

12 November 2024

Vodacom's Submission on the Authority's "CONSULTATION ON THE PROPOSED NEW LICENSING FRAMEWORK FOR SATELLITE SERVICES"



1. INTRODUCTION

Vodacom Pty Ltd ("Vodacom") wishes to thank the Authority for the opportunity to make submissions in its public consultation process on the Authority's "CONSULTATION ON THE PROPOSED NEW LICENSING FRAMEWORK FOR SATELLITE SERVICES" as published in the Government Gazette No. 51044 (Notice 2678) on 14 August 2024.

Vodacom welcomes the Authority's consultative approach to licensing, even though some aspects of the technology are still at an early state of commercial deployment. We trust that the Authority will consider our submission in the best interests of all consumers. We urge the Authority to engage further in regard to potential challenges that may surface through its enquiry, prior to making decisions that affect the structure of the industry and the market. Vodacom considers that the introduction of Non-Geo Stationary Orbit ("NGSO") based satellite services in South Africa, in particular Low Earth Orbit (LEO), to be an important development that requires careful consideration. Therefore, in addition to providing direct responses to the Authority's consultation questions, Vodacom has also set out the potential impact of satellite services on the telecommunications sector and the wider economy to help inform the approach that the Authority should adopt.

Vodacom has also tried to anticipate some of the issues that the Authority will have to address further down-the-line e.g. spectrum allocations, although it is only possible to provide high-level thoughts on these issues at this stage. Before satellite providers are allowed to launch their services in South Africa, the Authority should conduct additional consultation processes on important issues not dealt with under this consultation process e.g. how to ensure that there is a level playing field between satellite operators and telecommunication operators. Alternatively, the Authority needs to expand the scope of the existing consultation process.

2. GENERAL COMMENTS

Vodacom remains committed to assist the Authority in developing feasible solutions that advance connectivity for all South Africans. We support and embrace innovation, and actively seek to bring the benefits of technology to the societies that we support. We wish to do so in a manner that is fair and sustainable to all.

Terrestrial Mobile Operators have formed the backbone of consumer connectivity for more than two decades. With our consistently high investment, we have become a pillar of the economy as well as society in general, maintaining the fiscus while still directly giving back to the communities that we serve. Vodacom



has pledged to invest R60 billion in South Africa over the next five years, having already delivered on its promise to invest R50 billion over five years starting in 2018.

While satellite operators have existed for several decades, they have historically provided more of a niche service in connectivity markets, targeted at niche applications, or as a premium service for a minority of end-users. Other than basic connectivity, they typically did not provide much additional value to the communities that they covered. Recent developments in technology have allowed satellite operators to deploy significantly more satellites than in the past, at a lower cost, which could enable them to offer services that compete more closely with the services offered by terrestrial operators.

Notwithstanding, Satellite technology can provide benefits to the South African economy if it is authorised and managed in a prudent manner. Unfortunately, a failure to do so risks jeopardising connectivity markets at best, and surrender of national security at worst.

We have noted that a number of the Authority's proposals appear to not be adequately substantiated, and in some cases, appear to suggest an approach that is not supported in law, or alternatively, may be found to be irrational under review. In this regard, we trust that the Authority will consider Vodacom's feedback and recommendations in earnest, and then update its point of reference accordingly before taking regulatory action.

Vodacom's key recommendations are that:

- The Authority needs to ensure that the introduction of new satellite operators does not jeopardise national sovereignty or national security.
- Given that there will likely be some substitutability between satellite services and terrestrial services, the Authority needs to ensure that there is a level playing field, which should cover areas, such as BBEEE requirements, performance obligations, social obligations, spectrum fees and sanctions. Linked with this, to help ensure a level playing field, the Authority should not create a separate licensing regime for satellite operators, as the existing ECS/ECNS licensing framework can still be used for such purpose.
- The Authority also needs to ensure that there is a level playing field between different satellite operators to make sure that there is effective competition for satellite services e.g. through spectrum caps.
- Satellite operators offering services in South Africa should be required to have gateway earth stations in South Africa.
- Satellite operators should only be able to deploy D2D services using IMT spectrum where they have a commercial agreement with mobile operators. This is to help protect mobile operators' existing rights, whilst ensuring the efficient use of spectrum. Whilst D2D services have the potential to compete with mobile services, especially when users are outdoors, users are likely to get a much more attractive and



higher quality contiguous service when D2D services are harmoniously combined with terrestrial mobile services.

- Mobile operators should be able to meet their coverage obligations using D2D services.
- In considering its options for managing satellite operators, including their licensing, the Authority is bound by the legislative framework of South Africa in its entirety, and must adequately consider all aspects when introducing new entrants into the market.



3. IMPACT OF SATELLITE OPERATORS ON THE MOBILE SECTOR AND WIDER ECONOMY

3.1 IMPACT ON THE MOBILE SECTOR

An important recent trend in the provision of connectivity services has been the development of new NGSO satellite services, launched/being developed by satellite operators, such as Starlink and Kuiper. These new satellite operators can offer better performance (in terms of throughput, latency and focussed coverage) than more traditional satellite-based connectivity operators, namely Geo-Stationary Satellite ("GSO"), as they rely on LEO satellites, which are much closer to the Earth than GSO and Medium Earth Orbit (MEO) satellites.

Typically, these new satellite operators can offer two broad types of services:

- 1. Communication services delivered to a user's satellite antennae, which can be split into:
 - a. Fixed Satellite Services (FSS).
 - b. Mobile Satellite Services (MSS).
 - c. Broadcasting Satellite Services (BSS).
- 2. Communication services delivered directly to an International Mobile Telecommunication ("IMT") user equipment or device, colloquially referred to as Direct-to-Device ("D2D"). There appears to be two broad ways of achieving this:
 - a. Using Mobile Satellite Spectrum (MSS) D2D isn't currently supported by most mobile devices, except for some of Apple's latest devices using Globalstar's LEO satellites.
 - b. Using IMT spectrum, which will mean that D2D can be provided to most existing handsets. IMT spectrum is for the most part already assigned to mobile operators, typically on a national and exclusive basis.

There are a range of entities that have already launched satellites. However, Starlink is the clear market leader so far, especially in regard to LEO satellites. According to GSMA, Starlink had launched over 6,000 satellites as of September 2024.



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3.1.1 SUPPLEMENTARITY OF SATELLITE AND MOBILE TERRESTRIAL SERVICES

Satellite services have the potential to supplement mobile terrestrial services in a number of helpful ways:

- Providing backhaul in remote areas. Satellite operators can make it more feasible for mobile operators to expand their coverage in some less densely populated areas by providing satellite backhaul in areas where fibre and/or microwave backhaul are not viable.
- Expanding coverage. While mobile terrestrial operators are able to get close to providing 100% universal population coverage under the right conditions, it is currently unfeasible for them to provide universal geographic coverage. Given this, satellite operators could serve a role in helping to expand coverage to unserved areas. This applies to GSO and NGSO FSS, as well as D2D services. Given both the tariff design (i.e. large or unlimited data packages for a relatively high monthly fee) and the need to purchase user equipment, FSS-based services are likely to be more popular amongst relatively wealthy consumers, and as such may not help as much with expanding connectivity services for lower income consumers. In contrast, D2D services may be of greater benefit to low-income consumers that are outside the reach of the terrestrial mobile network, as an unmodified mobile device can be used to communicate with the satellite. But D2D services are only likely to be of material benefit when combined with terrestrial mobile services, as D2D services will likely suffer from much weaker indoor coverage.
- Providing connectivity for ESIM/ESV. Satellite services can be used to provide connectivity for earth station user terminals while in motion e.g. ships and aircraft.

3.1.2 SUBSTITUTABILITY BETWEEN SATELLITE AND MOBILE TERRESTRIAL SERVICES

Satellite services, if operating independently, will also compete with mobile terrestrial operators, although the full extent of this competition is as yet unclear and may vary across geographic areas. Based on the experiences of other countries, we anticipate that satellite operators might want to offer their services (at least NGSO FSS) across the whole of South Africa, including urban and remote areas. This is because the incremental cost of offering services in more densely populated areas is likely to be minimal once the satellites have already been put into orbit. Due to the nature of non-geostationary satellite services, they offer wide-area coverage, while allowing for increased capacity for FSS in specific areas, such as through beamforming.

