ITUWebinars

# ITU Workshop on performance, quality of service and quality of experience

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http://itu.int/go/qsdg2021

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# Summary of workshop outcomes and key takeaways for QSDG

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# Network performance, QoS and QoE in the light of a global pandemic – 2021 update

## Conclusions

Covid-19 pandemic lockdowns challenged the performance, QoS and QoE of Internet and Telecom networks due to the:

- Increase of internet traffic which affected some key parameters like Download Speed (decreasing average download speed), latency, etc.
- Actions taken by the regulators, operators and service providers such as suspension of QoS measurements, KPI for OTT services, changes in the monitoring strategies, rate adaptation of streaming services, among others
- Change of network busy hours (In some countries, network busy hour changed from evening hours to noon during lockdowns).
- Congestion of some routes due to the unexpected move of traffic, from one area to another.

## Recommendations/next steps

To stabilise the COVID-19 pandemic situation, especially lockdowns, the following steps were implemented:

- **Operator side:** Increasing Internet Capacity and Caching popular OTT applications. Caching OTT applications fastened to decrease international data usage and host traffic inside country which improved the quality of the applications (especially the RTT and retransmission values).
- **OTT Content provider** (e.g., Netflix) **side:** improved partnership with ISPs around the world and enabled enough caches to allow better provision of Netflix contents and improve the quality experienced by customers. Advances in (adaptive bitrate) video streaming technology.

# Emerging trends in performance, QoS and QoE

## Conclusions

1. Industrial grade private wireless networks (4.9G today and 5G next):

- The popularity of private networks is increasing day by day. QoS and QoE is more crucial in private networks because they are being used / or will be used in Industry 4.0.
- Private 4.9G/LTE in use today: supports 85% of industrial applications, shows significant benefits over existing industrial connectivity solutions. Have low latency (less than 10ms) and reliable.
- 5G: have higher bandwidth, reliability, low latency (up to 0.5-1ms in 3GPP Rel-16), security & slicing. To be used in Industrial IoT (3GPP Rel-15), Transportation IoT (3GPP Rel-16), etc.
- 5G analytics: installation of virtual probes, E2E slice monitoring, real-time event triggering, monitoring of new services such as EPS Fallback & VoNR, and so on.
- Network data analytics function (NWDAF): defined in 3Gpp Rel16 incorporates standard interfaces from the service-based architecture to collect data by subscription or request model from other network functions and similar procedures. NWDAF will play a very important to measure performance management in 5G context.

2. Practical experience of application of ITU-T E.806:

- Monitoring system for binding tests (e.g., RF probes, OSS): identifying peak hour calculation, sample calculation of municipalities, then Random Selection, measurement campaign, compliance verification.
- Monitoring system for non binding tests (e.g., crowdsourcing, RF probes, OSS)

3. 'Uberizing' network testing:

- Autonomous testing leveraging rideshare operators, delivery drivers, etc. with specialized handsets.
- Utilize both legacy drive testing and crowdsourced approaches for enhanced sampling.
- Indoor testing a challenge.

## Recommendations/next steps

- Explore network data analytics function (NWDAF) in context of existing SG12 literature
- Need for standardized 5G QoS / QoE KPIs and testing methodologies
- Consider additional E.812 use cases

# Next Study Group 12 meeting

- E-meeting, 12-21 Oct 2021
- More information at: https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx