



National Information and Communications Technology Authority

Public Consultation Discussion Paper

Licensing for the Provision of Non-geostationary Orbit (LEO/MEO) Satellite Services in PNG



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1. Introduction

Low Earth Orbit (LEO) satellites and satellite services are not new. The Iridium system which was launched in the 1980s was such a satellite system. What is new is the recent renewal of interest in LEO satellite systems, the substantial investment in a number of such systems around the world, and the rapid adoption of LEO satellite services across the globe for the delivery of broadband services. As a result, there is renewed interest in the way these services might be regulated and licensed, and whether national regulatory frameworks and licensing schemes require amendment in order to be adequate for the purpose.

This Discussion Paper has been prepared by NICTA to assist public consultation on the regulatory, and especially licensing, issues that are not only limited to LEO satellite services but may also cover the broader Non-geostationary satellite systems that may potentially be used in PNG.

Industry stakeholders and the public in general are invited to make submissions to NICTA on any issues raised in this paper, or any other issues that come to mind, in relation to LEO satellite services. The deadline for submissions is **4.00 PM on Monday 11th September 2023**. Details on how to make submissions are set out in Section 7.

2. Purpose

NICTA has been undertaking a detailed review of the standard and specific conditions for individual licences under the Operator Licensing Regulation, 2011, and a new version of the relevant Rule is expected to be available for industry and public consultation later this year. However, the apparent level of confusion about the circumstances under which LEO satellite services may be provided in PNG has led NICTA to undertake a review of the licensing for such services separately and in advance of the main review. This priority attention is justified because of the demand that is building for LEO satellite services in PNG, assisted by general publicity and advertising in both local and international media of the services themselves and their benefits.

The purpose of this Discussion Paper is to set out some of the issues that arise for the regulation of LEO satellite services in PNG, and, in the process, to relate those issues to current licensing regulations. Where there appears to be value in imposing additional requirements, these requirements are also raised for discussion.

Lastly, the paper sets out NICTA's proposals for comment.

3. Low Earth Orbit (LEO) Satellite Services – Advantages and Issues

LEO satellite systems operate on a low earth orbit and typically circle the earth every 128 minutes or less¹ and operate within the altitude of the low earth orbit. Most LEO satellite systems operate well below 1,000 kilometres above the earth.² These systems might be contrasted with geostationary (GEO) satellite systems that are positioned in fixed locational slots at much higher altitudes above the equator. GEO satellites do not move across the surface of the earth, and have defined footprints or potential service coverage areas at any given time.

¹ Starlink satellites orbit the earth every 95 minutes, for example.

² Starlink satellites operate at 550 kilometres altitude, for example.

The advantages of LEO satellite systems are:

- Being closer to earth than GEO satellite systems, they are able to provide lower-latency services, including intelligible voice services;
- They can deliver broadband and other services to rural and remote areas at lower unit cost than equivalent terrestrial services;
- The customer premises equipment associated with these systems may be readily installed, and is generally transportable which is of major benefit to many business customers; and
- These systems can be used in conjunction with terrestrial fixed and mobile networks to extend existing services to areas that are unserved, thereby extending coverage and overall amenity.

The actual and potential issues raised by LEO satellite services include:

- Whether, being a service delivered by satellite, LEO satellite service providers are subject to national regulation, and need to have appropriate national authorisation (an operator licence in the case of PNG) to provide services within national jurisdictions;
- Whether, if an operator licence is required, the standard terms and conditions of licence should apply, and whether any special terms and conditions should be imposed;
- How customers might have recourse in the case of disputes with LEO satellite service providers if those providers were not or need not be licensed in PNG; and
- Issues associated with customer data protection and national security.

These issues can be resolved, and the social and economic benefits of LEO satellite services can be achieved.

Interim measures

NICTA has been approached by a number of organisations seeking clarity on various LEO satellite issues. The most common have been (1) whether or not an operator licence or other authorisation is needed to supply or receive LEO satellite services in PNG; and (2) interim authorisation for trials, demonstrations and special public-interest applications. In addition, NICTA has received requests that it certifies that it has “no objections” to various projects involving LEO satellites from various organisations.

