide the broadcast services.

Though there is no agreed universal definition of technology convergence, the main concepts of the principle relates to the “technological, market or legal/regulatory capability to integrate across previously separated technologies, markets or politically defined industry structures¹” (Kreuzer, 2005). *Figure 1*, illustrates broadcasting industry’s understanding of technology convergence with respect to broadcast services.

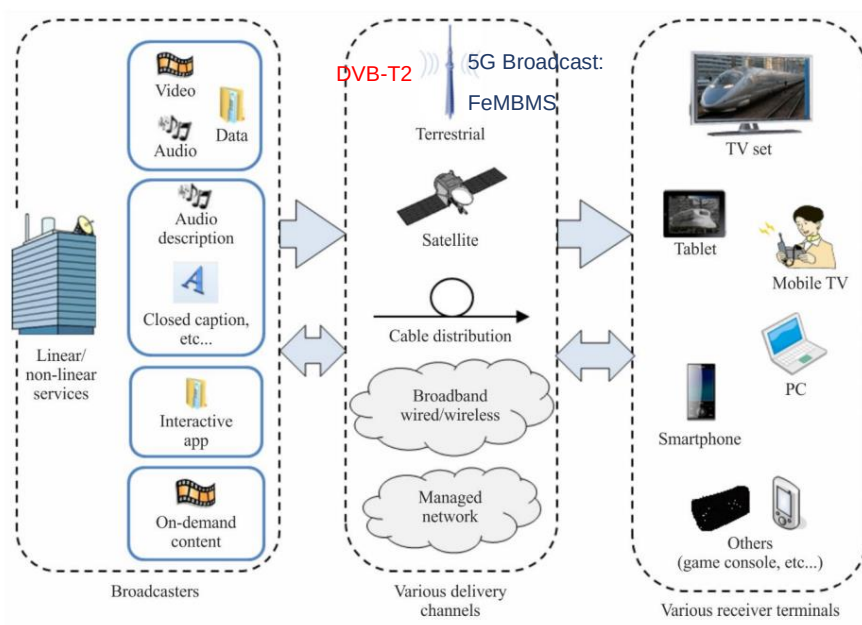


Figure 1: Conceptual block diagram of global platform (Source: Report ITU-R BT.2400-4)

4. Spectrum Outlook

4.1. Spectrum demands by non-mobile services

SENTECH understands that the regulatory framework for public interest requires the Minister and the Authority to balance spectrum allocation to accommodate assignment for the following usages, *inter alia*: private, commercial, consumer, security cluster, scientific

¹ https://open.uct.ac.za/bitstream/handle/11427/4649/thesis_law_kreuzern_2005.pdf

and public applications and services. Due to the high usage and demand for spectrum for a range of applications and services as a result of technological innovations, radio frequency spectrum assignment plans are going to become increasingly difficult to implement. The Authority must acknowledge that radio frequency spectrum as a finite and unique resource is progressively unable to accommodate and equitably provision for the needs of all services without negatively impacting on operational costs, quality of services due to unfavourable conditions as a results of migrating to different bands, etc.

The demand for more spectrum for one application generally implies another application migrating to a different frequency band. Unfortunately, the maturity of different ecosystems for equipment and devices are never conveniently aligned. The problem of the increasing demand for additional spectrum is worsened by services and applications that insist on exclusive assignment, even when it is possible to share. Eventhough there is pressure for additional spectrum by MNOs, the Authority must acknowledge that universal access to connectivity is only possible through a mixture of services and spectrum. For example,

- Machine-to-machine and consumer connectivity are possible through mobile and fixed wireless access (FWA), low-earth orbit (LEO) satellites;
- Backhaul and satellites networks for Internet and intermediate connectivity to the core network;
- Extra capacity and off-loading network demand pressure can be done through licence-exempt applications; etc.