3.1.2.1 COMPETITION BETWEEN NGSO SATELLITE SERVICES AND MOBILE SERVICES

User equipment

FSS services are likely to compete with Fixed Wireless Access (FWA) and with dedicated mobile broadband services used at a fixed location. Although FSS services require users to have a satellite antenna, both FWA and dedicated broadband services also require user equipment (either a router or a dongle). In addition, the size and weight of the NGSO FSS antennae have reduced significantly in recent years, making them as portable as a router in some cases.



Tariff design

The current tariff design of FSS and FWA and dedicated mobile broadband services are also quite similar in the sense that users tend to pay a monthly subscription for a large or unlimited data allowance.

Quality of service

At present, there is evidence that LEO satellite services, such as Starlink, are able to provide relatively fast broadband speeds and a good level of latency. Starlink has itself stated that:

"Starlink users typically experience download speeds between 25 and 220 Mbps, with a majority of users experiencing speeds over 100 Mbps. Upload speeds are typically between 5 and 20 Mbps. Latency ranges between 25 and 60 ms on land, and 100+ ms in certain remote locations (e.g. Oceans, Islands, Antarctica, Alaska, Northern Canada, etc.). These speeds make Starlink suitable for streaming, video calls, online gaming, and other typical household internet use."

Therefore, the data speeds offered by Starlink may be comparable to mobile and FWA services, in a number of geographic areas. While the speeds that can be offered by FSS is somewhat constrained by the physical distance between satellites and the earth, this is at least partially offset by the very large amount of spectrum available for FSS services (e.g. in the Ka and Ku bands).

Starlink already has plans to significantly increase its number of satellites, which should greatly boost its capacity.

Coverage

In terms of coverage, FSS services are likely to have an advantage over FWA and dedicated broadband services, as FSS services should have ubiquitous coverage provided there is a direct line of sight.

Cost levels and structure

Satellite operators tend to be global players, so are also able to benefit from significant economies of scale. For companies such as Starlink, there are also economies of scope, as they can share some of the costs of launching satellites into orbit with SpaceX. There are also significant government contracts that have been/are awarded to SpaceX, especially in the US, so Starlink indirectly benefits from a large amount of revenue from Governments.

WiFi offload

FSS may also provide some competitive constraint on handheld mobile services, as users may offload some of their traffic onto FSS i.e. using WiFi, allowing FSS operators to leverage their numerous advantages (as indicated above) to entice certain customers away from using the services of terrestrial operators.

https://www.starlink.com/legal/documents/DOC-1400-28829-70



3.1.2.2 COMPETITION BETWEEN D2D SERVICES AND MOBILE SERVICES

Certain satellite operators have indicated an intention to offer D2D services² to compete directly with mobile network operators. The key advantage of D2D services compared to traditional FSS/MSS services is that they can be used on existing handheld mobile devices rather than needing to purchase a device with a dedicated antenna.

There is still some debate around the likely data speeds that D2D services will be able to offer, given the limited emission power of mobile devices. However, it seems likely that D2D services will still be able to offer data speeds that are sufficient for many users, especially in developing countries. The main potential downside of D2D services is that it is unclear how good indoor coverage will be. This will depend on how D2D technology develops over time and/or whether D2D could be combined with WiFi.

D2D services are also likely to impose a competitive constraint on IoT services, especially those services that require widespread outdoor coverage, but may not necessarily require high data speeds.

In response to question 9, we explain why the most appropriate approach would be for mobile operators to use their IMT bands to offer D2D services in partnership with satellite operators, rather than satellite operators acquiring their own IMT spectrum. Whilst D2D services have the potential to compete with mobile services, especially when users are outdoors, users are likely to get a much more attractive and higher quality contiguous service when D2D services are harmoniously combined with terrestrial mobile services. The benefits of seamless planning and interference management have the potential to outweigh the risks of interference if satellite operators were to deploy currently licensed IMT spectrum independently.

3.1.3 IMPACT ON THE INVESTMENT INCENTIVES OF TERRESTRIAL MOBILE OPERATORS AND THE FINANCIAL VIABILITY OF THE SECTOR

In terms of the relationship between mobile operators and satellite operators, it may be useful to consider two types of geographic areas within South Africa:

- Areas that are uneconomical for terrestrial network coverage. In such areas, satellite services will be supplementary to mobile operators, and satellite D2D operators could be required to partner with terrestrial operators to deploy their IMT spectrum for D2D services, akin to the manner prescribed in the FCC SCS order.
- Areas that are already covered by mobile operators or could be covered in the future. There is likely to be considerable overlap between the coverage of mobile networks and satellite networks (at least for NGSO FSS). Given this, the entry of satellite operators could negatively impact the commercial business case of mobile operators, which could in turn impact their incentives to invest in the future, especially in areas where satellite services would have an advantage. This is especially relevant in rural areas with sparse population densities, where the distance between base stations and users limits the mobile speeds that can be offered, and where terrestrial operators are plagued with vandalism, theft

https://www.telecoms.com/satellite/satellite-disruption-how-leo-and-d2d-are-impacting-telecoms



and erratic power supply. This would mean that government and the Authority need to ensure that there is no distortion of competition/there is a level playing field between mobile operators and satellite operators (see response to question 1) that compete to serve retail consumers in South Africa. This is to ensure that investment by mobile operators is only deterred in areas where it would be more efficient to use satellite networks instead.

An additional consideration is that mobile operators have been required to provide widespread coverage as a result of the coverage obligations (as well as the outside-in obligation) imposed as part of the 2022 spectrum auction. Therefore, the combination of the coverage obligations and the subsequent entry of satellite operators could leave those mobile operators with stranded assets, which could deter future investment. This could in turn adversely affect progress toward South Africa's socio-economic objectives. Consequently, it is imperative that satellite operators are not given favourable treatment as this will have a destructive long-term impact.

3.2 IMPACT ON THE WIDER ECONOMY

The telecommunications sector forms a fundamental part of the South African economy, with it being a key enabler of virtually every sector of the economy³. This was especially evident during the COVID-19 pandemic when the telecoms sector played an important role in keeping the economy afloat. To assist government and citizens to stay connected during the COVID-19 pandemic and national lockdown, Vodacom maintained a high level of resilience and quality of service in our network amid the increase in traffic. Vodacom also provided health workers with access to connectivity and digital solutions, delivering significant support to COVID-19 remote consultations, data collection and testing. In addition, Vodacom also zero-rated key government websites.

More generally, terrestrial telecom operators undertake very large investments in South Africa, which helps ensure that South Africa benefits from cutting-edge infrastructure. Vodacom has pledged to invest R60 billion in South Africa over the next five years, having already delivered on its promise to invest R50 billion over five years starting in 2018.

The terrestrial telecoms sector also employs a large number of people. Vodacom in particular employs over 5,000 people with the telecoms sector as a whole estimated to employ over 48,000 people in South Africa⁴. There will also be a large number of people indirectly employed as part of the telecoms supply chain.

Significantly, the terrestrial telecoms sector pays a large amount in various taxes, including VAT, corporation tax and employment tax. The sector also contributed R14.4bn to the fiscus as part of the 2022 spectrum auction. Vodacom single-handedly paid R13.7bn in taxes and fees to the South African government in FY2024^{5.}

³ For example, the GSMA has recently estimated that the mobile sector's contribution to GDP is 7% in Sub-Saharan Africa. GSMA - The Mobile Economy Sub-Saharan Africa 2024.

⁴ Stats SA - Post and telecommunications industry, 2022

⁵ Vodacom Group Limited – tax transparency report for the year ended 31 March 2024.



Given the pivotal role played by the terrestrial telecoms sector to the South Africa economy, the Authority vitally needs to undertake an economic impact assessment before licensing any new satellite operators. Satellite operators have a fundamentally different business model to telecom operators, as they tend to have a much more limited local presence. This is because the satellite operators are typically global players, that potentially do not want to be encumbered by the burden of local regulation. The Authority is itself proposing that satellite operators will not necessarily need to have any gateway earth stations in South Africa, although we recommend against this. However, even if satellite operators were required to have gateway earth stations in South Africa, this would still require only a fraction of the investment made by telecom operators into their networks. Given the ability for satellite operators to offer their services with only a limited local presence, this also means that they will likely only employ a limited number of people in South Africa and therefore pay limited employment tax.

