

TERMS OF REFERENCE

For

Development of

a

Multi-Modular Compliance Monitoring System

Module 1: Network Quality of Service
Module 2: Traffic & Tariff Tracker
Module 3: International Voice Gateway Module
Sub-Module 3.1: OTT & VoIP Sub-Module
Sub-Module 3.2: International AP2 Gateway Sub-Module
Module 4: Electronic Equipment (Mobile Device) Standards Compliance Module



Independent Communications Authority of South Africa

350 Witch-Hazel Avenue, Eco Point Office Park
Eco Park, Centurion.
Private Bag X10, Highveld Park 0169
Telephone number: (012) 568 3000/1

Table of Contents

1. Background	2
2. Objective(s)	3
3. Scope of Work	3
3.1 Quality of Service (QoS)	3
3.2 Traffic and Tariff Tracking	4
3.3 International Voice Gateway (IVG)	6
3.3.1 Over The Top (OTT) & Voice over Internet Protocol (VoIP)	7
3.4 Electronic Equipment (Mobile Device) Compliance	7
4. Expected Deliverables/Outputs	7
4.1 Module 1: Quality of Service (QoS)	7
4.2 Module 2: Traffic & Tariff Tracker	8
4.3 Module 3: International Voice Gateway (IVG) Monitoring	8
4.3.1 Sub-Module 3.1: OTT & VoIP System	9
4.3.2 Sub-module 3.2: International Application to Person (A2P) Gateway	10
4.4 Module 4: Electronic Equipment (Mobile Device) Compliance System	10
5. Eligibility Criteria	Error! Bookmark not defined.
6. Bids Evaluation Criteria	11
6.1 Stage 1: Minimum Requirements/Mandatory Requirements	11
6.2 Stage 2: Functionality	12
6.3 Stage 3: Price and BBBEE Level	17
7. Project Inception	18
8. Awarding of Bid	18
9. Contracting	18
10. Duration of the Project	18

1. Background

The Independent Communications Authority of South Africa (the Authority) is a creature of statutes established pursuant to section 192 of the Constitution as outlined in Schedule 1 of the Public Finance Management Act No. 1 of 1999.

The Authority's mandate is set out in the Independent Communications Authority of South Africa Act No.13 of 2000, the Electronic Communications Act No.35 of 2005, as amended, the Postal Services Act No.24 of 1998 and the Broadcasting Act No.4 of 1999 as the regulation of electronic communications, broadcasting and the postal sectors in the public interest.

The Authority takes government policy direction as outlined in the National Development Plan 2030, the National ICT Policy and any other policy directives that government issues from time to time, through the Ministry of Communications and Digital Technologies.

The Authority's functions include development of regulations for the ICT sector, issuing of licences to telecommunications and broadcasting service providers, monitoring of licensee compliance with rules and regulations, planning and managing of radio frequency spectrum and protecting of consumers against unfair business practices and poor quality of service by ICT service providers.

The Authority also collects licence fees and penalties charged on ICT service providers on behalf of government and transfers the revenue to the National Treasury through the National Revenue Fund.

On 26th July, 2020, the Minister of Communications and Digital Technologies issued a *Policy on High Demand Spectrum and Policy Direction on the Licensing of a Wireless Open Access Network* in terms of sections 3(1), 3(2) and 5(6) of the Electronic Communications Act 36 of 2005, as amended, directing the Authority to issue an Invitation to Apply and accept and consider applications for the IMT Spectrum and Individual Electronic Communications Network Services (IECNS) project commonly known as Wireless Open Access Network (WOAN).

Furthermore, government expressed the need for the Authority to enhance its revenue collection capabilities to curb any revenue leakages and maximise revenue raised from the ICT sector for the national fiscus.

Together with the Authority's regular mandate, the foregoing require a well-capacitated regulator.

To that end, the Authority requires the services of a service provider to assist it to develop a multi-modular IT-based platform (system) that will enable it to execute its compliance enforcement, monitoring and revenue collection mandate effectively and efficiently.

2. Objective(s)

The objective of the assignment is to develop a multi-modular IT-based compliance monitoring platform (system) that will enable the Authority to execute its compliance enforcement, monitoring and revenue collection mandate effectively and efficiently.