The Authority, when considering the spectrum outlook plan, must be cognizant that there is a need to change approach with respect to radio frequency spectrum assignment plans (RFSAPs) because increasing use will affect the number of bands available to move existing services making way for new ones. Exclusive assignments for some bands, excluding satellite bands, must be reconsidered as technological innovations and techniques are increasingly enabling novel ways for spectrum sharing. Issues of public interest and techniques such as cognitive radio systems, dynamic spectrum access, smart antennas and radio resource management must be central to defining and discussions on maximisation on the efficiency of spectrum usage.

The spectrum outlook plan must also consider the licencing regime with respect to the inclusion of rural, urban, underserved and underserviced areas, to ensure that the benefits of the release of spectrum is enjoyed concurrently in all regions. Matters on facilities leasing, in particular, active infrastructure and essential facility principle must be addressed. Additionally, 5G use cases requires a regulatory regime that will enable a mixed licensing approach to accommodate anticipated applications and services.

4.2. Five year plan

The ITU Radio Communication Sector activities influence South Africa's digital infrastructure, with the DCDT and the Authority, ICASA, playing crucial roles in compliance with the EC Act (as amended). SENTECH support's the five (5) year spectrum outlook plan similar to Australia's Five-year spectrum outlook 2019–23: The ACMA's spectrum management work program. Through the National Preparatory Working Group (NPWG) World Radiocommunication Conference (WRC) activities, South Africa deals with institutions' spectrum requirements rather than implementing a country strategy to manage maximising spectrum usage for the public good. The spectrum outlook plan is crucial to influencing the country's spectrum strategy towards participating in WRC activities.

The Australian Communications and Media Authority (ACMA) spectrum outlook recognises the continuous evolution of spectrum usage, including

"continually monitoring the environment to identify opportunities for improvements in spectrum management arrangements, and accommodating new and changed uses of spectrum while ensuring the continuation of existing uses of spectrum that are of value to the community²".

4.2.1. Spectrum licencing regime

The challenge with South Africa's review of the spectrum management arrangements is the narrow degree of consideration and the single-mindedness of accommodating one (1) particular service at the expense of others. The Competition Commission's Data Services Market Inquiry: Final Report, highlights the importance of the deliberations in spectrum allocations considering the impact on downstream markets and the extent of competition in those markets as they influence spectrum demand. To *"to facilitate the requisite capacity to support service delivery (sectors such as public service, transport, health care, education, agriculture, and smart cities) and the digital economy"*, there is a requirement for policy and regulatory intervention to consider the appropriate licensing regime for vertical markets.

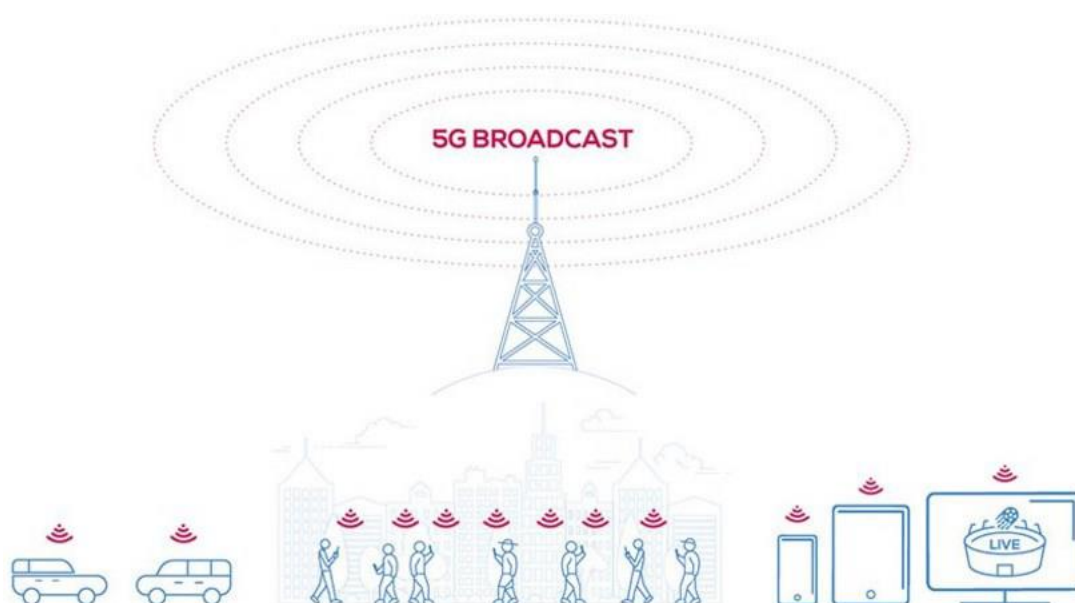
South Africa's current spectrum licensing regime is tailored for entities seeking ubiquitous coverage and access to a large subscriber base. The system is not ideal for local area services based operators, SMMs, private or private entities (non-commercial use) or SOCs, etc. Any "digital infrastructure strategies and policies" should ensure and enable collaboration across all sectors and include all businesses regardless of size.

