

Measuring mobile voice and data quality of experience: Response by Nielsen to a Call for Input from OFCOM

1. Introduction

1.1. Nielsen is pleased to provide input into OFCOM's efforts to determine how to promote competition between operators to deliver a quality technical solution, as published on 23rd January 2013 at <http://stakeholders.ofcom.org.uk/consultations/mobile-voice-data-experience/>

1.2. Nielsen comes from the position of being the global experts in measurement. While we have substantial expertise in data acquisition, including acquisition of telecom service quality information, and the statistics required to ensure that the data is actionable; we also have large numbers of government (or quango) contracts to supply official data. We therefore thoroughly understand the need for accurate, transparent data in a manner that can be trusted and used to enforce pricing, transactions, contracts and damages.

1.3. This response to the Call for Input has been prepared by:

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1.4. We have structured this response as:

Benefits of using market forces to improve customer experience of mobile phones now, and in the future

Driving improved service quality through demand side information


Driving improved service quality through the supply side enforcement

Measurement via Drive test

Measurement via On-Device Meters (ODM)

Measurement through MNO data

Making the overall solution cost effective

1.5. Nielsen requests that  remain confidential. However, other sections can be shared in the public domain.

2. Benefits of using market forces to improve customer experience of mobile phones now, and in the future

2.1. Nielsen welcomes the overall approach suggested by OFCOM to create useful and authoritative data about mobile network performance in the UK, with the objective of fuelling competition in the market on service quality.

2.2. Nielsen sees two mechanisms by which an authoritative data set can drive better overall service quality: through the provision of public information that empowers consumers to make choices that favour an operator with better service quality; and through measurement that allows OFCOM

to better regulate to its goals of quality, nationwide mobile voice and data service.

- 2.3. Nielsen notes that a significant factor in consumers' experience of mobile services comes from the device, rather than the network. Throughout our responses, we highlight that OEMs and the phone or dongle models that are selected by users are important, and at a minimum users' device choice needs to be corrected for in any cross-operator benchmarking.

3. Driving improved service quality through demand side information

- 3.1. Nielsen welcomes the ambition that placing historic technical service quality information into the hands of consumers may inform their choice of network provider, and that this will provoke operators to ensure that the technical quality of their network improves the customer experience.
- 3.2. We suggest that for this information to achieve the goal, it is critical to ensure that consumers were provided with the right tools, are made aware of them, and that they are in a suitable format so that consumers use and understand the tools are time when they are making a service provide choice.
- 3.3. We also believe that consumers' needs on the network will change in the future. The Call for Input (sections 2.7-2.8) outlines that the ability to make calls is the primary driver, followed by cost, and other reasons negligible. It outlines that 83% of respondents in a Kantar survey in late 2012 rated voice/text as the most important measures of service quality; with only 7% rating internet experience as the most important network characteristic. Nielsen believes this will change, and that people will start to consider not just 'internet speed' but 'internet quality' metrics such as jitter and network response time. Therefore, it is important at this stage not to focus on 2G solutions, but to generate a solution which can continuously evolve with usage and demand.
- 3.4. For example, if Nielsen were the trusted data provider, we may consider writing high-availability APIs providing operators, resellers and switching advisors the ability to offer network experience metrics directly at the point of decision, for example on websites. This would motivate innovation in delivery, which would lead to usage, which would motivate operators to ensure good service.
- 3.5. Nielsen would repeat that network and device choice are important in consumer experience, and would suggest OFCOM allow the data to be used for the creation of tools that include choices that include both devices and service provider.

4. Driving improved service quality through the supply side enforcement

- 4.1. Nielsen welcomes OFCOM's consideration of leveraging complete and comprehensive data about mobile network performance as a lever to measure, benchmark, reward and penalise operators who are not investing or cooperating to maximum consumer benefit.
- 4.2. We understand OFCOM may have the potential to encourage network sharing in 'partial notspots' (areas with only one operator providing coverage) if these partial notspots can be independently identified. Nielsen sees that if operators are aware they can be penalised in partial notspots, then they will be motivated to infill these areas.

4.3. At present, Nielsen imagines that operators cannot usefully use their own network operating logs to identify partial notspots accurately, and can only depend on modelling.

5. Measurement via Drive test

5.1. Nielsen welcomes the clear summary of measurement technologies outlined in sections 3.30-3.39 of the Call for Input.

5.2. As a leader in many forms of passive measurement, including on-device metering (ODM) solutions and drive test, Nielsen has evaluated the benefits and weaknesses of the various solutions that have been presented to the market. Drivetest (by which we include walk tests) remains the gold standard internationally at this time, though we anticipate that ODM solutions will become increasingly significant. This is based on our commercial conversations with operators around the globe.

5.3. Drive test, which controls for everything from the data demand usage portfolio, location, time of day and day of week; as well as hardware; is excellent at generating metrics which are comparable to the previous drive, with the intention that changes in these readings is a function of the network.

