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

APPOINTMENT OF A SERVICE PROVIDER TO TEST AND BENCHMARK THE PERFORMANCE AND QUALITY OF SERVICE IN SIX PROVINCES.

1. Background

The Authority is mandated to ensure provision of good quality of service by licensed telecommunication operators and service providers. ICASA's function is to protect and promote the interests of consumers with regards to the price, quality and variety of communication services. Quality of Service can be described as the ability of a network to provide a service at an assured service level. This can be measured by the mobile network operators themselves or by an independent or a regulatory organisation.

Engineering and Technology division's strategic objective is to protect the rights of consumers by promoting the delivery of quality of services to consumers and other stakeholders. To give effect to this objective, the annual target is for QoS monitoring for voice to be extended from four to six provinces of which two of the six will be monitored for voice and data during FY 2020/21.

The Authority therefore intends to appoint consultants to benchmark QoS for mobile voice and data services offered by Cell C, MTN, Telkom and Vodacom in a multi-vendor, multi-technology environment.

2. Scope of work

The Authority invites an Open-bid with proposals from eligible service providers for drive-test monitoring of mobile voice services in the Provinces; Free State, Limpopo, KwaZulu-Natal and Mpumalanga. The drive-test will also include monitoring of voice and data services in the Eastern Cape and Northern Cape.

ICASA intends to appoint a service provider to conduct QoS measurements for mobile voice and data services offered by operators on multi-technology (2G, 3G, and 4G) environment. The results will provide an indication of quality of service experienced by end users of mobile voice and data services, and help in identifying areas where network performance needs to be improved.

2.1. Drive Test & Benchmarking

The objective of this exercise is to ascertain the effectiveness of mobile networks to provide acceptable service, by using a Service Provider to audit; identify issues in each specific network, analyse the root causes, and for the Authority to mitigate the non-performance. Key objectives of the project are:

1. To measure the following parameters:
   <u>Voice service parameters</u>
   - Call Retention: Drop Call Rate;
   - Call Accessibility: Call Setup Success Rate;
   - Call Setup Time
   - Voice Quality

   <u>Data service parameters</u>
   - Latency: Ping
   - Video streaming: Youtube video streaming and Video Mean Opinion Score (MOS);
   - Web Browsing: Static Pages and Live web browsing;
   - File sharing download speed: 3G preferred, 4G preferred File download and upload.

2. To analyse the end-to-end service quality from subscribers' perspective.
3. To benchmark the coverage position of the main four mobile network operators: Cell C, MTN, Telkom and Vodacom.
4. To produce an insightful report, for ICASA's internal Research as agreed with the Authority.
5. To ensure a full skill transfer towards ICASA personnel in the area of QoS monitoring. Training shall occur during the project and will focus on QoS parameters, measurement methodology as well as measurement and analysis tools.

2.2. Methodology

The proposal shall contain a detailed methodology and approach to attain the above objectives. The proposal shall outline the methodology, resource requirements and man-hours, hardware/software tools and expertise that will be required during the project.

The bidder(s) shall provide a detailed project plan including cost breakdown. The service provider will be required to submit weekly progress/status report during the project. ICASA and the service provider will determine the content of the weekly progress report. A final QoS report shall be submitted for each province after completion of a drive test for the province. The Project Leader shall do the on-going management of the service in accordance with the service level agreement. The service provide shall also provide a project closure report at the end of the project.

A detailed list of parameters is shown in Appendix B.

Mobile voice measurements will be measured with a device set in best available technology mode with VoLTE disabled; whereas mobile data services will be tested with a device set in 3G, and 4G Preferred modes. The details of the test plan shall include measurement profiles as defined in Appendix B for voice and mobile data services.

2.3. Roles and Responsibilities

The differentiation of roles and responsibilities between ICASA and the prospective bidder is shown in table 1:

Table 1: Responsibility matrix

Activity	ICASA	Service Provider
Field Measurements Tool (Software and Hardware)		X
Airtime	X	
Mapping and Routes	X	X
Post Processing Tools		X
Test Server		X
Vehicles (fuel and tolls, any		X

other related vehicle expenses)		
Personal Protection Equipment and Covid -19 compliance matters		X
Training of ICASA personnel		X
Reports		X
Logistics, Accommodation and Allowance for ICASA's personnel	X	
Logistics, Accommodation and Allowance for Service Provider's personnel		X

2.4. Logistics and Accommodation

The appointed bidder will be responsible for logistic arrangements such as accommodation, daily allowances and transportation of the field measurement team. ICASA will be responsible for logistics, allowance and accommodation for its own staff. It is the responsibility of the service provider to comply with Covid-19 regulations when conducting work on behalf of the Authority.