3. Scope of Work

The breadth of issues outlined below delimit the scope of work the service provider must cover in provision of services.

3.1 Quality of Service (QoS)

Quality of Service (QoS) can be described as a network's ability to provide a service at a guaranteed service level. QoS is critical for mobile communication network technologies including second generation (2G/GSM), third generation (3G/WCDMA), fourth generation (4G/LTE) systems and any subsequent generation systems (including 5G).

The Authority has a legislative mandate to protect the rights of consumers by promoting the delivery of quality services to consumers and other stakeholders. The Authority promulgated a regulatory framework for monitoring of Quality of Service levels offered by operators. This regulatory framework and accompanying service level standards are set out in terms of EUSSC Regulations. However, due to lack of

technical monitoring capabilities there are several limitations in the implementation and enforcement of the regulations.

Regulation 10 of the End-User and Subscriber Service Charter (EUSSC) Regulations imposes an obligation on each licensee to monitor its network on a twenty-four (24) hour seven (7) days a week basis. Regulation 9(14) of the Regulations states that a licensee must submit a report to the Authority regarding its compliance with the parameters listed in sub-regulation 12, twice annually.

However, as of today, the Authority has no satisfactory means or methods of verifying these compliance reports. Further, the Authority has no means to independently assess compliance by licensees with prescribed parameters. In terms of best practice, effective monitoring and enforcement of compliance with the prescribed standards requires that a regulator possess the capability to collect data continuously and adhere to the latest methodologies / mechanisms to obtain and assess QoS measurements.

The Authority currently uses drive-test methods. These methods provide a snapshot of an operator's network performance on selected routes at a time of day.

The detailed technical specifications in Annexure A.

3.2 Traffic and Tariff Tracking

The EUSSC Regulations require that licensees be transparent in their dealings with consumers in their billing practices, particularly about out of bundle billing for voice and SMS services, out of bundle billing for data services as well as treatment of unused data for purposes of roll-over and transfer¹. In addition, the Regulations also impose specific obligations on licensees in respect of promotional tariffs².

Notwithstanding these protections, South African consumers have continued to express concerns about disappearing airtime / data as well as highly expedited data

¹ See regulations 8, 8A, 8B(2) and 8B(3).

² See regulation 5.

consumption rate³. It was on the back on these various concerns that the Authority entered into a collaborative arrangement with the National Metrology Institute of South Africa during July 2020.

In addition, consumers have continued to battle with instances of fraudulent subscriptions to premium rated services⁴. The latter instances fall foul of regulation 21 of the **Numbering Plan Regulations, 2016**. They further fall foul of the **Regulations on Code of Conduct for Premium Rated Services, 2016** which *inter alia* requires that prior to provision of premium rated services to any end-user, the end-user shall be advised of the costs, as well as terms and conditions of the service.

The lack of appropriate technical systems on the regulator's side has made it difficult for the Authority to:

- monitor whether the prices charged by licensees under various packages are in fact those published / advertised to consumers,
- monitor adherence to the itemized billing prescripts as outlined in terms of regulation 8 of the EUSSC Regulations, and
- monitor compliance by licensees (and their third-party providers) with the Regulations on Code of Conduct for Premium Rated Services

More importantly, all licensees are - in terms of the *General Licence Fees (GLF) Regulations* - required to pay a percentage of their revenue derived from licensed service (as defined) as an annual licence fee to the Authority (the amount which the Authority on-pays to the National Revenue Fund ("NRF")). Since the Authority currently does not have (and historically has not had) any capability to reconcile the licensed revenues declared against the tariffs and traffic generated against such

³ <https://myofficemagazine.co.za/evidence-of-mass-airtime-theft-from-vodacom-subscribers/>

<https://whichvoip.co.za/news/disappearing-data-are-vodacom-and-mtn-cheating-you/>

<https://www.youtube.com/watch?v=Cu2XkHsHBfw>

<https://mybroadband.co.za/news/cellular/365418-damning-evidence-about-mass-airtime-theft-from-vodacom-subscribers.html>

⁴ <https://www.itweb.co.za/content/rW1xLv59YN3vRk6m>

tariff, there has been no way of telling whether the revenues are under or even whether there are revenues undeclared.

Detailed technical specifications in Annexure B.