5.4. While drive test is a very good solution to identifying changes in network quality, it is very expensive, and does not well represent the perceived user experience of the network.

6. Measurement via On-Device Meters (ODM)

6.1. Consumers behave differently to drive test meters. They hold their phones differently; and use their phones in a variety of ways with different needs with different exposures to poor jitter, latency, and speed. Most importantly, consumers have different devices made by different manufacturers with differing chip- and radio- hardware and configurations, and run different operating systems, and do it indoors. Crucially, the range of devices in use, and the technical demands by users on the network changes faster than any formal measurement system can hope to keep up with.

6.2. Nielsen believes that actual measurement of the experience inside phones is the only viable way to identify the users' experience. But Nielsen also recognises that operators have only a limited capacity to control the devices and methods of use. Some operators in the UK have been slow to adopt new phones into their portfolios because they believe a phone gives a poor user experience on their network. Other operators have taken this on-board and are actively providing device support (e.g, O2 Gurus).

6.3. On-device meters have a very specific advantage that, if carefully managed, continuously represents the changing real-world use of the devices, and the constantly evolving portfolio of devices on the network.

6.4. Nielsen suggests that manufacturers should be as much part of this discussion as operators, and that all considerations of how the data collected from this project should always be seen through the lens of varying device portfolios of the sample base.

- 6.5. Any data analysis needs to be corrected for device and usage scenario.
- 6.6. On-device meters distributed across large numbers of individuals, who then use their phone as normal, and report in their experience, are well known. There are many variants of meters. ODM solutions have substantial benefits that their data reflects usage, incl. in not spots. In comparison to drive test, cost per useful data point is a tiny fraction. In many cases, the increased density in popular locations (e.g., train stations) is beneficial to the analysis.
- 6.7. ODM solutions tend to paint a worse picture of a network than drive test or signal modelling, because the data points are concentrated in areas where people are densest, and when they are abnormally dense, which often correlates to where and when the network is under the most stress.
- 6.8. Getting ODM solutions into devices in the wild, and having them reporting back, is considerably more important in the data acquisition decision process than the technical solution itself. This is because a poorly distributed ODM solution will fail to capture the portfolio of devices, user demographics and usage scenarios, and breadth of locations that are essential to truly calibrate a network.
- 6.9. Nielsen generally favours measuring customer experience at the customer, and has developed a portfolio approach between crowdsourcing, panel and a variant of a targeted walk test to capture data in all areas. This solution has been designed to balance cost and need for breadth; but even in the worst case, the costs are usually considerably lower than drive test, and provide much more useful insight.
- 6.10. Nielsen notes that a few thousand meters in a city is enough to capture 100-fold the data points that drive test captures. However, the more data points the better, and solutions enforcing the operator to distribute meters in their phones, maybe motivated by OFCOM, would be a very substantial leap towards a ubiquitous and continuous measurement.
- 6.11. In addition, ODM solutions often have the ability to gather attitudinal feedback through pop-up surveys on the phone. This capability is essential to understanding the actual users' perception of quality. Since the perception of quality will depend on the user and the usage scenario, which as mentioned above (section 3.3), constantly evolves. Any long-term solution needs to constantly recalibrate perception to the technical metrics collected by the network.
- 6.12. Correlating perception, and maybe intention to churn, or NPS scores, to poor network quality experiences, is also very important to operators. Nielsen suggests that connecting poor network experience to churn or poor consumer satisfaction creates a connection between underinvestment in the network and lost revenue, and will be a component in OFCOM's desire to see operators invest more, or more cooperatively.
- 6.13. Furthermore, ODM solutions have the ability, albeit on a more limited way, to capture the roaming experience. Data is concentrated in countries where many Brits travel, which is desirable. OFCOM and operators together are able to ensure that a good standard is delivered abroad.

7. Measurement through Mobile Network Operator (MNO) data

- 7.1. Nielsen welcomes the conversation started in the Call to Action about collation of MNO operational log data to calculate real network experience metrics in section 3.22-3.25, and in 3.35, at least for technically measurable metrics such as dropped calls.
- 7.2. Individual MNO data is very rich and can be used reliably to determine various network performance metrics for that operator. It is under-representative on data where the network is poor, because of consumers' choices not to use a phone or connect with an operator where the network is poor. MNO data will also fail to convert the basic technology metrics into any continuous experience metric (such as call quality), because of the impact of the device on the experience.
- 7.3. MNO data logs are also unable to detect call attempts where there is no signal. They are also unable to determine the reason of the poor experience in many cases, which could be network or device related (or both).
- 7.4. Nielsen notes the suggestion to collate network experience metrics from all MNOs to create granular benchmarking reports. Nielsen notes that very few cross-operator collaborations have been considered successful in the UK unless mandated by law.