2.5. Test Area and Route Plan

ICASA will issue a route plan and waypoints for areas indicated table 3 and 4 in Appendix A. Table 3 shows areas targeted for mobile voice drive-test. Table 4 depicts areas targeted for mobile voice and data drive-test; the static data tests are also planned for these areas.

The final routes will be finalised with the appointed service provider before the start of the project.

There are five (5) areas of interest per province of which voice and data measurements will be conducted by a way of a drive test methodology. Drive test distance is estimated at 300 km per area of interest and thus 1500 km is a total drive test distance per province.

3. Period of assignment

All work is to be carried out in accordance with the time schedule as agreed with the Authority. The project is expected to be completed within eight (8) months from the date of award. Drive tests and stationary tests for data services will only be conducted in one phase, however, drive tests for voice services will be conducted in two (2) phases i.e. phase 1 and phase 2 (re-drive). The Authority will not be responsible for any cost incurred due to an extension of the project.

4. Bid evaluation

The bid will be advertised for a period of 21 working days in the Government Tender Bulletin on an 80/20 procurement principle.

Bidders will be evaluated on; a) submission of the required documents, b) functionality and c) price/bb-bee. Only bidders who meet the cut-off score of 70 points out of 100 points for functionality will be considered further for price evaluation. All bid proposals submitted will be evaluated in accordance with the 80/20 procurement principle as prescribed by National Treasury Regulations.

Table 2: Bid evaluation categories and Weights

No	Category	Weight
A.	**Price**	**80**
B.	**BBBEE Status Level Contribution**	**20**
	TOTAL	**100**
C.	**Functionality: Pre-qualification criteria**	

| 1. | **Drive test methodology**

5 = Methodology includes all the information below:

• Test plan,

• Measurement tools,

• Processing tools,

• Test servers (software and hardware)

• Datasheets,

• Standards (SABS and ITU)

• Occupational Health and Safety plan.

4 = Methodology includes information on four (4) to six (6) of the information below:

• Test plan,

• Measurement tools,

• Processing tools,

• Test servers (software and hardware),

• Datasheets,

• Standards (SABS and ITU),

• Occupational Health and Safety plan.

3 = Methodology includes information on three (3) to four (4) of the information below:

• Test plan,

• Measurement tools,

• Processing tools,

• Test servers (software and hardware),

• Datasheets,

• Standards (SABS and ITU),

• Occupational Health and Safety plan.

2 = Methodology includes information on two (2) of the information below:

• Test plan,

• Measurement tools, | **40** |

		• Processing tools, • Test servers (software and hardware), • Datasheets, • Standards (SABS and ITU), • Occupational Health and Safety plan. 1 = Methodology includes information on 1 or none of the information below: • Test plan, • Measurement tools, • Processing tools, • Test servers (software and hardware), • Datasheets, • Standards (SABS and ITU), • Occupational Health and Safety plan.	
2.		**Provide Project Plan** 5 = A project plan with: Milestones, Work Breakdown Structure, Time Schedule, Budget allocations, Responsibility Matrix, Risks and Contingency Plans. 4 = A project plan with: Milestones, Work Breakdown Structure, Time Schedule, Budget allocations and excludes: Responsibility Matrix, Risks and Contingency Plans. 3 = A project plan with: Milestones, Work breakdown structure, Time Schedule and excludes: Budget allocation, Responsibility Matrix, Risks and Contingency Plans. 2 = A project plan with only a schedule. 1 = No project plan submitted	**15**
3.		**Provide reference letters with company letter heads of QoS drive test measurements for mobile services conducted in the past/current.**	**15**

	5 = Provide more than three (>3) testimonial reference letters of work conducted in relation to QoS. 4 = Provide three (3) testimonial reference letters in relation to QoS. 3 = Provide two (2) testimonial reference letters in relation to QoS. 2 = Provide one (1) testimonial reference letter in relation to QoS. 1 = No submission of testimonial reference letters	
4.	**Provide skills transfer plan for ten (10) ICASA staff members with timeframes.** 5 = A skills transfer plan which includes training, timeframes, objectives and working methodology. 4 = A skills transfer plan which includes training, timeframes and objectives 3 = A skills transfer plan with training and timeframes 2 = A skills transfer plan submitted without timeframes 1 = No skills transfer plan submitted	**10**
5.	**Provide previous experience in producing high-quality reports that can be used internally and for publication in the media including the sample reports. *NB:(sample reports need to have company letter heads and telephone numbers for authentication)*** 5 = 4 sample reports (2 x data and 2 x voice sample reports) 4 = 3 sample reports (2 x data and 1 x voice sample reports) 3 = 2 sample reports (1 x data and 1 x voice sample reports) 2 = 1 sample report (1 x voice or 1 x data sample report) 1 = no submission of sample reports	**15**
6.	**Key personnel competency in similar projects and resume.**	**5**