3.3 International Voice Gateway (IVG)

The development of the telecommunication technologies and the big market size of telecom products has given rise to interconnect bypass activities. The aim of the interconnect bypass activities is to bypass, refile and or mask 'internationally originating traffic' destined for termination on South African networks 'as local traffic' with the consequence that:

- (a) it results in significantly reduced revenue being recovered by the fiscus⁵, and
- (b) it undermines infrastructure investments as it diverts revenue from legitimate licensees.

The interconnect bypass activities are in breach of the Currency Transactions Report (*CTR*) Regulations. Though the extent of the prevalence of these conduct/activities is not fully quantified, preliminary data demonstrates that it is not insignificant⁶. This is particularly the case given that in addition to undermining revenue collection efforts, the practice has other undesirable consequences such as unlawful manipulation of caller line identification in breach of **Chapter 11 of the Electronic Communications Act, 2005** and the **Numbering Plan Regulations, 2016**. Such Caller Line Identification (CLI) manipulation carries further undesirable consequences as it has the potential to undermine national security by negating permissible intercept measures which are required to be implemented in terms of the **Regulation of Interception of Communications and Provision of Communication-related Information Act, 2002**. The International Voice Gateway serves as a Revenue Assurance System to verify the international voice traffic (and attendant revenues) and is therefore critical for enhancing the Authority's revenue generating capabilities.

⁵ Instead of SARS recovering tax revenue based on an international termination rate of USD0.15 per minute, it is recovering revenue on revenue at the domestic rate of less than USD0.01 per minute, given that where interconnect bypass activities have occurred the originating number reflected is a domestic number, and domestic rates are accordingly charged for the call

⁶ Anecdotal data estimates the loss to the fiscus at R100 million per annum based on data from only on one licensee.

Detailed technical specifications in Annexure C.

3.3.1 Over the Top (OTT) & Voice over Internet Protocol (VoIP)

The Authority is required to licence electronic communications services in the public interest, to this end, inter alia, facilitate convergence of services, promote development of interoperable and interconnected electronic networks and create a technology neutral licensing regime.

3.4 Electronic Equipment (Mobile Device) Compliance

In terms of the provisions of Chapter 6 of the Electronic Communications Act, 2005 no person may possess, sell or use any type of electronic communications equipment with the provision of electronic communications, unless such equipment has been approved by the Authority. To this end, the Authority has promulgated Type Approval Regulations in terms of which it (the Authority) may conduct market surveillance on all equipment that requires type approval to ensure compliance.

Detailed technical specifications in Annexure D.

4. Expected Deliverables/Outputs

The service provider is expected to deliver a multi-modular IT-based platform (system) that will enable the Authority to execute its compliance enforcement, monitoring and revenue collection mandate efficiently and effectively.

The platform must contain four core modules as outlined below.

4.1 Module 1: Quality of Service (QoS)

A centralised system which provides measurements from the entire network and allows all the different locations at different times to be monitored, so the representability is assured using ETSI EG 202 057-3 standards. A combination of both the drive-test method and a centralised system will provide the Authority with the ability to monitor network performance within the country, and thus adequately protect end-users whilst verifying the accuracy of data reported by licensees (particularly mobile operators) to assess and confirm regulatory compliance.

To be reliable, the monitoring of network performance must provide constant measurements from across the entire network, in different locations on a twenty-four (24) hour basis. The QoS module of the IT-based compliance monitoring platform shall fulfil this requirement.

The module must support enforcement and compliance monitoring with the quality of service and network performance standards as prescribed in terms of the EUSC Regulations. Furthermore, it is central to the Authority's ability to enforce compliance and monitor adherence to the conditions and obligations proposed to be imposed in terms of the International Mobile Telecommunications (IMT) spectrum licensing process⁷ (as well as the Wireless Open Access Network (WOAN) licensing process).

4.2 Module 2: Traffic & Tariff Tracker

A Traffic & Tariff Tracker that is primarily destined to support enforcement and compliance monitoring with billing, as well as voice and data consumption standards as prescribed in terms of the EUSC Regulations. It should further enable the Authority to authenticate the veracity of licensed revenue as declared by licensee for purposes of confirming the accuracy of the licence fee payable in terms of the General Licence Fees (GLF) Regulations.