In response to these enquiries and requests NICTA has:

- Given time-bound or other limited approvals for trials and demonstrations, often with conditions suggested by the applicants themselves;
- Made it clear that NICTA does not generally give “no objection” certifications, but prefers to have clear processes that may involve approval or rejection of applications sought pursuant to those processes; and
- Made it clear that it is inappropriate to continue on the basis of case-by-case decisions and that, consequently, the LEO satellite service elements of the current operator licence review would be brought forward.

4. Network Services

Section 49 of the *National Information and Communications Technology Act, 2009* (the Act) provides:

“(1) Subject to Section (3), no person shall exercise a facilities right, or supply any facilities access service, or supply any network service, unless they hold a network licence, that is an individual licence or a class licence, that authorises them to do so.

(2) A network licensee shall comply with the terms and conditions of its network licence.

(3) Notwithstanding Subsection (1), the Head of State, acting on advice, may make regulations that identify (without limitation) the procedure, circumstances and consequences associated with NICTA exempting a person, by way of a published declaration, from any obligation under this Act to hold a network licence, where a network licensee has agreed to assume all obligations that would apply to that person if they were to hold such a network licence.”

In NICTA’s view, LEO satellite services are network services as defined in the Act. In Section 2 of the Act, ‘network service’ is defined as meaning “a service for the carrying of communications, by means of guided and/or unguided electromagnetic energy, supplied between distinct geographic points at least one of which is located in Papua New Guinea, but does not include services provided solely on the retail customer side of the network boundary”.

LEO satellite services fit within this definition. They involve the carriage of communications and are supplied between geographic points at least one of which – namely, the transceiver radiocommunications equipment at the customer’s location – is located in PNG. None of the applications that have been brought to NICTA’s notice include services provided solely on the retail side of the network boundary. They typically involve extension of or connection with publicly available fixed and mobile services in PNG and the ability to interact with customers connected to the network services of other licensed operators in PNG.

NICTA has not given any exemptions of the kind contemplated in Section 49(3) of the Act. In most of the applications or requests it has received, the request has not included any arrangements for a network licensee to assume all of the obligations associated with the provision of LEO services as a network service.

It is important to anticipate here the argument that all satellite services, including LEO satellites, operate well outside the territory of PNG, and that LEO satellite system operators are therefore beyond the jurisdiction of NICTA and PNG law. There are two aspects of the answer. Firstly, the relevant satellite service is proposed to be delivered within the territory of PNG at the customer’s site(s). Secondly, Section 6 of the Act deals with extra-territorial application, and provides that “this Act applies both within and outside Papua New Guinea”.

5. Who can provide LEO satellite services in PNG?

Based on the discussion above, individual network licence operators in PNG already have authorisation to provide LEO satellite services. There are no specific conditions of licence that apply to LEO satellite services, nor are there any exemptions in place from licensing in general or from any of the current conditions of licence in particular. Network licensees may require additional licences if they do not have them, including applications licences and spectrum allocations.

6. Applicability of Current Licensing Regime

A number of issues arise concerning the adequacy and applicability of the current licensing regime, and whether it should be required at all, for LEO satellite services. Each of the issues is dealt with in turn, below.

6.1 Should LEO satellite services be exempt from licensing altogether?

NICTA's answer is that they should not be exempted, and that service providers should be licensed. There are a number of reasons for this, as follows:

- **Competitive fairness and equity:** LEO satellite services are capable of delivering voice and data, and fixed and mobile, communications to end-users. They operate in competition with the network services of existing licensed operators. It is therefore fair and reasonable, from a competition perspective, that they should be subject to the same sort similar obligations as those other providers.
- **Broader contribution to the PNG economy and public administration:** Licensed network operators contribute to the development of PNG in many ways beyond providing services to end-users. They contribute to industry administration through regulatory fees and charges, and to the extension of service coverage to unserved and underserved areas through Universal and Access Service (UAS) levies. There is no basis on which LEO satellite service providers should be exempted from similar contributions.
- **Regulatory compliance and recourse:** The licensing regime is the key framework within which regulatory obligations and regulatory recourse may be heard against providers in the broader public interest. Without licensing or a similar authorisation system it would be difficult to effect recourse and to proceed against service providers.
- **Consumer protection and recourse:** Consumers, and other end-customers, have a range of interests that need to be respected and protected, and which they are, individually, unlikely to be able to pursue if the service provider is not present in the country, and if only the foreign jurisdictions specified by the provider are those in which claims might be pursued. The interests of consumers include privacy, personal data protection, fair and reasonable treatment, and delivery of services that meet expectations in terms of performance quality and availability.