² <https://www.acma.gov.au/sites/default/files/2019-09/Five-year%20spectrum%20outlook%202019-23.pdf>

Policy and regulatory intervention must acknowledge terrestrial television as part of the digital infrastructure. The developments in 5G are not limited to connectivity, vertical markets, etc. but include the transformation of broadcasting content distribution. The "digital infrastructure strategies and policies" must incorporate and encourage multi-platform usage. The DTT platform transmits radio and television channels, with the former's strategy being to ensure universal access to audio services in all South African languages. For these reasons, spectrum must be available for SOCs to deliver public sector mandate without limitations.

4.2.2. Multi-platform strategy

SENTECH posits that implementing a multi-platform strategy will assist the country in addressing some of the concerns highlighted in the National Integrated ICT Policy, particularly the challenges of universal services and access and the true access gap. All services, including broadcasting, must be available on all reception infrastructures concerning the users. South Africa requires a policy that prohibits the deactivation of terrestrial broadcasting services on mobile devices, smartphones, etc.



The Department must address the influence of Mobile Networks Operators (MNO) on manufacturers regarding the functionalities of end-devices, particularly the ability to access broadcast services. Developments in 5G Broadcast allow for access to free-to-air services through hand-held devices without SIM card. The increasing use of audio and television content on hand-held devices encourages the adoption of 5G Broadcast and unconstrained access to users without additional cost or data consumption.

4.2.3. 5G for Broadcasting

SENTECH has for some time taken note of the technological developments, other than DVB-T2, impacting the media and entertainment industry. Of interest to the company are the developments requiring high-power high-tower (HPHT) networks, namely Further evolved Multimedia Broadcast Multicast Service (FeMBMS). Additionally, SENTECH is interested in technology developments requiring low-power low-tower (LPLT), namely 5G use cases for broadcasting. On this basis, in January 2020, SENTECH applied and succeeded in obtaining a 5G (FeMBMS) trial license, whose progress was affected by the introduction of the National State of Disaster accompanied by the Disaster Management Regulations. Additionally, the equipment used was loaned and, most importantly, prototype, therefore the time window to conduct the trial was limited.

SENTECH is of the view that digital terrestrial television (DTT) has long term prospects. To realise these prospects, the company is mindful of integrating complementing technologies to ensure an enhanced user and viewer experience for customers of its clients (end-users). 10 SENTECH SOC LTD: Written Submission on DCDT Proposed National Data and Cloud Policy SENTECH believes that FeMBMS offers the company the opportunity to enhance DTT services by using its existing infrastructure, with minor modifications and spectrum already allocated for terrestrial television services. The FeMBMS technology enables the emission of audio-visual content to mobile devices without data costs, which is essential for public services. Furthermore, the company is conscious of the increasing need to accommodate public safety services, and FeMBMS provides that capability. FeMBMS is a 5G use case suitable to complement DTT since its design is built on OFDM standards such as DVB-T2. SENTECH envisions a future where users experience ubiquitous coverage due to a combined platform comprising terrestrial broadcast transmitters, satellite transmitters, fibre, and mobile-cellular networks. Figure 2 and 3 illustrates the platform.

