

ADDRESSING QOS CHALLENGES WITHIN THE AFRICA SUB-REGION (THE 3-TIER APPROACH)

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Presentation Outline

- The Issues
- Perspectives
- Addressing the Issues
- Conclusion



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QoS Issues Classification (ITU-T E.800)



- **Network Coverage-** *This category is characterized by inability of the network to provide the required signal strength (reception) for access to the network.*
- **Network Availability-** *This category is characterized by failure of the network to meet desired expectations on uptime, thereby leading to loss of service.*
- **Service Accessibility-** *This category of issues dovetails into the failure of the network to provide the conditions or resources required to successfully access a service on the network.*
- **Service Retainability-** *Issues under this category borders on the inability of the network to sustain to normal end a service that is in session.*
- **Service Integrity-** *This category is characterized by the inability of the network to deliver a service without any impairments.*



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Perspectives to QoS Issues



- **Policy-** *This perspective considers issues that can be attributed to the mandate and activities of relevant ministries, agencies and departments.*
- **Regulatory-** *This aspect considers issues that are influenced by the interventions or otherwise of the telecom regulator.*
- **Operational-** *This aspect considers issues that are contributed by Mobile Network Operators and Service Providers (E.g. Cellular Mobile (2G) licensees, 3G and BWA (4G) licensees)*

Addressing the Issues- 4Qs Approach



■ Where are we?

- *This considers the “AS-IS” of the QoS situation in any jurisdiction*

■ Where do we want to be?

- *This considers the “TO-BE” or desired expectations on QoS*

■ How do we get there?

- *This considers the STRATEGY that is required to facilitate transition from the “AS IS” to the “TO-BE” state.*

■ How will we be able to tell if have arrived?

- *This considers the “success criteria” or “progress indicators” needed to empirically assess the “TO-BE” state.*



“AS-IS” of QoS

- Historical trend of inconsistency on the part of Operators to achieve and/or maintain regulatory compliance.
- Disconnect between technical QoS and QoE-based assessment outcomes
- Gaps in existing QoS standards, assessment approach and enforcement measures among many African countries.
- Poor QoE leading to increased subscriber complaints



“TO-BE” of QoS (Using Six Sigma Concept)

- *Consistency* of compliance with QoS obligations
- Improved *consistency* between QoS and QoE (consumer survey) assessment outcomes.
- Reduced *regulatory cost* and improved *turnaround time* in enforcing compliance
- Improved QoE or general satisfaction with service delivery

3-TIER STRATEGY



POLICY	REGULATORY	OPERATIONAL
<p>Introduction by the Communication Ministry of National Roaming Policy to facilitate improved coverage and network resilience.</p>	<p>Facilitate understanding about the Regulatory Concept of ITU-T G.1000 model and the associated value chain on QoS.</p>	<p>Massive coverage (outdoor & in-building solutions) and capacity expansion programme</p>
<p>Ministry/ Attorney Generals Department to facilitate legislation against indiscriminate fiber cuts to ensure network resilience</p>	<p>Implement QoS Regulatory Framework on best practice service quality monitoring, yet in accordance with existing national laws.</p>	<p>Facilitate continuous network optimization, fine-tuning & software upgrade measures for improved accessibility, retainability and integrity performance</p>
<p>Improve coordination among relevant government agencies on site acquisition to ease network roll-out and enhance coverage.</p>	<p>Develop a “High-Level QoS Management Dashboard” to consolidate the oversight roles on QoS & facilitate an industry-led implementation of Guidelines on Infrastructure Sharing.</p>	<p>Improved network resilience programme to assure service continuity (i.e. transmission, power, hardware upgrades etc.)</p>
<p>Facilitate the formation of a National Industry Working Group on QoS/QoE with defined Terms of Reference to guide its work.</p>	<p>Participate in the standardization work of the ITU & institute a work programme for the implementation of ITU Recommendations on QoS/QoE</p>	<p>UMTS-900 implementation as practical way of boosting 3G coverage in unserved/underserved areas of the country.</p>
	<p>Ensure an incentivized spectrum auctioning & management regime that is adept to technology changes and demands of the industry</p>	<p>Improve onsite supervision by operators during road construction or related engineering projects</p>

STRATEGY (Regulatory)

- Understanding of QoS/QoE value chain across all working divisions/units on QoS is imperative for effective regulation