6.2 Applicability of existing network licence conditions

Pursuant to Sections 55 and 218 of the Act, NICTA has made Rules in relation to standard and special conditions of licence. They are published on NICTA's website at <https://www.nicta.gov.pg/licensing/terms-conditions/>. The Rules were made in 2011 and are the subject of the broader review of licensing terms and conditions, as mentioned earlier.

Current **standard and special terms and conditions** applicable to individual network licences and their relevance to LEO satellite service providers are set out in Tables 1 and 2, respectively, below:

Table 1: Standard Terms and Conditions of Licence and LEO satellite services

Rule Reference	Rule Description (summary)	Applicability to LEO services
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Schedule 1 Standard terms and conditions of individual licensees		
Section 2(1)(a)	Pay applicable licence fees and levies	Yes
Section 2(1)(b)	Comply with mandatory instruments, etc	Yes
Section 2(1)(c)	Notify NICTA within 14 days of changes in beneficial ownership of more than 10%, and other relevant particulars	Yes
Section 2(1)(d)	Notify NICTA before any transfer of shares resulting in transfer of more than one quarter of those issued, etc	Yes
Section 2(1)(e)	Take all proper safety measures to safeguard life and property	Yes
Section 2(1)(f)	Take all reasonable steps to ensure that the charging mechanisms used in connection with any facilities or services are accurate and reliable.	Yes
Section 2(1)(g)	Indemnify NICTA against claims arising from breaches etc of the licensee	Yes
Section 2(1)(h)	Advise NICTA early of force majeure events affecting service	Yes

Table 2: Special Terms and Conditions of Licence and LEO satellite services

Rule Reference	Rule Description (summary)	Applicability to LEO services
Schedule 3: Special Terms and Conditions for Network Licensees who provide Public Cellular Mobile Services		
Section 2	Mandatory coverage obligations based on locality category	No
Section 3	Minimum level of network performance – in terms of drop out rate, call failure rate, and network availability	Yes, in principle, but subject to review of specific performance measures
Section 4	Network fault repair performance based on locality category	Yes, in principle, but subject to review of specific fault

		response regime adopted by LEO satellite service providers
Schedule 6: Special Terms and Conditions applicable to Telikom Limited (and potentially to other fixed network service providers including by wireless and satellite technologies)		
Section 3	Minimum level of network performance for fixed voice telephony services in terms of network availability	Yes, in principle, but subject to review of specific performance measures
Section 4	Maximum timeframes for the connection of new services	No, contractual obligations only
Section 5	Maximum timeframes for repair of network faults	Yes, in principle, but subject to review of specific fault response regime adopted by LEO satellite service providers
Section 6	Publication of a public number directory	No
Section 7	Continued obligation to provide a Directory Assistance service and a National Maritime Radio Safety Service	No

6.3 Proposed new conditions

For the avoidance of doubt and for overall clarification, it is proposed to add a schedule (which is temporarily called Schedule 3A) to the Rules which reflect the adaptation of existing terms and conditions (see 6.2 above) to services that are provided entirely or extended by LEO satellite networks.

The proposed additional schedule is annexed as Attachment 1 to this paper.

7. Submissions and Questions for Consideration

7.1 Submissions

Industry and other stakeholders and the public in general are invited to provide comments and make submissions on the subject of this Discussion Paper to NICTA in writing.

The preferred means of delivery is by email to leoconsultation@nicta.gov.pg. Alternatively, submissions can be mailed to NICTA at P.O. Box 8444, Boroko NCD, Papua New Guinea.

Submissions should be sent to reach NICTA no later than the deadline, namely **4.00 PM on Monday, 11th September 2023**.

Any enquiries in relation to the Discussion Paper or the consultation process should be directed to Mr. Gibson Tito, Manager, Licensing and Business Relations, Telephone: +675 3033275, email: gtito@nicta.gov.pg.