4.3 Module 3: International Voice Gateway (IVG) Monitoring

This module must enhance the Authority's revenue collection capabilities by specifically targeting the enforcement of compliance with the CTR Regulations and curbing the practice of international interconnect bypass activities. The module will also support verification of annual licence fees in terms of the GLF Regulations as revenue generated from international traffic comprise licensed revenue as defined.

Specifically, the international gateway monitoring module must provide real-time aggregation and monitoring of all international calls and serve the following objectives:

- afford ICASA access credible data from the sector – which will be monitored independently – which will inform objective and evidence-

⁷ In respect of download speeds and connectivity for designated underserved areas

based regulation making for the benefit of consumers and the economy as a whole,

- serve as an independent benchmark for auditing licensees and for verifying their declarations of both local and international traffic against the licensed revenue / income declarations as reconciled with the remittance of taxes in relation thereto and detect fraud and potential loss of revenue from recalcitrant operators (by curbing interconnect by-pass activities); and maximise revenue collection for the fiscus.

4.3.1 Sub-Module 3.1: OTT & VoIP System

The sub-module must enhance the Authority's data gathering capabilities for future and informed regulation making. It should primarily be designed to detect and monitor emerging trends in data traffic patterns and associated revenue streams and to assess the extent of any revenue losses due to increased adoption of new technologies at the expense of traditional services (i.e. GSM calls).

The sub-module must enable the Authority to gather reliable data for purposes of executing its mandate. More specifically serve the following objectives:

- monitor new revenue streams emanating from new services and assess lost revenue due to increased OTT usage at the expense of the traditional services,
- monitor and gather data on VOIP traffic,
- enable the monitoring and gathering of data on dynamic rates levied for national and international VOIP calls based on volume of traffic,
- differentiate VOIP traffic to enable reporting of statistics on application, usage and performance; allow for the establishment of different rates for different OTT applications (e.g. charging WhatsApp calls at a different rate than Viber calls), and
- allow for the detection of any fraudulent traffic.

4.3.2 Sub-module 3.2: International Application to Person (A2P) Gateway

In addition to the sub-module on OTT and VoIP services, module 3 must further contain a sub-module on management and monitoring of A2P traffic.

4.4 Module 4: Electronic Equipment (Mobile Device) Compliance System

The module must support the Authority's monitoring and enforcement measures in respect of the Type Approval Regulations. Through the module, a system should be embedded to identify all subscriber equipment (including, mobile devices) in use in the South African telecommunications market and detect the International Mobile Equipment Identity (IMEI)s attached to various networks to identify which subscriber equipment / devices are compliant with prescribed local and international standards.

To this end, the module should connect to all the Mobile Network Operators in South Africa, should receive IMEI-Check and Line Equipment-Identity-Check requests to detect all IMEIs connecting to the Mobile Operator, and shall replicate in real-time the IMEIs from all Mobile Operators in one Centralized Database located on the premises of the Independent Communications Authority of South Africa (ICASA).

By analysing the centralized data replicated into ICASA's system, which is to include all handsets in the market, the System should be able to identify genuine, fake and cloned devices, and generate a comprehensive electronic communications equipment and or device repository, thereby ensuring proper identification and certification of mobile phones/devices connected to the network for compliance purposes thus ensuring consumer protection against defective/grey products.

Thus, the module will support the Authority in fulfilment of its mandate to:

- ensure devices are compliant with prescribed standards,
- detect non-compliant devices and restrict their access to the South African network, as per a set of rules and procedures defined by applicable prescripts,
- detect duplicate devices in real-time that are using IMEIs of conformed devices, and restrict their access to the network,
- identify IMEI swapped devices (i.e. devices using an IMEI that is

- related to another device) and restrict their access to the network,
- support the efforts by the South African Revenue Services to collect the duties attendant upon electronic communications devices by rooting out grey devices,
- support law enforcement agencies with capability for verification of customer data collected by licensees for purposes of enforcement and monitoring licensees' compliance with the Regulation of Interception of Communications and Provision of Communication-related Information Act, 2002. Customer data collection must comply with the Protection of Personal Information Act, 2013

5. Bids Evaluation Criteria

All received proposals will be evaluated in three stages.

- (a) Stage 1: Special Mandatory Conditions,
- (b) Stage 2: Functionality,
- (c) Stage 3: Price and BBBEE Level.

