

# ITU Workshop on Telecommunication Service Quality

**Istanbul, Turkey, 3-4 September 2018**

Programme and presentation material available at

<https://www.itu.int/en/ITU-T/Workshops-and-Seminars/qos/201809/Pages/programme.aspx>



## Takeaways and Conclusions

1. Understanding real-world mobile network experience
  1. How to overcome the key challenges in measuring the QoS of mobile network experienced by customers, with the massive increase of mobile smarter devices data?
2. Emerging Enterprise application of autonomous UAVs / drones: the QoS & QoE from modern telecom networks
  1. Drones are expanding and can be implemented in any wireless network; and drones have to be controlled, monitored continuously; QoS has to be ensured to avoid unpredictable accident.
  2. For drones applicability, cellular mobile network is the very robust, cost effective and reliable network compared to other wireless network. Accordingly, it is time for telecom operators to think about redesigning cellular networks, by taking into consideration routes for drones and their QoS requirements / Class of Services.

## Suggestions to ITU-T SG12

1. It was noted that, there are some initiatives in SG12 about QoE / QoS crowdsourcing measurement methodology; Open Signal was invited to join the discussion.
2. SG12 to think about development of QoS provision and QoS requirements for UAVs / drones applications.

### Takeaways and Conclusions

1. E2E application testing is starting to become one of the most important trends in network testing – end user perceived quality
2. The characteristics of the QoS / QoE measurement campaigns (equipment, test scenarios, number of samples, etc.) depend primarily on the purpose of using their results

### Suggestions to ITU-T SG12

1. If high-level KPI measurements could be the most accurate measurement of QoE, then it would be advisable to specify value intervals and characterize them (from bad to excellent)

## Takeaways and Conclusions

1. As network and services grow, Network Virtualization is becoming essential for E2E QoS / QoE as it enhance user experience and decrease latency.
2. How QoS in IoT and 5G network can be employed and benefits.
3. Benefits of virtual probes in VNs.

## Suggestions to ITU-T SG12

1. Show hands on NV cases, benefits earned
2. Explore and assess QoS / QoE KPIs for IoT and/or 5G networks

## Takeaways and Conclusions

1. Highlighted the differences between QoS and QoE, and between the customer/user and service provider domains
2. Identified the (6 classes of) components of 360-deg video QoE
3. Content quality and simulator sickness have significant impact on QoE
4. Monoscopic vs. stereoscopic VR
5. Discussed the *time to load scenario* KPI and potential role for adaptive streaming to adapt experience to network conditions

## Suggestions to ITU-T SG12

1. Adhere to own definitions and terminology. New Application Guide for the concept of QoE might help.
2. Consider the material and inputs on 360-deg video and VR app testing in related existing work items.

## Takeaways and Conclusions

1. For fixed and mobile broadband QoS measurement, the use of software-defined measurement tools embedded in the subscriber's own CPE and running in background are currently in use by operators.
2. Customer experience management and network evolution TIM. For CeX, mobile measurement methods is being more common.
3. NFV/SDN deployments are increasing, operators need to measure their virtualized infrastructure. Especially mobile operators need to adopt more dynamic and real-time assurance systems to assure their networks and services.

## Suggestions to ITU-T SG12

1. Some subscribers may not accept measurement applications running in the background.
2. Contributions are welcome to advance work item Y.cvms due to the big number of NFV/SDN deployments.

## Takeaways and Conclusions

1. Popular OTT measurement solutions are commonly used in the industry.
2. Operators are measuring the performance of popular OTT applications in their network to make optimization and assure a good service delivery.
3. Regulators recognize the importance to raise transparency on the performance of popular OTT applications in operators' networks.

## Suggestions to ITU-T SG12

1. Based on contributions, discuss if regulators should focus on raising consumer awareness on the readiness of the operators' networks to run popular OTT applications, by measuring and publishing information about the QoS of popular OTTs.

# Next SG12 workshop and meeting: Geneva, 26 November – 6 December 2018