It is also unclear how much corporate tax global satellite operators will end up paying in South Africa as it may depend on how they allocate their costs across countries e.g. a large share of their costs is likely to relate to their satellites in outer space.

On balance, expanding coverage through satellite technologies into areas that cannot feasibly be covered by terrestrial mobile networks may be helpful for the South African economy, as this should help drive greater connectivity in areas that are currently unfeasible to rollout terrestrial networks. However, it's less clear that satellite services displacing mobile services in areas already covered by terrestrial mobile networks, or in areas that will in the foreseeable future be covered by terrestrial mobile networks, would necessarily be helpful for the wider economy. This provides one of several reasons why D2D services using IMT spectrum should only be provided by satellite operators in partnership with mobile operators (see our response to question 9).



4. RESPONSES TO SPECIFIC QUESTIONS

4.1 QUESTION 1

Kindly provide comment(s) on the proposed policy principles and any further recommendations listed in the above section?

When considering the licensing of services based on new satellite constellations, it is vital that government, regulators and society in general consider the following principles to protect South Africa's own socioeconomic interests:

- National sovereignty is paramount
- National security and controlled end-user access is critical
- It is important to have a level playing field
- Property rights must be protected
- It is also important to take into account the impact on the South African economy as a whole

The following sub-sections discuss these policy principles in more detail.

4.1.1 NATIONAL SOVEREIGNTY IS PARAMOUNT

In the context of satellite operators, they should only be allowed to offer their services, whether wholesale or retail, within the construct of national legislation and regulation. In the South African context, that means that all the operating conditions currently in place for terrestrial network licensees, such as lawful intercept and universal service obligations, need to apply to satellite operators. Moreover, the nature of Satellite technology allows easy provision of service coverage across national boundaries from space, heightening the need for effective national controls that ensure such services conform to local laws.

4.1.2 NATIONAL SECURITY AND CONTROLLED END-USER ACCESS IS CRITICAL

It is vital that the Authority's approach to licensing satellite services does not undermine national security and/or inadvertently open a new unpoliced communications pathway for criminal activity. Unfortunately, the inherent network architecture of space networks creates the opportunity for user traffic to be routed in such a manner that bypasses local law enforcement protocols with minimal effort, by potentially routing traffic from user earth stations to space stations and then directly to international gateways located in other national territories. In such cases, authentication of end users and the control of such authentication can be performed outside the territory of end user service operation which leaves a local law enforcement vacuum, and opens the door to criminal activity.



Moreover, it seems clear that there is currently no effective and expeditious means to sanction satellite operators, making restitution for non-compliance ineffective, and potentially compromising national security. It is perhaps relevant to note that the ITU has received complaints regarding the illegal provisioning of Satellite based services within the territory of the Islamic Republic of Iran in contravention of Article 18, resolves 1) and 2) of Resolution 22 (WRC-19) and Resolution 25 (WRC-03) of the ITU Radio Regulations. Notwithstanding, while the complaint was submitted to the Radio Regulation Board around March 2023, we understand that the issue remains unresolved to date.

Given the Authority's lack of control of Gateway Earth Stations outside of South Africa, the Authority should require local Gateway Earth Stations for all services delivered to South African consumers (see also our response to Question 4).

4.1.3 IT IS IMPORTANT TO HAVE A LEVEL PLAYING FIELD

Promoting competition in the ICT sector is a key objective in the Electronics Communications Act (ECA)⁶. Given that there will be some substitutability between mobile and satellite services, it will therefore be important to ensure that there is a level playing field between the different sets of services. If satellite services were to receive an unfair advantage e.g. by facing more light-touch obligations than mobile operators, or gaining access to spectrum on favourable terms, then this could distort competition, which could ultimately harm consumers.

Satellite operators ought to be subject to the same conditions that a terrestrial operator would typically have to face, especially with respect to local ownership and control, social obligations, performance obligations, and sanctions.

4.1.3.1 LEVEL PLAYING FIELD BETWEEN SATELLITE OPERATORS AND TERRESTRIAL OPERATORS

Given that terrestrial operators and satellite operators are expected to compete with each other in regard to the provision of broadband services, it will be important to ensure that there is a level playing field between the two types of operators. For example, if satellite operators faced fewer or less onerous obligations, then this could create an uneven playing field that could undermine investment in terrestrial networks. As discussed below, creating a level playing field is likely to involve a number of different dimensions. The Authority needs to consider these dimensions, as part of this consultation process as well as in any future consultation processes, before finalising any amendments to the licensing framework for satellite operators in South Africa.

⁶ Paragraph 2(f)



In general, if there is a relaxation of the obligations on satellite operators, then other operators that compete in the same or similar markets ought to also benefit from such relaxation.

Local Presence and BBEEE requirements

Mobile operators are subject to ongoing BBEEE requirements in terms of the ECA and the Regulations in respect of the Limitations of Control and Equity Ownership by Historically Disadvantaged Groups (HDG) and the application of the ICT Sector Code), but BBEEE requirements also formed part of the qualifying criteria for acquiring spectrum in the recent IMT auction⁷. Satellite operators should be subject to similar BBEEE requirements for ground earth stations located in South Africa and for service provision.

The ATU's recommendation that no legal presence should be required to obtain the landing rights authorisation for satellite operators cannot be implemented outside the scope of local legislation and regulation. Each ATU member state has its own legal and regulatory framework, some of which are in direct conflict with those of South Africa. As such, the Authority is advised that a mere deference to ATU recommendations may be irrational and unlawful.

If the Authority wishes to amend local presence or BBEEE requirements, it should do so for all market players, including mobile operators, through a transparent consultation process.

Spectrum fees

MNOs paid R14.4bn to acquire spectrum in ICASA's 2022 spectrum auction. Therefore, the Authority is requested to consider a fee framework that levels the playing field when assigning spectrum to satellite operators for directly competing services to that offered by terrestrial networks. In addition, further fees for satellite providers may have to be considered if they are assigned a disproportionate quantum of spectrum that in itself results in a competitive advantage to satellite operators. The Authority should also consider appropriate spectrum caps for satellite services.

If MNOs compete with satellite and MNOs have to periodically pay high relicensing and annual fees to use the spectrum, and satellite operators do not, then longer term this would be a disincentive for MNOs to invest. Rather, the fees (and obligations) ought to be normalised for services that compete in similar markets. Vodacom elaborates on the appropriate spectrum fees in further detail in response to question 5.

⁷ "A licensee must, within 36 months of the promulgation of the Limitations of Control and Equity Ownership by Historically Disadvantaged Groups (HDG) and the Application of the ICT Sector Code, 2021 (HDI Regulations), reach a minimum of Level 4 contributor (BBBEE status) in terms of the Codes of Good Practice, applicable to the ICT Sector, published in terms of section 9 (1) of the B-BBEE Act and maintain such status for the period of the licence in line with regulation 4(4) of the HDI Regulations" ICASA (December 2021) -INVITATION TO APPLY NOTICE ON THE LICENSING PROCESS FOR INTERNATIONAL MOBILE TELECOMMUNICATIONS IN RESPECT OF THE PROVISION OF MOBILE BROADBAND WIRELESS ACCESS SERVICES FOR URBAN AND RURAL AREAS USING THE COMPLEMENTARY BANDS, IMT700, IMT800, IMT2600 AND IMT3500.



Coverage and throughput obligations

In the 2022 spectrum auction, ICASA placed demanding coverage and throughout obligations on the 700MHz and 800MHz spectrum (for Tier-1 operators), which are costly and complex to achieve given the nature of terrestrial mobile networks.

Importantly, the Authority needs to take into account the potential role of satellite operators in providing remote coverage when deciding on the appropriate coverage obligations to impose on mobile operators in future auctions. In recent years, wide-area coverage obligations have been imposed on terrestrial mobile networks, that are not as well suited to such coverage as satellite networks. With the proliferation of satellite networks, it is recommended that the Authority allow mobile operators to partly achieve their coverage obligations using D2D services on their licensed and controlled IMT spectrum in partnership with satellite operators.

