



QoS and the Digital Tsunami

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QoS, QoE and MNOs

Mobile operators in SSA are subject to performance obligations both for QoS and QoE

A. QoS \gg QoE

C. QoS $=$ QoE

B. QoS \ll QoE

D. QoS \neq QoE



QoS & QoE ALWAYS a priority for MNOs

How do we know this?

MNOs subjected to regulatory intervention where the set of minimum standards on QoS/QoE deemed to have been breached

- Financial penalties
- Criminal prosecution
- Suspension of marketing activities, including customer acquisition
- Difficulty renewing licenses
- Reputational damage

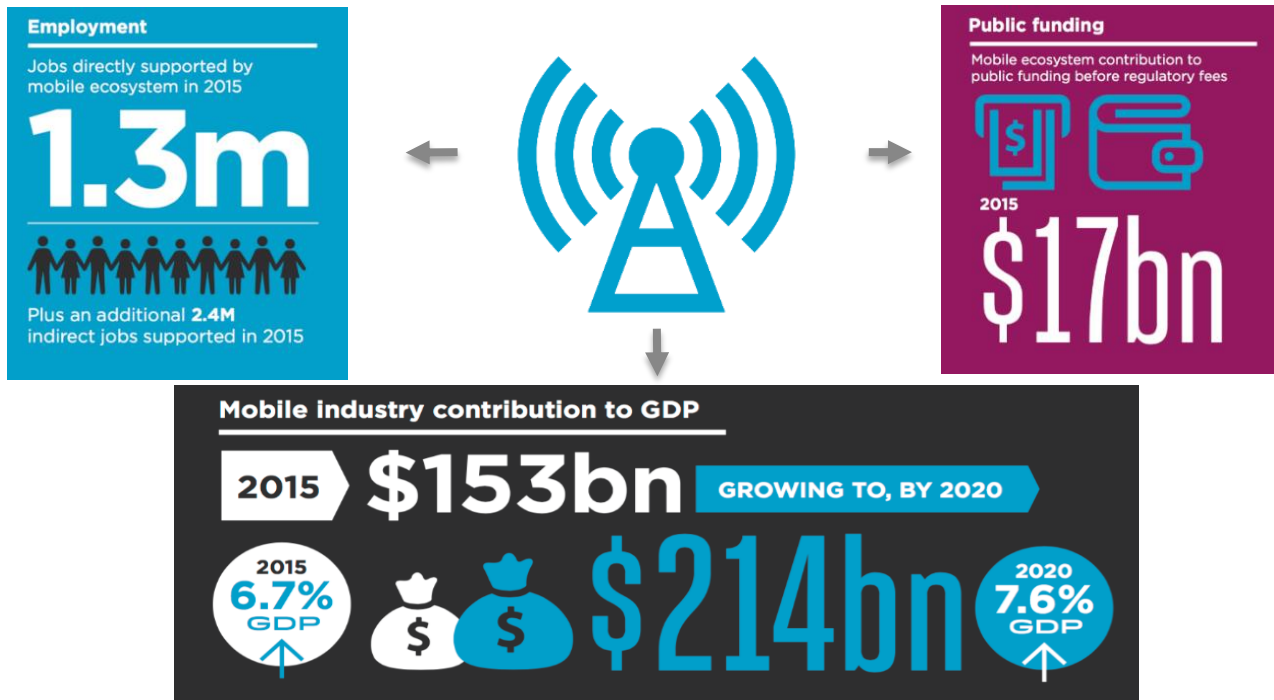
Consumer expectations

- Right of access to services
- Good quality of voice and data services
- Transparency/access to information
- Compensation for service interruption
- Etc