6.1 Stage 1: Special Mandatory Conditions

The table below lists special mandatory conditions that the Bidder's proposal must cover:

Special Condition		
Module 1: Quality of Service		
The Bidder must ensure that the module covers all Functional Requirements in Annexure A	Comply	Not Comply
Special Condition		
Module 2: Traffic & Tariff Tracker		
The Bidder must ensure that the module covers all Functional Requirements in Annexure B	Comply	Not Comply
Special Condition		
Module 3: International Voice Gateway (IVG) Monitoring		

The Bidder must ensure that the module covers all Functional Requirements in Annexure C including technical requirements for the two sub-modules(Annexure C1 and C2).	Comply	Not Comply
Special Condition		
Module 4: Electronic Equipment (Mobile Device) Compliance System		
The Bidder must ensure that the module covers all Functional Requirements in Annexure D	Comply	Not Comply
Special Condition		
Associate Membership		
The Bidder must be a member of Global System for Mobile Communications (GSMA). A valid GSMA associate membership proof must be provided	Comply	Not Comply
Special Condition		
OEM Membership		
The Bidder must provide a valid OEM membership certificate for the proposed solution	Comply	Not Comply
Special Condition		
System Blueprints and User Manual		
The Bidder must provide a written undertaking on their letterhead to provide the developed system's blueprints and user manual. The undertaking must be signed by the Bidder's officer senior enough to commit the Bidder on such matters	Comply	Not Comply

A proposal which does not meet the special mandatory conditions will not be considered for evaluation.

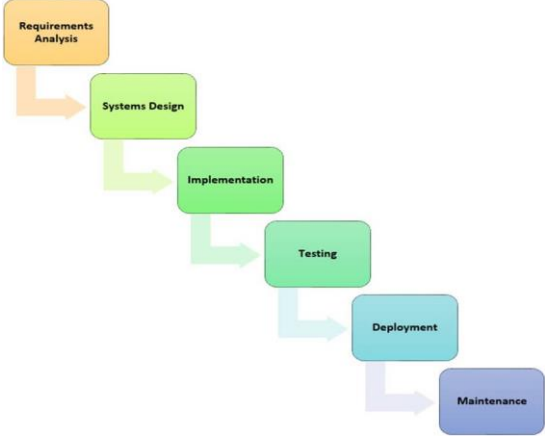
6.2 Stage 2: Functionality

The following criteria will be applied for functionality to assess all the Bidders who complied with the special mandatory conditions:

Evaluation Criteria	Evaluation Sub-Criteria	Scoring Criteria	Weight

Knowledge of ICASA	Knowledge of ICASA's <i>mandate, operations and legislative requirements</i>	<p>1 = Bidder proposal's reference to one of the three elements that show knowledge of ICASA</p> <p>2 = Bidder proposal's reference to two of the three elements that show knowledge of ICASA</p> <p>3 = Bidder proposal's reference to mandate, operations and legislative requirements which all show knowledge of ICASA</p> <p>4 = Bidder proposal's reference to mandate, operations, legislative requirements and one other continental affiliation which show knowledge of ICASA</p> <p>5 = Bidder's reference to mandate, operations, legislative requirements, continental and international</p>	10
--------------------	--	---	----

		affiliation which show knowledge of ICASA	
Experience	Provide a minimum of 3 contactable Customer references where IT-based systems of similar nature have been rendered successfully in the last 5 years. Customer References must be from the Customer on their letterhead	1 = No references provided 2 = One (1) reference Provided 3 = Two (2) references provided 4 = Three (3) references provided 5 = Four (4) references Provided	20
Key Project Personnel Experience	CVs showing experience and qualifications of the Bidder's key personnel	1 = A project team with key personnel having qualifications and 0-2 years of experience 2 = A project team with key personnel having qualifications and 3-4 years of experience relevant to at least one module 3 = A project team with key personnel having qualifications and 5-6 years of experience relevant to at least two modules	20