Social obligations

As part of the spectrum auction, mobile operators were required to zero-rate certain services. Satellite operators should also be required to adhere to social obligations, such as providing zero-rating services.

Taxes

Terrestrial Mobile operators are subject to a range of taxes in South Africa. Given this, satellite operators should also be required to pay equivalent taxes, including USAF contributions. For this purpose, a local legal entity would have to be incorporated.

Facility leasing obligations

Mobile operators have to provide access to their facilities in terms of the facilities leasing obligations (Chapter 8 of the ECA). Satellite operators should also be obliged to provide access to their facilities, including access to satellite infrastructure.

4.1.3.2 LEVEL PLAYING FIELD BETWEEN SATELLITE OPERATORS

As well as ensuring a level playing field between satellite operators and mobile operators, it will also be important to ensure a level playing field between different satellite operators. It would be best if a range of satellite operators were to emerge rather than being over-reliant on a few satellite operators with considerable market power. This is because:

- Competition between a number of satellite operators will help to ensure that consumers have a range of options if they wish to directly purchase FSS/MSS satellite services. Further, to the extent that mobile operators form partnerships or purchase capacity from satellite operators, it will be important to have a choice between a number of satellite operators for D2D services.
- Having a clear leader for wide-area satellite services may provide that firm with too much leverage over the South African government, especially in regard to the provision of services for internal government use, such as military applications. For example, Starlink has ended up in a number of disputes with governments.



In practice, to ensure a level playing field between different satellite operators, it will be important to ensure that a range of satellite operators have access to FSS/MSS spectrum and that spectrum caps are imposed where appropriate. Imposing the facilities leasing regulations on satellite operators could also help to ensure that there is effective competition between satellite operators.

4.1.4 RIGHTS MUST BE PROTECTED

The licensing of satellite operators should not directly or indirectly undermine terrestrial mobile operators' rights and legitimate expectations. This is especially true of scarce IMT spectrum that has been hard-fought for over the last three decades, and which in South Africa has recently sold for several Billions of Rands. In particular, South African mobile operators spent R14.4bn on acquiring exclusive rights to IMT spectrum in the 2022 auction, and continue to invest further in regard to the fulfilment of onerous social and coverage obligations. Terrestrial mobile operators have also invested a huge amount in their network infrastructure on the premise that they have exclusive access to the spectrum that has been assigned to them.

It is imperative that ICASA protects terrestrial mobile operators' rights and legitimate expectations, as this is fundamental to ensure that the regulatory environment promotes future investment. In practice, this means that:

- Mobile operators should retain exclusive rights to their spectrum and should not be forced to provide satellite operators with access to any of this spectrum.
 Satellite operators should only be able to deploy IMT spectrum for D2D services where this is based on commercial agreements between mobile operators and satellite operators, with mobile operators still retaining full control of the spectrum that is licensed to them nationally.
- Satellite services must not create any interference issues for terrestrial operators. This applies both to FSS/MSS spectrum, as well as any IMT spectrum that satellite operators deploy on behalf of the terrestrial MNO that is licensed for that spectrum.

A prudent approach would be to consider satellite operators' D2D services as supplementary infrastructure providers to local licensees, with guardrails established for the manner in which satellite services integrate into terrestrial infrastructure without harming existing services to consumers or the associated infrastructure investments. In anticipation of some of the challenges indicated above, the FCC issued an SCS order that provides home helpful direction, wherein it requires satellite providers to enter into commercial agreements with terrestrial licensees in order to prevent conflict (see response to Question 9 for further details).



4.1.5 PROMOTE THE EFFICIENT USE OF SPECTRUM

In line with the objectives in the ECA, the Authority should promote the efficient use of spectrum⁸. This provides a key reason why IMT spectrum should only be exclusively assigned to mobile operators (see the response to Question 9 for further details). Assigning some of the IMT spectrum that becomes available in the future to satellite operators to provide D2D services would likely result in excessive spectrum fragmentation (as scarce IMT spectrum would be split between too many licensees) and it would likely result in IMT spectrum being used to provide a more limited service indoors on average.

There may be some areas of the country where D2D satellite technology could be used to make more efficient use of spectrum than a terrestrial network, generally in outdoor areas. Terrestrial mobile operators will have the clearest insight into which parts of South Africa are financially unfeasible to cover with a terrestrial network. Put another way, it should be up to mobile operators to judge in which areas they could partner with satellite infrastructure providers to deploy their nationally licensed IMT spectrum more efficiently than if they were to use a terrestrial network. Ultimately, the aim should be to ensure that consumers get the best possible mobile service, which is likely to be achieved by using a mixture of terrestrial mobile and satellite networks.

4.1.6 POLICY PRINCIPLES CONTAINED IN THE ATU LICENSING FRAMEWORK

4.1.6.1 LICENSING PROCESS TO BE HARMONISED, AS MUCH AS POSSIBLE, AMONG THE ATU MEMBER STATES

In general, Vodacom considers that it is important that the Authority adopts a satellite licensing framework, which is suitable for South Africa. Given this, whilst it is helpful to also consider the ATU licensing framework, there are instances where it would be appropriate for the Authority to deviate from this. For example, it is important that the Authority ensures that there is a level playing field between mobile and satellite operators. This would not be possible if the Authority adopted all aspects of the ATU satellite licensing framework because the mobile sector is not regulated in exactly the same way across ATU countries. In addition to considering the ATU licensing framework, the Authority should also take into account international best practice from non-African countries.

4.1.6.2 LICENSING OF SATELLITE NETWORKS OR SERVICES PROVISION TO FOLLOW THE ITU INSTRUMENTS AND REGULATORY PROCEDURES THAT GOVERN THE USE OF RADIO SPECTRUM AND ASSOCIATED ORBITAL RESOURCES

Vodacom considers that the Authority should take into account the ITU instruments and regulatory procedures that govern the use of radio spectrum and associated orbital resources. However, to ensure that

⁸ Section 2(e)



there is a level playing field with mobile operators, the Authority also needs to consider the extent to which satellite operators should face similarly burdensome obligations as terrestrial mobile operators.

4.1.6.3 TRANSPARENT REGULATORY FRAMEWORKS WITH CLEAR RULES TO ESTABLISH REGULATORY CERTAINTY TO SUPPORT DURABLE INVESTMENT

In general, Vodacom agrees that there should be transparent regulatory frameworks with clear rules to establish regulatory certainty to support durable investment, both for satellite operators and mobile operators. In practice, given that the impact of satellite operators on the mobile sector is still uncertain, it may be necessary to start with a cautious approach towards licensing satellite operators. This is because it would be difficult for ICASA to start off with a light-touch approach towards licensing/regulating satellite operators that would then to be overturned at a later stage.

4.1.6.4 DOMESTIC USER TERMINALS TO BE LICENSED WITHOUT THE NEED FOR INDIVIDUAL TERMINAL-BY-TERMINAL AUTHORISATION (E.G., ON A BLANKET LICENSING BASIS)

Vodacom agrees that domestic user terminals should be licensed without the need for individual terminalby-terminal authorisation. As noted by the Authority, this approach is very similar to the mobile/cellular environment, where devices are exempt from individual licensing i.e., blanket licence. However, a necessary precondition for blanket licensing of terminals ought to be that gateways are located within South Africa, and operated by a licensed entity (we discuss Earth Gateway Station licensing below).

In addition, Vodacom recommends that the Authority develops minimum interoperability standards for FSS and MSS terminals, in similar manner to those developed by 3GPP for IMT terminals. Such an approach would prevent vendor lock-in through proprietary standards, whilst at the same time assisting with economies of scale, that will ultimately benefit consumers.

4.1.6.5 MEMBER STATES TO TAKE APPROPRIATE ACTIONS TO PUBLISH IN A TIMELY MANNER, PROCEDURES FOR AUTHORISING USER TERMINALS OPERATIONS IN THEIR COUNTRIES

Vodacom agrees that ICASA should take appropriate actions to publish in a timely manner, procedures for authorising user terminals operations in South Africa.