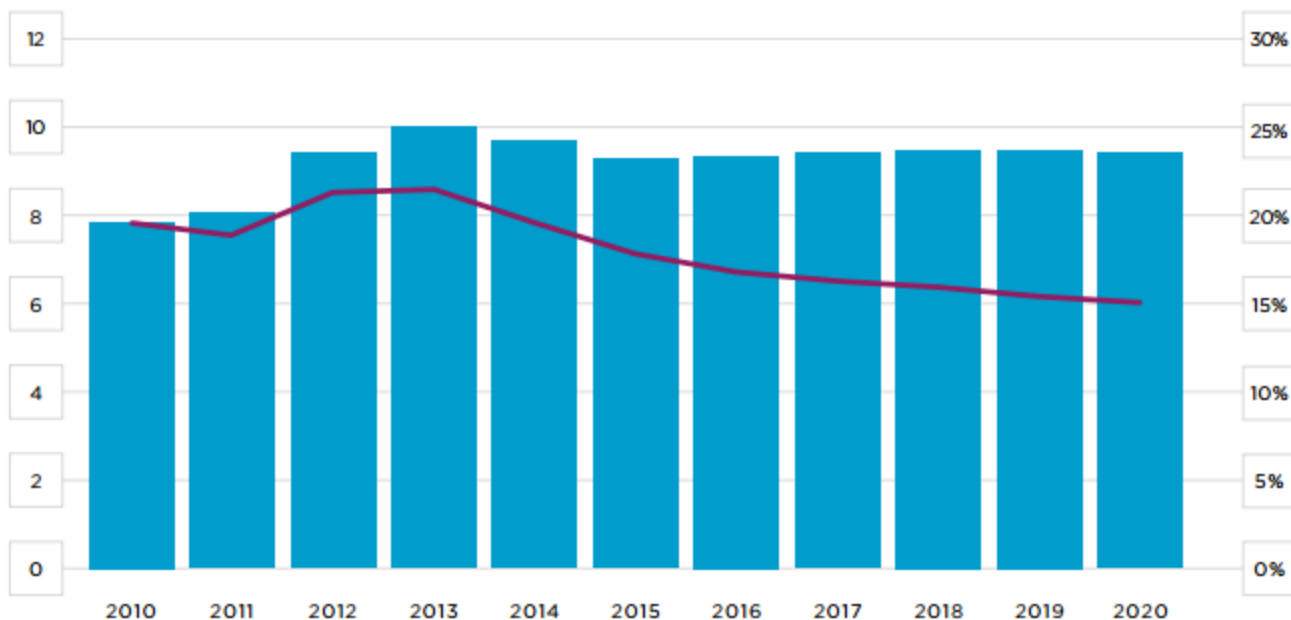
So what's the problem???

Investment is not the problem





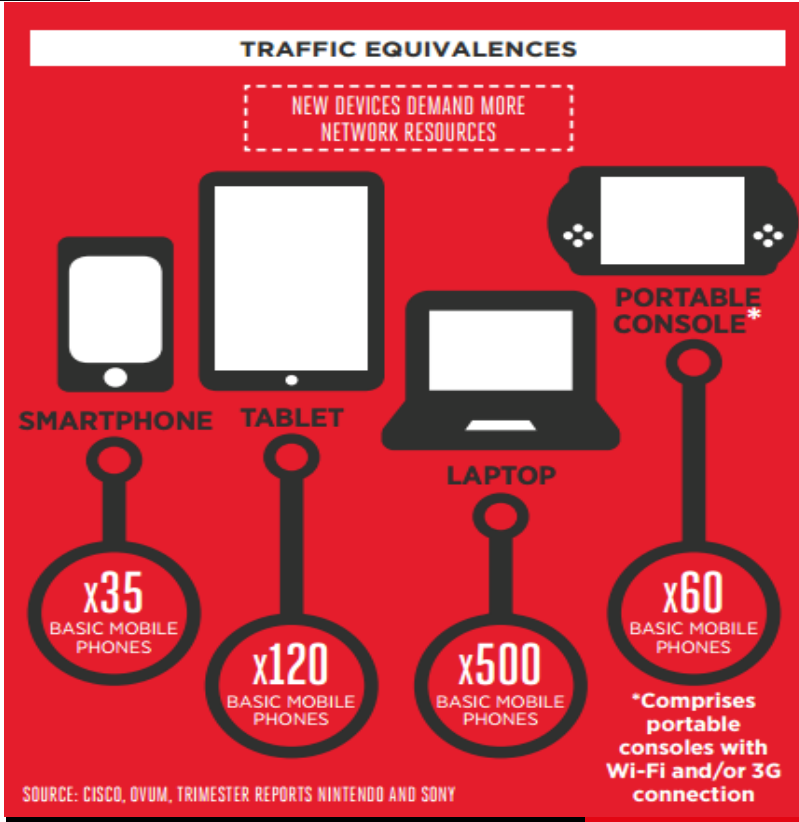
Capital expenditure in Africa: outlook steady despite cashflow pressure



Capex (\$ billion)

Capex/revenue

It's the Digital Tsunami!