It is NICTA's standard practice to publish submissions received. If a person wishes to claim confidentiality in relation to any part of their submission, they should indicate the extent of the claim and provide, in addition to the complete submission, a suitably redacted version of the submission for publication.

7.2 Questions for consideration

It is entirely a matter for respondents to determine the extent, format and coverage of their comments and contribution to the discussion on LEO satellite services. It would be helpful, however, if respondents could consider the following questions in the course of preparing their comments:

Question 1: (a) Do you agree that providers of LEO satellite services in PNG should be licensed by NICTA under the Act, as other providers of network services are licensed? (b) If not, what other authorisation arrangements, if any, should apply? (c) Would any form of exemption be appropriate, and under what circumstances?

Question 2: Do you agree with NICTA's assessment of the current terms and conditions of individual network licences which should apply to the provision of LEO satellite services? If not, what alternative arrangements should apply?

Question 3: Do you agree with the addition of a specific section in the 2011 Rule to clarify the terms and conditions of licence where an individual network licensee chooses to provide LEO satellite services, as set out in Attachment 1 to the Discussion Paper? If not, what changes would you recommend?

Question 4: Do you think that there should be some constraints on where LEO services should be permitted to be located in PNG, such as, for example, only in areas where telecommunications services are non-existent or are inadequate? Please give your reasons.

Question 5: Irrespective of the answer to Question 4, should LEO services be structured and managed within the Universal Access and Service (UAS) Scheme administered by NICTA, or be eligible for inclusion in the UAS?

Attachment 1: Proposed Schedule 3A to the Standard and Special Terms and Conditions of Individual Licences Rule, 2011

Schedule 3A: Special Terms and Conditions for Network Licensees who provide Public Cellular Mobile Services and other Public Network Services using Low Earth Orbit Satellite Networks

1. Application

- (1) This Schedule applies to all Network Licences that:
 - (a) are Individual Licences; and
 - (b) own, operate or maintain a Network that includes access to and use of one or more Low Earth Orbit (LEO) satellite networks; and
 - (c) use that Network to supply a Public Cellular Mobile Service and/or any other kind of Public Network Service.

2. Validity of Licence and Authority to Provide Services using LEO Satellite Networks

- (1) The Licensee shall continue throughout the term of the licence:
 - (a) to comply with the eligibility requirements for an individual licence set out in Sections 48 and 56 of the Act; and
 - (b) to maintain a corporate presence in Papua New Guinea the management of which shall have full authority to represent the Licensee on all matters relating to the Network Licence and to accept full responsibility for the discharge of licence obligations and the operation of the Network, including the LEO Satellite network components of that Network.
- (2) The validity of the Licence shall cease if and when compliance with the condition in sub-section (1) ceases.

3. Mandatory Coverage Obligations

- (1) The Licensee may use LEO satellite services to meet mandatory coverage obligations that apply to the Licensee pursuant to Schedule 3.
- (2) If the Licensee does not have mandatory coverage obligations pursuant to Schedule 3 then no mandatory coverage obligations shall apply to the Licensee.

4. Minimum level of Network performance

- (1) The licensee must maintain a Call Drop-Out Rate of no more than 2%.
- (2) The licensee must maintain a rate of Call Failure due to Network Congestion of no more than 2%.
- (3) The Licensee must maintain a rate of Network availability of least 99.54%³ for all services which are delivered using LEO satellite networks or network components.
- (4) In relation to services that are not delivered using LEO satellite networks or network components, the minimum levels of Network performance in Schedule 3 shall apply.

5. Network fault repair

- (1) The Licensee must repair 85% of Network faults occurring as a result of the operation of the LEO satellite network or network component within 24 hours of the fault being identified by, or reported to, the Licensee.

³ <https://www.sciencedirect.com/science/article/pii/S2405959516301448>

- (2) On relation to other fault, not being associated with failure of the LEO satellite network or network component, the Licensee shall meet the network fault repair obligations set out in Schedule 3.
- (3) The Licensee must repair 95% of Network faults occurring in the mid-sized centres specified in Schedule 9 within 24 hours of the fault being identified by, or reported to, the licensee.
- (4) In assessing the licensee's compliance with these fault repair timeframes, the licensee's performance will be measured over the period of a calendar year.