4.1.6.6 DESIGNATION OF THE RELEVANT FREQUENCIES FOR USE BY SATELLITE USER TERMINALS ON A DOMESTIC, REGIONAL, OR INTERNATIONAL BASIS CONSISTENT WITH RADIO REGULATIONS FREQUENCY ALLOCATION TABLE

Vodacom agrees that the relevant frequences for use by satellite user terminals should be consistent with the Radio Regulations frequency allocation Table, insofar as the Table aligns to South Africa's unique circumstances and sovereign rights.



4.1.6.7 REASONABLE SPECTRUM FEES, TAKING ALSO INTO ACCOUNT THE INCREASING AMOUNT OF BANDWIDTH USED BY SATELLITE SYSTEMS OPERATING IN HIGHER FREQUENCY BANDS

Vodacom agrees that satellite providers should have to pay reasonable spectrum fees. Vodacom has commented on the spectrum fees proposed by ICASA in response to Question 5. It is important that the Authority charges both reasonable and harmonised fees for all operators offering the same or similar services.

4.2 QUESTION 2

Do you agree with the exclusions of radio navigation satellite services, amateur satellite services, earth exploration, space research satellite services and radio astronomy services indicated above and others if applicable? If not, please explain your reasoning and propose an alternative to this proposal.

It is not clear which of the "Satellite services such as radio navigation satellite services, amateur satellite services, earth exploration, and space research satellite services" indicated by the Authority are commercial services, or provide information that is used for commercial gain. If any of the abovementioned services fall into such a category, then we recommend that those services need to fall within the same licensing framework as other commercial infrastructure and services. Not doing so would render an unfair advantage to certain satellite infrastructure providers. In the context of a scarce national resource such as satellite spectrum, commercial services compete for the same resource, and as a consequence ought to be treated in a similar manner in order to ensure the most efficient use of spectrum.

4.3 QUESTION 3

Do you agree with the proposed approach of having a separate licence/authorisation (where applicable) for each segment of the Satellite Communication value chain? Please elaborate.

When deciding on the appropriate licensing regime, it will be important that the Authority chooses a licensing regime that:

- Ensures a level playing field between mobile operators and satellite operators. The simplest way of doing this would be to apply the Authority's existing licensing regime to satellite operators to the extent possible.
- Ensures that satellite operators contribute towards the South African economy, which includes the payment of local taxes and fee obligations.



• Ensures that the Authority has the ability to sanction satellite operators in the event of noncompliance and that satellite operators cannot circumvent any of the obligations.

The licensing of satellite networks seeks to ensure that satellite operators and service providers follow the legislative rules and conditions and the outcomes of applicable bilateral discussions, including coordination. Existing licensing in South Africa for electronic communication services imposes significant obligations and costs (e.g. through coverage/throughput obligations, BBEEE requirements and spectrum licence fees) on terrestrial operators.

As such, an appropriate licensing framework is fundamental for authorising and managing the use of satellite technologies in a prudent manner. In particular, without appropriate guardrails, there is a risk that the full potential for Satellite Communications services to supplement terrestrial networks and deliver maximal benefits to South Africans may not be realised. Notably, a licensing framework that results in an unlevel playing field for satellite and terrestrial operators may undermine co-operation between satellite service providers and terrestrial networks to maximise coverage and capacity across South Africa through wholesale arrangements.

Satellite operators should adhere to the conditions of existing ECS and ECNS licences

The Authority has proposed three types of licences/authorisations for Satellite Communications, namely a Satellite Gateway Earth Station Licence, a User-Terminal network licence and registration of the Space Segment. These proposed licences appear to focus on satellite operators' deployment of network apparatus and/or use of spectrum at different points in the value chain. However, it is not clear whether the Authority's proposals intend to introduce a separate service licensing framework for satellite operators – put another way, whether it intends *not* to licence satellite operators under the ECNS and ECS framework under Chapter 3 of the ECA. If this is the Authority's intention, then Vodacom disagrees with it. The Authority has not set out a strong rationale for licensing Earth Gateway Stations separately (i.e. not via an ECNS/ECS licence).

In particular, there is no clear reason why satellite operators should not require ECNS/ECS licences if they wish to offer electronic communication services in South Africa. The Authority appears to recognise this in Section 10 of the Consultation⁹. Importantly, as set out in our response to Question 1, we consider it crucial that there is a level playing field between satellite and terrestrial operators (should satellite

⁹ The Authority notes that registration of Space Stations *"does not grant the right to provide telecommunication services or/and telecommunications networks in South Africa, and a relevant Licence(s) are required in each case [...] Once included in the Authorised list of Space Stations, a foreign entity will need additional radio frequency spectrum either by itself or through an already licensed Individual Electronic Communications Network Licence holder (I-ECNS) provider"*



operators seek/be allowed to offer commercial services either directly or indirectly), and licensing satellite operators via the existing ECNS/ECS framework would clearly help achieve this. Vodacom already operates an earth gateway station in South Africa using an ECNS license.

The current frameworks for satellite and IMT licensing are appropriate and need not be altered

Vodacom notes that the Authority largely proposes retaining the current licensing mechanism for Satellite spectrum – i.e. that licenses are required for the Satellite to Earth Station spectrum links, as well as for the User Terminal to Satellite spectrum links. Vodacom generally supports this approach.

We see no need for a separate category of spectrum licence for satellite communications services to that of terrestrial communications services. Such a separation would introduce unnecessary legal and administrative complexity in spectrum management, and result in an unlevel playing field.

Vodacom does not have an issue with blanket User-Terminal licensing, as long as gateways are located within South Africa, and operated by a licensed entity (we discuss Earth Gateway Station licensing below).

There is a risk of misalignment between South African and international (ITU) regulations

It is important to take into account the international and fast-evolving nature of the Satellite Communications sector. There is a risk that making pre-mature decisions on licensing could restrict the possibilities of Satellite Communications for South Africa in the longer term. Specifically, the Authority's intended process for registration, accepting that the definition of such registration remains unclear, may pre-empt the outcomes of Agenda Item 1.5¹⁰ at WRC-27. In so doing, the Authority risks granting rights that may potentially conflict with the upcoming ITU decisions, potentially finding itself in a position where it is unable to easily unwind its early decision on registration requirements. If the Authority does insist on proceeding ahead of WRC-27, we recommend that any registrations that it grants contains suspensive conditions that allow it to modify the terms of registration if required post-WRC-27. In any case, with the current information available, it is not clear as to the Authority's reason for requiring a registration rather than licensing, nor how the requirements for registration would differ from the requirements of a license. The requirement for an ECNS licence to be held by Gateway Earth Station providers (which we explain in more detail in other parts of our response to Question 3) would appear to render the registration of the space segment unnecessary, given that such information would be

¹⁰ Agenda Item 1.5 - "To consider regulatory measures, and implementability thereof, to limit the unauthorized operations of non-geostationary satellite orbit earth stations in the fixed-satellite and mobile-satellite services and associated issues related to the service area of non-geostationary satellite orbit satellite systems in the fixed-satellite and mobile-satellite services, in accordance with Resolution 14 (WRC-23)"



contained in the ECNS license application. We urge the Authority to provide further clarity on this aspect, in order to allow those wishing to make representations to the Authority to do so with an informed view.

Our views are informed by international precedent

Our views above reflect our consideration of international precedent, as well as our deep understanding of the South African context. Below, we summarise the international precedent relevant to the Authority's Question 3.

While the launch and operation of satellites themselves are coordinated in accordance with international regulations, individual countries take decisions on how to license/authorise the provision of satellite communications services within their borders. This is a foundation for maintaining national sovereignty.

To support the use of satellite communications as supplementary to terrestrial networks, the ITU World Radiocommunication Conference 2023 (WRC-23) adopted a new agenda item 1.13 for the WRC-27 cycle, to study possible new MSS allocations in support of supplementary mobile coverage by satellite, in frequency bands between 694/698 MHz and 2.7 GHz. As part of this agenda item, ITU-R Resolution 253 (WRC-23) proposes to study possible technical and operational measures to ensure that the space stations in the new MSS allocations do not cause harmful interference to terrestrial stations operating in the mobile service.