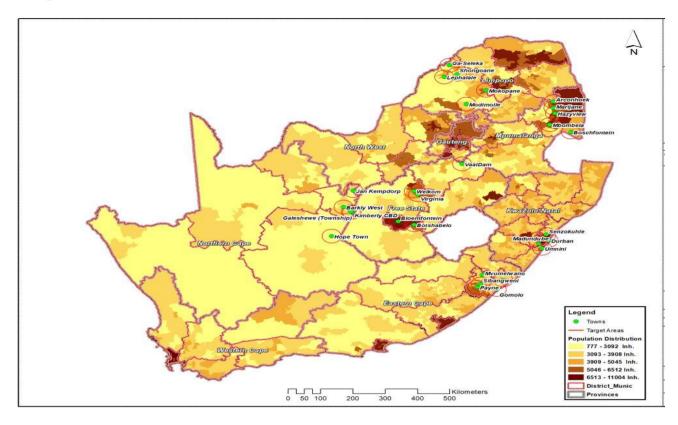|	5 = More than five years' experience and more than 2 candidates with relevant qualifications (specify what the qualifications in the engineering field e.g. B.Sc. (Electrical or Electronic) 4 = Four years' experience and at least 2 candidates with relevant qualifications 3 = Three years' experience and at least 1 candidate with relevant qualifications 2 = Two years' experience and no candidate with relevant qualifications. 1 = One-year experience and no candidate with relevant qualifications.	
	TOTAL FOR FUNCTIONAL PRE-QUALIFICATION CRITERIA.	**100**

APPENDIX A

Targeted Areas 2020/2021

Table 3: Mobile Voice-Test Targeted Areas

Province	District	Mobile Voice Drive Test Area
Free State	Lejweleputswa	Welkom
	Lejweleputswa	Virginia
	Magaung	Bloemfontein
	Magaung	Botshabelo
	Fezile Dabi	Metsimaholo NU
Mpumalanga	Ehlanzeni	Arconhoek
	Ehlanzeni	Bushbuckridge
	Ehlanzeni	Mbombela
	Ehlanzeni	Hazyview
	Ehlanzeni	Boschfontein
	OR Tambo	Mvumelwano
	OR Tambo	Lusikisiki
	OR Tambo	Sibangweni
	OR Tambo	Gomolo
KwaZulu-Natal	eThekwini	Durban
	eThekwini	Umnini
	eThekwini	Madundube
	eThekwini	Mpumalanga
	eThekwini	Senzokuhle
Limpopo	Waterberg	Mokopane
	Waterberg	Ga-Seleka

	Waterberg	Shongoane
	Waterberg	Lephalale
	Waterberg	Modimole

Table 4: **Mobile Voice and Data Test Targeted Areas**

Province	District	Mobile Voice and Data Drive Test Area	Data Static Measurements
Northern Cape	Frances Baard	Kimberly	Taxi Ranks, Clinics, Airports, Library, Tourist Attractions, Community Halls/Youth Centres, Home Affairs Offices
	Frances Baard	Galeshewe	
	Frances Baard	Jan Kempdorp	
	Frances Baard	Barkly West	
	Pixley Ka Seme	Hope Town	
Eastern Cape	OR Tambo	Payne	Taxi Ranks, Clinics, Airports, Library, Tourist Attractions, Community Halls/Youth Centres, Home Affairs Offices
	OR Tambo	Mvumelwano	
	OR Tambo	Lusikisiki	
	OR Tambo	Sibangweni	
	OR Tambo	Gomolo	

APPENDIX B

Parameters

Table 5: Voice Measurement Profiles

Voice Call Parameter	Description
Accessibility: Short Call	Call Duration (10s) + 30 seconds (for the setup and release phases) + 30 seconds (for the minimum pause interval)
Retainability: Long Call	Call Duration (120s) + 30 seconds (for the setup and release phases) + 30 seconds (for the minimum pause interval)
Call Setup Time	Time taken to setup a call -Target is 20s
Voice Quality	Average Speech Quality of MOS must be greater than 3

Table 6: Data Measurement Profiles

Test Description	4G Pref	3G Pref
FTP Download	FTP DL (15 MB)	FTP DL (5 MB)
FTP Upload	FTP UL (5 MB)	FTP UL (1 MB)
HTTP Download	HTTP Get (15 MB)	HTTP Get (3 MB)
HTTP Upload	HTTP Put (3 MB)	HTTP Put (1 MB)
Ping sessions with size 32 bytes payload	Ping (32 bytes)	Ping (32 bytes)
Video streaming from YouTube during 60s	Video: YouTube	Video: YouTube
Downloading content from the test server	HTTP Browsing: Kepler	HTTP Browsing: Kepler
Download content from live web page (Gumtree, News24, MSN)	Live Web Browsing	Live Web Browsing
Packet Delay: Ping to www.google.com	Ping (32 bytes)	Ping (32 bytes)