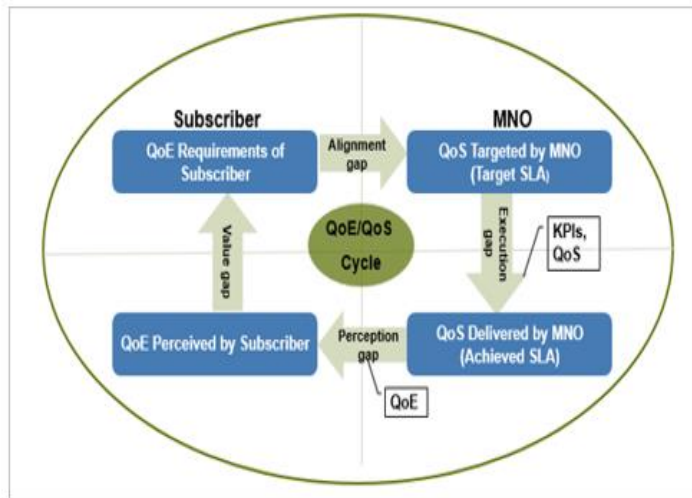
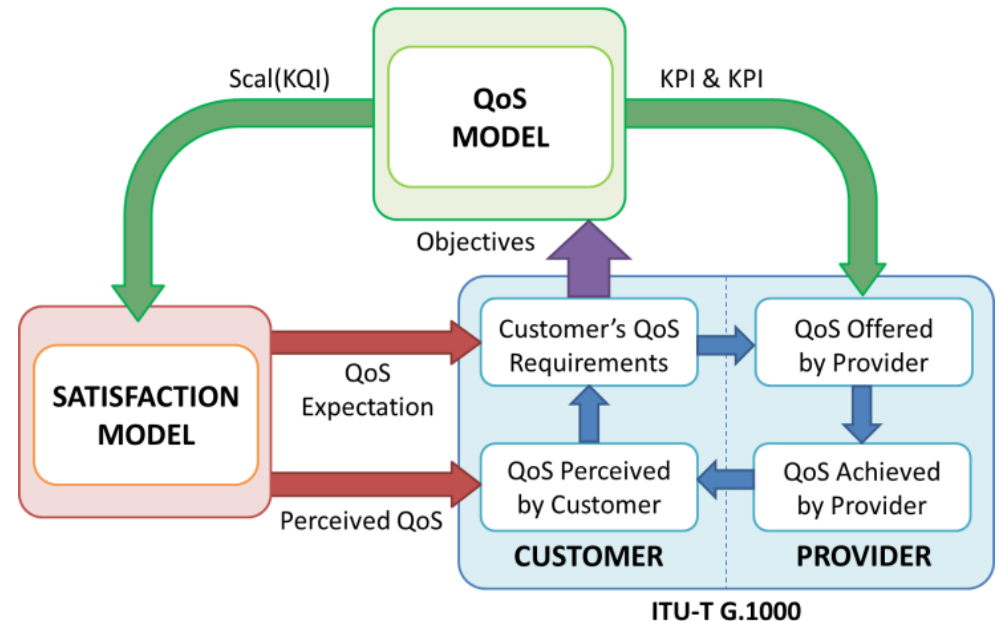
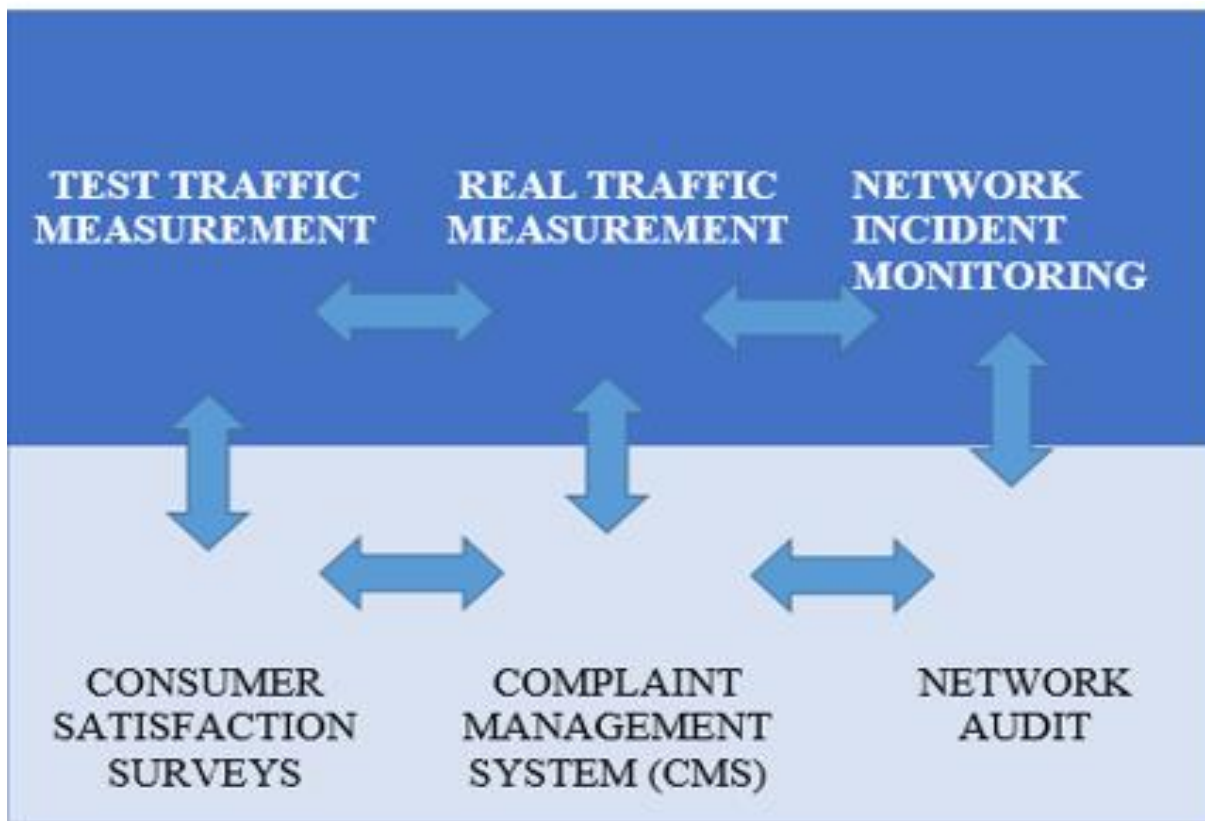