As shown in the Table below, the emerging precedent reflects, for example, that:

- Technologies and international frameworks are still evolving; and
- NRAs envisage that satellite communications services for mobile will act as a supplement to terrestrial networks.
- The regulatory regime of several other countries required adjustment in line with satellite technological developments. This is in contrast to the South African legislative and regulatory environment, where current ECS and ECNS license regimes are adequate to cater for all non-space elements of the satellite system.

Table: Summary of international precedent.

Precedent	Summary of position	Rationale for separation
ATU (Africa):	• Licences may be split across the	Regulation of the space segment is
Framework	system (ATU guidelines cover	largely carried out at the
relating to	separately: satellite space segment	international level, whereas other
Harmonized	operations licensing, satellite	parts of the value chain are more
Model	communication earth station	relevant for NRAs
Framework for	licensing; provision of mobile	
Licensing of	satellite services; landing rights for	



Precedent	Summary of position	Rationale for separation
Satellite Services in Africa, 2022	 broadcasting satellite service; and direct-to-home broadcasting service licensing). Blanket/class licensing or general authorisation regimes are preferable. Alternative licensing regimes should be as simple as possible. 	 An efficient and effective satellite licensing framework should (among other things): use pro-competitive regulatory mechanisms for managing the coexistence of many operators, service providers and networks in complementary, supplementary or competing market segments involve streamlined and non-discriminatory procedures - facilitated market access procedures that reduce the administrative burden; define conditions of operation, rights and obligation of licensees; and provide all the stakeholders with enough information about their rights and obligations. Blanket licensing provides a simple and efficient framework facilitating and enabling the growth of satellite service provision.
FCC (US): Report and Order on Single Network Future: Supplemental Coverage from Space, 2024	• Separate licences for Space Station Operations, Earth Station Operations, and terrestrial service providers.	 Licences for earth station operations may not require as many criteria as space station operations. Satellite and terrestrial networks should be enabled to work seamlessly together to provide coverage that neither network can achieve on its own. <u>Regulations should accurately reflect</u> the relationship between satellite operators and terrestrial licensees, since SCS operations are not independent and, instead, are provided as a supplement to the terrestrial licensee's existing network.
Ofcom (UK): Call for input: Improving mobile connectivity from the sky and space, 2024	 TT&C (tracking, telemetry, and control) and gateway earth stations are authorised through individual licences. User terminals are authorised either through an Earth Station Network (ESN) licence or a licence exemption. FSS terminals are typically authorised through an ESN licence whereas terminals operating in MSS spectrum are typically licence exempt (although may be moved to ESN licences in future). 	 Regulation of the space segment is largely carried out at the international level, whereas other parts of the satellite system are more relevant for NRAs Separate authorisations may be needed to ensure optimal spectrum use, support innovation and enable fair competition, given the need to minimise risk of harmful interference to licensees in adjacent spectrum bands, to ensure service quality of terrestrial networks and protect other users



Precedent	Summary of position	Rationale for separation
	• Ofcom would consider a new licence specifically covering transmission from airborne platforms, if it introduced a new framework to authorise satellite D2D services in mobile bands.	
ComReg (Ireland): Satellite Earth Station Licensing Guidelines, 2024	 Separate licences for Fixed Earth Stations (FES) and Transportable Earth Stations (TES) FES licensees can be licensed for transmitting and/or receiving operations in specific areas Certain satellite terminals are exempt from licensing. 	• ComReg's guidelines simply reflect a review of the existing Satellite Earth Stations licensing regime (already distinct from e.g. space station licensing).
ISED (Canada): Consultation on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite, 2024	• ISED proposes to issue supplemental mobile coverage by satellite space station and earth station licences and FSAs on only a Canada-wide basis, and to limit the scope of these licences to only those service areas and frequency blocks held by the flexible use licensee where they plan to offer supplemental mobile coverage by satellite.	 Supplemental mobile coverage by satellite is an emerging technology, where both the technical and international regulatory frameworks are still evolving Where there is an established framework for another satellite service (e.g. MSS), where separate authorizations have been issued for satellites and earth stations, it may be appropriate to apply a similar framework for supplemental mobile coverage by satellite
ACMA (Australia): Operation of an IMT satellite direct-to- mobile service Regulatory guide, 2024	 No authorisation of a space station is required to provide a IMT satellite direct-to-mobile service. Satellite operators and MNOs may co-ordinate use of IMT spectrum privately – i.e. spectrum licensees and their partner satellite operators are expected to undertake their own due diligence to manage coexistence with other spectrum uses and users, including managing interference to services outside of spectrum-licensed areas. ACMA permits IMT satellite direct-to-mobile services in certain frequency bands (e.g., 700 MHz, 800 MHz, and 850/900 MHz) licensed for Australia-wide use 	 Regulation of the space segment is largely carried out at the international level, whereas other parts of the satellite system are more relevant for NRAs Direct-to-mobile services are intended to operate in frequency bands already allocated to terrestrial mobile service providers. Satellite services offer broad coverage, therefore IMT satellite direct-to-mobile service in Australia is only practical where there is an Australia-wide spectrum licence.

The examples provided in the table above reflect a sample of recent global activity in regard licensing of satellite systems. Given the wide scope of South Africa's ECA, coupled with the broad nature of current ECS and ECNS licenses, the Authority is advised to first identify clear gaps where the ECA is incapable to accommodate satellite technology, before embarking on a process to define an alternative licensing regime.



4.4 QUESTION 4

Please provide your comments on the proposals in the preceding paragraph and the duration of the Gateway Earth Station licences.

Vodacom does not agree that Gateway Earth Station licences are eligible to be treated under the Private Electronic Communication Network (PECN) licence regime. The ECA indicates under Section 6 (Licence exemption) that:

"(2) The electronic communications services, electronic communications networks, electronic communications network services and radio frequency spectrum contemplated in subsection (1) may include, but are not limited to—

(a) electronic communications services provided on a not-for-profit basis;

(b) electronic communications services that are provided by resellers;

(c) private electronic communications networks used principally for or integrally related to the internal operations of the network owner. Except that where the private electronic communications networks' additional capacity is resold, the Authority may prescribe terms and conditions for such resale;

(d) small electronic communications networks such as local area networks;

(e) uses of the radio frequency spectrum that were permitted without a licence prior to the coming into force of this Act and uses of the radio frequency spectrum that the Authority finds would not cause harmful interference with radio frequency spectrum licensees such as low power uses; and

(f) such other services considered to be exempted, as may be prescribed by the Authority." [emphasis added]

The PECN regime contemplates services that are primarily for internal operations, and it is not intended for the provision of commercial services, whether directly serving customers or not. Allowing service providers to use the PECN regime to render commercial services, thereby effectively by-passing the statutory licensing regime, would not only be in contravention of the ECA but would lead to inconsistent treatment of service providers with the Authority having little to no proper control and oversight.

We note that the Authority proposes that "*Only when they provide additional services to the end-user directly will they need to possess an I-ECNS licence*." This is not consistent with the provisions of the ECA. The ECA does not contemplate a license exemption for commercial services, irrespective of whom the services are rendered to. If it were to do so, it would in effect allow some commercial infrastructure providers to offer wholesale services without taking any responsibility for the downstream market effects of the service that they define. For example, a satellite infrastructure provider who defines a particular product for broadband, and controls the size of the bundle or data allowance, performance characteristics of the service, wholesale price and service restrictions (such as fair usage policy), in effect largely controls the retail product, even if they are not directly engaging the end-user. In such a scenario,



a separate Gateway Earth Station licence that is <u>commercially</u> operated without an I-ECNS license would contravene Section 5 of the ECA, which states clearly that:

"(3) Electronic communications network services, broadcasting services and electronic communications services that require an individual licence, include, but are not limited to— (a) electronic communications networks of provincial and national scope operated for commercial purposes;"

The Authority further proposes that "*The Authority is cognisant of the fact that the Gateway operator may not necessarily be the same entity as the service provider to the end user. In some cases, the operator may choose locations of their Gateway Earth Stations outside South African territory for operational reasons. It is for this reason that the Authority will continue to issue separate licences for Gateway Earth Stations and service link licences.*"

Unfortunately, this reasoning does not appear to be adequately considered. Firstly, it is not clear why or how the Authority would contemplate licensing infrastructure (in this case Gateway Earth Stations) that fall outside of the South African jurisdiction. Secondly, it seems reasonable to expect, given the Authority's lack of control of Gateway Earth Stations outside of South Africa, that the Authority would require local Gateway Earth Stations for all services delivered to South African consumers. Without such controls, the Authority is unlikely to be able to ensure compliance with local regulations and legislation, nor will it be able to effectively terminate such services, should the need to do so arise. The gateway operator will simply continue to connect customers that are at unknown locations across the country.