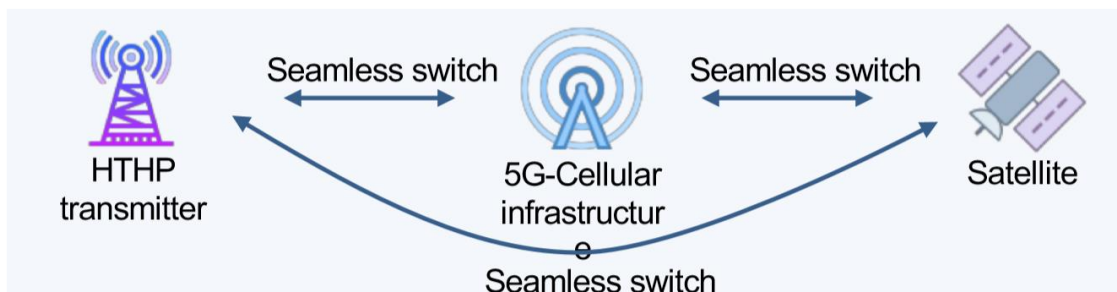


Figure 2: platform comprising of terrestrial broadcast transmitters, satellite transmitters and mobile cellular networks (Source: EBU (2019))

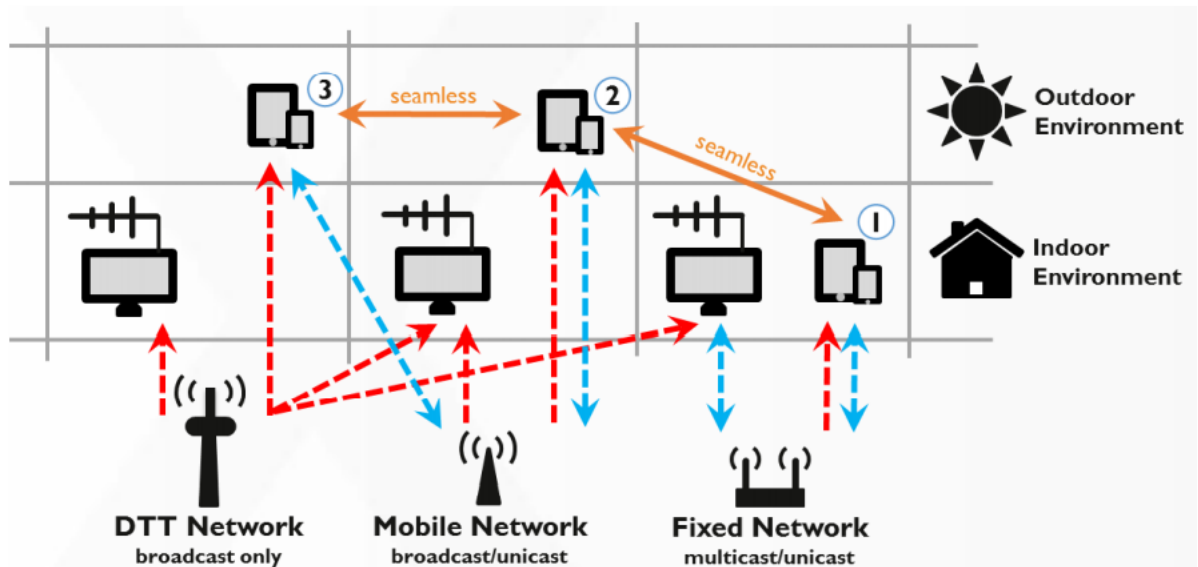


Figure 3: Converged media delivery architecture (Source: 5G-Xcast)

The expected value proposition for 5G infrastructure, when complemented by DTT, is to serve users with the best technology solution, optimisation of network usage, and collaborative overall investments for both mobile and broadcasting. SENTECH anticipate that the combination of both technologies will assist in addressing the cost challenges of rolling 5G services in rural and underserved areas. Therefore, the mix of technologies is likely to facilitate and accelerate bringing 5G services to the entire population at a reduced cost.

5. Conclusion

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