Mobile services have experienced unprecedented diversification compared to other industries

Mobile devices have universalized access to voice services and are now doing the same with the Internet

Mobile operators need to deal with continually changing traffic patterns and congestion, within the limits imposed by finite network capacity, where user traffic can have a significant effect on overall network performance.

Factors affecting network performance & QoE

FACTORS AFFECTING QUALITY

 <p>THE NUMBER OF USERS VARIES FROM CELL TO CELL</p>	 <p>PEOPLE MOVE ABOUT, TRAFFIC VARIES, ACCIDENTS HAPPEN, CONGESTION OCCURS, PROTESTS TAKE PLACE, GROUPS GATHER, EVENTS ARE HELD, ETC.</p>	 <p>IN A SINGLE CELL THE NUMBER OF USERS VARIES DEPENDING ON THE TIME AND THE DAY</p>	 <p>THE CONSUMPTION PATTERN IN EACH CELL VARIES SIGNIFICANTLY THROUGHOUT THE DAY</p>
 <p>WEATHER, ESPECIALLY RAIN</p>	 <p>OBSTACLES BETWEEN TERMINALS AND ANTENNA, WHETHER FIXED (BUILDINGS) OR MOVING (VEHICLES)</p>	 <p>THE DISTANCE BETWEEN THE TERMINAL AND THE ANTENNA VARIES WHEN USERS ARE IN MOTION</p>	 <p>INDISCRIMINATE USE OF JAMMERS AND AMPLIFIERS</p>



The Digital Tsunami



Objectivity of measurements – open to interpretation



Undue complexity - is the right thing being measured?



Customer devices “QoD”



Lack of exception reporting



Competition - biggest determinant of Quality?

Enhancing competition among operators promotes sustained improvement in quality.

Number Portability facilitates user migration making it essential for mobile operators to invest in the quality of their services to keep customers satisfied and sustain growth

Knowledge is power: Information enables users to make the best decisions on service provider, and policy can be used to promote transparency –

- Reducing information asymmetries between users and service providers.
- Generating a peer pressure mechanism among operators so that the quality differentiation promotes sustained investments in continuous improvements