In regard to the duration of the Gateway Earth Station licenses, it is not possible to provide a reasonable view at this point in time, as the concept of a Gateway Earth Station license seems to be tenuous, with the current ECNS license regime adequately enabling regulation of gateway earth stations currently.

4.5 QUESTION 5

Please comment on the above-mentioned alternative proposals to levy the spectrum fees for Gateway Earth Stations and indicate your preferred option. The Authority understands that there are other spectrum fee calculation methodologies used elsewhere in the world. Please give details of the methodologies which you believe would be most suitable for South Africa.

We note that Authority proposes to provide licensing fee relief to Gateway Earth Station Spectrum licensees, in the form of either a reduced fees for HTS satellite spectrum, or on a band-specific basis.



The Authority may be aware that spectrum license fees currently present a significant financial burden to licensees that offer terrestrial telecommunication services. Should the Authority proceed with such an approach it will be providing an unfair competitive advantage to Satellite providers, by dramatically reducing their input costs. Consequently, it is likely to have a negative effect on the current terrestrial connectivity markets. An unfair competitive advantage for satellite providers in regard to fees, would undermine terrestrial providers' ability to compete for the same or similar services. Terrestrial network providers' returns are likely to fall or at least slow in growth, which will reduce incentives to invest in terrestrial networks. In the long run, the level of competition will be lower (and therefore consumer outcomes worse) than in a counterfactual where satellite providers did not receive an artificial competitive advantage.

As an alternative, the Authority is urged to reconsider the licensing model for all access and backhaul spectrum (not just spectrum gateways), and ensure consistency in its licensing model, based on the application. For example, for backhaul, it would be consistent for the Authority to license spectrum based on the aggregate amount of spectrum (i.e. MHz) used nationally irrespective of the frequency band. Such a model would incentivise reuse of spectrum nationally, and in so doing encourage more efficient use of spectrum, without providing an unfair advantage to certain backhaul providers.

4.6 QUESTION 6

Kindly comment on the section above and on the proposal for blanket licensing with a fee for a set number of terminals under a new proposed licence regime to be referred to as "Satellite User Station Network Licence". If possible, please provide a breakdown of the number of terminals with the corresponding spectrum fee values in South African Rands.

Vodacom agrees with the Authority's proposal to harmonise all satellite license fees into a single model on a technology neutral basis. However, we do not agree with the Authority's proposal for 'tiered' pricing, when the services in question are direct substitutes for each other. It is not clear how the Authority intends to price each of the tiers. Irrespective how the tiers are priced, should there be a differential in pricing it will have the effect of disadvantaging one or other segment of the market.

In addition, the Authority's proposal for a "Satellite User Terminals Network Licence" to be introduced, appears to be a duplication of the current licensing regime with regard to terminal licensing i.e. the current ECNS license allows for the application for a spectrum license to serve multiple types of terminals, including satellite terminals. It is also not clear what the purpose of such a license would be beyond that which is empowered by an ECNS and appropriate spectrum license. In this regard, we request that the Authority provide further clarity, and allow respondents the opportunity to make



representations based on an informed view. For example, the Authority has not indicated how the terms and conditions of this new license category would be different from the current regime.

4.7 QUESTION 7

Kindly comment on the appropriateness of using regulation 37 of the ICASA radio regulations ("Recognition of licences issued by other countries") to recognize ESIM licences issued by other countries.

The Authority proposes to "*issue a radio frequency spectrum licence as required by the Act or these Regulations to a person who, in the opinion of the Authority, possesses a similar licence issued by an authority in another country despite the fact that such person does not satisfy specific requirements stipulated by these regulations for the acquisition of the licence or certificate*".

Vodacom advises the Authority against the abovementioned approach, as it may nevertheless be susceptible to challenge where such licencing may create conflict with the operations of local licensees and where no proper consultation process is followed before the issuing of such licences. It would also be irrational to follow a blanket approach in this regard and each case may have to be considered and determined on its own merits. In particular, the terms and conditions of operation licensed by another country are likely to be different from that within South Africa. For competitive services, this potentially allows for an unfair market advantage to those that may be freely allowed to operate under the regime of another country, but within South African territory.

We note that the Authority references ESIM on Aircraft as the specific use case for its proposed relaxation. It is not clear to us as to how such a use case would operate and to whom services would be provided in South Africa. This also makes it challenging to comment on the applicability of Regulation 37, as well as the implication of the Authority's proposals on other Regulations or the ECA.

In any event, irrespective of the text of Regulation 37, the relevant legislation requires the Authority to act in a rational manner, with due regard for its decisions on the market. It should be carefully considered whether, and in which instances, the issuance of a licence to an entity that does not satisfy all the requirements for the acquisition of a licence or certificate would be justifiable, considering the objectives of the ECA and the current licensing framework as a whole, as misguided decisions may be susceptible to legal review.

In light of the above, we request that the Authority provide further clarity, and allow respondents the opportunity to make representations based on an informed view.



4.8 QUESTION 8

Please provide your comments and details of the best practices in other jurisdictions to fulfil the intentions of the Authority as indicated in the above section. Furthermore, considering the provision set out in the Astronomy Geographic Advantage (AGA) Act of 2007, and the requirements of the Radio Quiet Zone, what measures and techniques do you propose to be employed in mitigating the possible interference that may be caused by the satellites within the Astronomy radio frequency bands in South Africa?

Vodacom welcomes the Authority's approach of protection of terrestrial services nationally from interference by satellite operators.

Unfortunately, a number of the Authority's proposals pose severe challenges and ought to be revisited. For a start, a key assumption of the Authority that "The "footprint" of a satellite – the region of the Earth served by a satellite – does not match national borders, making it necessary to regulate this matter through international agreements such as those developed under the auspices of the ITU", is incorrect. Modern satellites, especially those designed for LEO operation, are capable, and do employ advanced beamforming techniques that allow satellite operators to more precisely control that path and extent of their service area. This then leaves no impediment to satellite operators implementing and operating within national legislation and regulation.

The Authority has unfortunately focussed its energies on justifying a regime in which landing rights are not required, and skimmed over the benefits of developing and enforcing a landing right regime for South Africa. This comes at a time when more countries are recognising the need for stricter landing rights controls¹¹. Simply put, allowing transmission over South African territory without direct licensing of a local entity, does not provide any effective means for the Authority to manage unauthorised transmissions. Ordinarily, this ought to trigger a national security concern, as terminals may be enabled (however unlawfully) to transmit to the satellite, with no local recourse available to the Authority. Any complaint that may be lodged with the ITU (as is recently the case with Iran) is likely to take years to decades to be resolved, and does not provide effective short-term restitution for non-compliance.

¹¹ <u>https://developingtelecoms.com/telecom-technology/satellite-communications-networks/16272-</u> vietnam-to-require-foreign-satellite-players-to-have-domestic-gateway.html



The Authority also appears to conflate the issue of ITU authorisation for the space segment, with the concept of regulating landing rights in South Africa. These are separate concepts with South Africa's only point of direct control being landing rights that have appropriate terms and conditions attached.

We also note that the Authority proposes a register of for satellites transmitting over South Africa. It is not clear what the purpose of the register would be, as would not allow for statutory recourse in the manner that a license to a local entity would.

Relieving Satellite operators of the need for a local entity that is licensed, is also unfair to other (terrestrial) providers of connectivity services that have not been allowed to operate without local licensing, and have had to comply with regulations that are in part challenging to comply with, such as payment USAF fees, social obligations, and even payment of taxes to operate as a local commercial entity. The aforementioned requirements to offer services in South Africa form a significant cost component for current local operators, affecting both profitability as well as market pricing to consumers. The playing field for similar services needs to be level, else the Authority risks negatively impacting competition in the market, which would not only be contrary to various objectives of the ECA but could be susceptible to legal challenge and unlawful.