Fig.1: ITU-T G.1000 Model on QoS/QoE with Identified Gaps





STRATEGY (Regulatory)



QoS Management Dashboard (Six Sigma Concept)

(Value Proposition Comparison on MONITORING TOOLS for regulatory use)

Drive-Test (DT)	Network Monitoring System (NMS)
Provides a <i>simulation vision</i> of the QoS delivered	Provides <i>realistic vision</i> of QoS delivered
Periodic in nature due to resource constraints	Continuous monitoring (24 x7)
Unable to provide accurate information on network operational status	Readily and accurately verifies network operational status & service outages
Best suited for <i>coverage, call setup, speech quality and data speed</i> measurements.	Best suited for availability and traffic measurement KPIs such as <i>downtime, call setup success, congestion, call drops etc.</i>
Relatively long <i>turnaround</i> time in enforcing compliance (averagely 21 working days per regional drive)	Short or near real-time compliance enforcement

STRATEGY (*Regulatory*)



S/N	Internal Regulatory Issues on QoS	Suggested ITU-T Rec. to FIX the Issue
1	Poor understanding of the QoS Assessment Concept and implementation	ITU-T G.1000 and E.800
2	Issues on QoS Measurement Methodology and Framework	ITU-T E.802 and E.807
3	Inconsistency in QoS enforcement methods	Supplement 9 to ITU-T E.800 series
4	Reliability and stakeholder confidence in QoS measurement outcomes	New Annex to ITU-T E.802 and E.804
5	Inadequate understanding about the relationship between QoS and Network Performance (NP)	ITU-T E.807 and E.811





STRATEGY *(Regulatory)*

Nature of QoS Complaints	Possible Cause(s)	Diagnostic Approach	Appropriate Investigation Method
No signal bars on phone	No Coverage/ Occurrence of network service outage	Review reported incident, and ascertain affected location(s) / Is this an isolated case or general?	Test traffic- for coverage (DT) Real traffic - for network outage (NMS)
Poor clarity of voice call	Interference/ coverage problems	Is it an isolated or general case? / What time(s) of the day is this observed?	Test traffic (DT)
Frequent call drops during a conversation	Interference/ coverage problems		Real Traffic (NMS)
Inability to make calls with the sufficient signal bars	Network Congestion		Real Traffic (NMS)



Success Criteria



S/N	QoS Category	Minimum Threshold	Industry Average	Nature of Assessment
1	Network Coverage	90% of samples > -85dBm	- 85dBm	Absolute
2	Network Availability	90% uptime/day per cell	75%	Both
3	Service Accessibility	1% (for all aggregation levels)	2%	Both
4	Service Retainability	1% (for all aggregation levels)	2%	Both
5	Service Integrity	2Mbps (DL Speed) 3.5 (MOS Voice quality)	1Mbps 3.0	Both Absolute

Note 1: Success criteria can be assessed in “absolute” terms, or “over-time trending” or “Both”, depending on the demography of the area(s) under assessment as well as the objective of testing.

Note 2: Targets stated above are for guidance purposes and may be altered to suit jurisdictional preference



Conclusion



- The presentation sought to provide a **systematic method** of evaluating the QoS issues prevalent in the African sub-region considering ITU definitions and standards.
- The three-pronged perspectives to the QoS challenges identified require **improved synergy and working relationship** among the responsible stakeholders.
- A *Monitoring & Evaluation* focus group should set up by the Regulator to **assess and benchmark the progress** of each activity item **with a related success criteria**.

***Thank You for your time &
attention***