		<p>4 = A project team with key personnel having qualifications and 7-8 years of experience relevant to at least three modules</p> <p>5 = A project team with key personnel having qualifications and 9-10 years of experience relevant to all the four modules</p>	
Methodology	<p>Methodology containing the system development life cycle elements (Requirements Analysis, Systems Design, Implementation, Testing, Deployment and Maintenance)</p>  <pre> graph TD RA[Requirements Analysis] --> SD[Systems Design] SD --> IM[Implementation] IM --> T[Testing] T --> D[Deployment] D --> M[Maintenance] </pre>	<p>1 = Two system development life cycle elements are missing in the methodology</p> <p>2 = One system development life cycle element is missing in the methodology</p> <p>3 = All system development life cycle elements are present in the methodology</p> <p>4 = All system development life cycle elements are present in the methodology plus one more enhancing extra element</p> <p>5 = All system development life</p>	40

		cycle elements are present in the methodology plus two more enhancing elements	
Skill Transfer Programme	Proposed programme for the transfer of skills and knowledge to the Authority's officials	<p>1 = Once-off presentation on the user manual</p> <p>2 = Q & A sessions programme for a defined period</p> <p>3 = A proposed skills transfer workshop programme</p> <p>4 = A proposed skills transfer workshop programme with a Q & A session for a defined period</p> <p>5 = Counterpart (on-the-job training) skills transfer programme with Q & A session for a defined period</p>	10
TOTAL			100

Minimum Required Score for functionality is 70 points out of 100 points. Only Bidder(s) that meets the minimum required percentage or minimum points, will be evaluated in terms of price and preference as per the PPPFA Act, No.5 of 2000 and its associated Regulations issued by the National Treasury.

6.3 Stage 3: Price and BBEE Level

The Bidder's price proposal shall be clearly designed to reflect all costs without causing any confusion, which may include travelling costs from the base premises to the venue of the auction. All relevant costs will be considered for the purposes of evaluating prices.

Bidders are advised to use the following format to formulate their price proposal (VAT Excluded).

Team Member	Qualification & experience	Quantity	Tariff per Hr (Normal time)	Tariff per Hr (Over time/ Saturdays)	Tariff per Hr (Sundays / Public Holidays)	TOTAL
Project director/Client Liaison						
Project manager						
Assistant Manager						
Professional						
Clerks						
TOTAL						

The financial part of the bid will be evaluated in terms of the 90/10-point system as stipulated in the Preferential Procurement Regulations of 2011. 90 points will be allocated for price and 10 points for attaining the B-BBEE status level of contributor.

The maximum possible score that can be achieved for price is 90 points.

Bidders are required to submit original and valid B-BBEE status level verification certificates or certified copies to substantiate their B-BBEE rating claims together with their bids. A bid will not be disqualified from the bidding process if the bidder does not submit a certificate substantiating the B-BBEE status level of contribution nor is a non-compliant contributor. Such a bidder will score 0 out of maximum of 10 points for B-BBEE.

No preference points will be awarded without submitting of a valid B-BBEE certificate or a consolidated B-BEE Certificate in case of a Joint Venture, Trust or Consortium

and total points scored will be calculated by adding points scored for price and B-BBEE Contributor Level.

6. Project Inception

The service provider will be required to provide an inception report (8-10 pages) for the project within three to four weeks of the signature of the contract. The inception report must provide: a presentation and justification for the methodology chosen to approach the task; the feasibility of the Terms of Reference - scope, time, budget, and foreseen methodology; and any deviations from the Terms of Reference with justification. The inception report will be reviewed and considered for approval by the Project Steering Committee. Once agreement has been reached on the inception report, the service provider will be allowed to commence with the project.

7. Awarding of Bid

The bid will be awarded to the bidder who scored the highest total number of points as prescribed in the PPPFA, SCM Policy and Preferential Procurement Regulations of 2011. In exceptional cases, the bid may, on reasonable and justifiable grounds, be awarded to a bidder that did not score the highest number of points. Reasons for such decision will be approved and recorded for audit purposes so that they may be justifiable in the court of law (as prescribed on the Preferential Procurement Regulations 2011).

8. Contracting

The successful bidder will enter into a Service Level Agreement (SLA) with the Authority. The signed SLA will specify all deliverables (mostly stipulated under section 4) and all conditions in which the technical support will be rendered.

9. Duration of the Project

The duration of the project is for a period of 3 years from the date of appointment plus 5 years support which will commence soon after system launch, subject to the Service Level Agreement being concluded and agreed to by both Parties.