Vodacom is particularly concerned about the Authority's proposal that:

"In other jurisdictions, it is a requirement for Space Station operators to have a Gateway Station in the country. The Authority's view is that this puts an unnecessary burden on the Space Station operator. The Authority is instead proposing undertaking/ commitment from the Space Station operator to ensure compliance with RICA. This is only applicable where the Space segment operator intends to provide retail service directly to the end user (i.e., not through the already licensed I-ECNS holders)."

It is clear that other jurisdictions recognised the danger of not requiring a space station operator to have a local in-country gateway earth station. A commitment of sorts, as proposed by the Authority, does not provide sufficient assurance that the Authority will be able to monitor traffic, and if need be, take action to directly stop the operation of the service. It is even more concerning that the Authority would consider allowing such a regime only when a local I-ECNS holder is <u>not</u> involved in the transmission of data, effectively placing a higher burden on local ECNS licensees than on foreign non-local operators. This then would set the stage for unfair competition for connectivity services.

4.9 QUESTION 9

Please provide proposals on the role the Satellite operators can play in ensuring that broadband connectivity reaches the areas of the country in terms of community networks with Satellite connectivity as a backhaul. Kindly provide a regulatory solution that can be applied by Satellite operators to address the shortcomings of terrestrial networks in providing to



unserved and underserved areas of the country. This may include collaboration with government programs to reach out to those unserved and underserved areas of the country.

Although the objectives of this inquiry appear to focus on FSS, ESIM, IoT, legacy MSS and gateway services rather than the development of mobile broadband services provided by satellite operators, we understand that the "Roll-out Obligations" mentioned in the introduction of this question could apply to both fixed and mobile services. Therefore, in the response below, we consider the roles of FSS and potential future D2D technologies as supplementary to terrestrial services.

Satellite technologies can provide benefits to the South African economy if their use is authorised and managed in a prudent manner. These technologies offer solutions that can meet the demand for fixed and mobile services in unserved and underserved areas of the country where traditional terrestrial networks are unfeasible to deploy. However, depending on how they are operated they can also conflict with the regulatory principles outlined in our response to Question 1. A prudent licensing approach would consider satellite operators as supplementary infrastructure providers to local licensees, with guardrails established in a manner in which satellite services integrate into terrestrial infrastructure without harming existing services to consumers or the associated infrastructure investments.

Benefits of satellite technologies for fixed broadband services

FSS are particularly valuable to provide broadband connectivity to end-users in rural or hard-to-reach areas where terrestrial infrastructure is limited. These services are already widely available globally and experiencing steady growth. For example, we note that Starlink has reported over 4 million fixed broadband users across more than 100 countries as of September 2024¹²

Benefits and limitation of satellite technologies for mobile services

Companies like Starlink, AST SpaceMobile, OneWeb and others have announced plans to deliver advanced mobile services with broadband capabilities, either through partnerships with mobile operators or by directly acquiring spectrum. While these developments offer significant potential for users in unserved areas, the performance and indoor coverage of such services will remain somewhat limited by inherent physical constraints. It is also worth noting that, depending on the architecture options adopted, the overall benefits of D2D services may vary significantly. Therefore, the general

¹² https://www.techcentral.ie/milestone-in-satellite-internet-growth-reached-as-starlink-passes-4m-users/



principle should be to rely on terrestrial IMT mobile networks as far as practically possible, and then use D2D services in a supplementary manner to fill-in gaps in coverage. In areas where satellite backhaul services would make it feasible to roll-out mobile networks, this would potentially be a superior solution to relying on D2D services.

We understand that there are three possible architectural options for D2D services:

- 1. A standalone nationwide D2D service where satellite operators have access to IMT spectrum on an exclusive basis.
- 2. A D2D service in particular areas with the mobile terrestrial operators deciding in which areas it is used (i.e. mobile terrestrial operators contract satellite providers to deploy their spectrum in particular areas).
- 3. A D2D service in particular areas with satellite operators unilaterally deciding in which areas it is used (assuming satellite operators are allowed to operate as a Secondary service).

Vodacom would like to emphasize that option 1 must be avoided because it would conflict with several key regulatory principles, as follows:

Inefficient spectrum use: In densely populated areas, satellite providers independently operating IMT spectrum would be particularly inefficient for two main reasons:

- Sharing IMT spectrum among a larger number of users fragments spectrum, resulting in less available spectrum for service across the entire country, and consequently reduced service levels than would be possible with a smaller number of operators.
- For a given amount of spectrum, D2D spectrum efficiency is also lower compared to terrestrial networks due to (i) more limited indoor service and (ii) larger physical distance between the transmitter and the end-user¹³.

Reduced quality of service: Under Option 1, D2D users are limited to the designated spectrum set aside for their use. Additionally, the increased number of operators sharing this spectrum leads to fragmentation, which in turn reduces capacity for other users on terrestrial networks. This should be viewed in the context of IMT spectrum already being fragmented in South Africa with 6 different mobile operators already being assigned IMT spectrum, which is much higher than the global norm.

Opaque and ambiguous regulations that hinder sustained investment: In areas already covered by terrestrial mobile operators, the introduction of satellite services could render some regions even less unprofitable for terrestrial network operators, significantly altering the original business case that justified their investment. This is especially true of terrestrial operators that deployed rural coverage in

¹³ The significant distance between end users and satellites, compared to terrestrial antennas, results in reduced link budget, making it difficult to provide reliable service, especially indoors



response to coverage and throughput obligations. Such as a shift could leave mobile operators with stranded assets, as their infrastructure becomes underutilized in the face of new competition that is not burdened with similarly onerous obligations.

Vodacom also notes that Option 3 poses significant interference management risks. Mobile operators roll out their networks into new areas over time, so there would be a constant need for satellite operators to adjust their networks to avoid interference with mobile networks. In contrast, Option 2 is likely to offer users a more attractive service, as it is the only option that enables D2D services to coexist with terrestrial mobile services through effective deployment planning for both terrestrial and satellite services by the terrestrial mobile network operator in different areas of the country.

We further note that Option 2 is the only option considered as of yet in other jurisdictions. The only regulators which to our knowledge have released an opinion on satellite use of IMT spectrum – the FCC in the US¹⁴ and ACMA in Australia¹⁵ – have required that satellite operators also gain the commercial agreement of the mobile operators whose spectrum they wish to deploy in order to avoid degradation of service in areas where terrestrial mobile services are currently provided using that spectrum. That requirement seems likely to be replicated by other regulators as they consider similar developments, and wish to protect the service levels to the bulk of customers who are terrestrial network users.

Proposals to facilitate satellite broadband connectivity services in underserved areas

To enhance mobile broadband availability in underserved areas, rather than imposing costly obligations on terrestrial networks to extend coverage to these regions, the Authority should clarify that satellite operators who intend to provide D2D services need to gain the agreement of MNOs under option 2 set out above, on mutually agreeable commercial terms. This approach could allow for a more efficient and cost-effective solution to bridge the digital divide. In doing so, it is crucial that ICASA balances the push for innovative network architectures to meet these coverage goals with the need to maintain the quality of existing terrestrial services, protect spectrum usage rights, and minimize the risk of harmful interference, both domestically and internationally.

¹⁴ FCC only allows Satellite operators to use IMT spectrum as a secondary service which "*may only be provided pursuant to a lease agreement with a terrestrial licensee(s)*"

¹⁵ ACMA recommends that "*an agreement be in place between an IMT satellite direct-to-mobile operator and a partner MNO before a satellite operator transmits in spectrum-licensed space*", see ACMA's Operation of an IMT satellite direct-to- mobile service, Regulatory guide, 2024



Given the emerging nature of hybrid satellite-terrestrial networks, and while awaiting the adoption of relevant 3GPP standards, Vodacom believes it may be premature to establish a bespoke regulatory framework for authorizing such partnerships at this stage. However, ICASA could clarify, like some other regulators have done, that satellite providers should not be allowed to offer direct-to-mobile services unless they have a partnership agreement with an MNO to deploy its IMT spectrum.