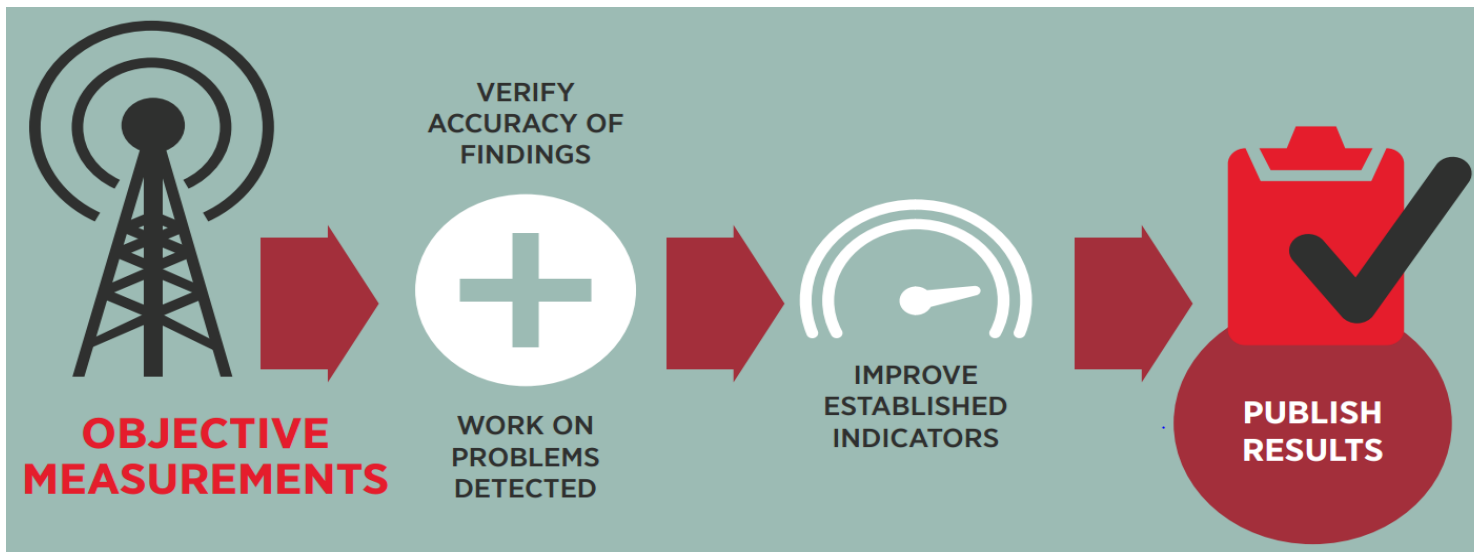
Objectivity of QoS measurements

Technical measurements of network quality performed by regulators are very important for promoting competition

- A **combination of operator-generated statistical measurements and third party drive testing** should be utilized to ensure objectivity.
- The measurement **methodology should be based on international standards** - such as those developed by ITU or ETSI
- **Automated methods** should be used to perform the drive testing, with no manual intervention - reduces risk of mistakes from human error or tampering.
- **Service area for statistical reporting & drive testing should be sufficiently large** and contain fairly large percentage of the population for it to be a representative sample of the network.
- Testing should be conducted on an **end-to-end basis on the same network** - prevent disputes on which network is responsible for a dropped call or quality degradation if inter-network testing is performed.
- The **sample size of test calls should be sufficiently large (>2000)** to ensure that it is representative of the network in the service area.
- The **test period should be sufficient in length (at least 24 hours)** to ensure that the QoS KPIs are measured during and outside of peak traffic times in order to obtain a balanced view of network performance.

Collaboration is key...

Measurement results and log files should be made available to mobile operators in advance of finalizing and/or publication of a QoS report.



Sanctions will not solve the problem

- Sanctions may punish sub-optimal performance but do not necessarily contribute to continuous improvement
- Focus on promoting the right incentives for MNOs to adequately sustain and direct their investments to address QoS
- An exclusively sanctions oriented approach could have unwanted consequences such as disincentivising innovation, distorting the market, reducing products and lowering efficiency and competition.
- Caution must be applied not to inadvertently re-direct funds intended for network infrastructure investments towards payment of sanctions – to the detriment of Digital Inclusion



Lack of access is the worst quality of service you can have



Spectrum, spectrum, spectrum!!!

Having sufficient spectrum is essential for providing quality services

Amount of spectrum allocated to an operator affects its capacity to provide a faster data speeds, better levels of coverage, improved call quality and lower DCR



Amount needed varies by country - depending on level of data demand & national priorities

One way governments can address is to ensure spectrum allocated for mobile services is actually licensed to and in use by operators

Addressing infrastructure rollout challenges

Encouraging infrastructure deployment directly impacts quality



Remove municipal barriers – have single, nationwide process for permits and approvals based on technical considerations & international standards



Use of public land and government buildings – facilitate operators' access to public spaces to provide alternatives for network deployment & boost in QoS/QoE



Infrastructure Sharing - fulfil government role in voluntary infra share by operators; enable cross-sector colocation, implement incentives, ease bureaucratic impediments

In conclusion...

- QoS is a competitive factor therefore **ALWAYS an operator priority**
- Competitive markets with **light touch regulation better** placed to produce service quality that consumers expect
- Some factors affecting QoE are **outside the control of operators**
- A **sanction regime is ineffectual** in addressing fundamental issues
- Promote **transparency on all sides** to facilitate user decision making
- Factor in **limitations of tools** measuring QoS & QoE
- Facilitate **active & passive infra sharing, cross-sector colocation** and use of public spaces & buildings
- Make **genuine efforts to solve underlying problems** before “naming and shaming”
- **Deal with jammers & signal inhibitors** and put in place effective type approval processes
- Recognize specific issues require specific solutions and ensure **relevance of chosen course of action**



Thank you

