

Question 10/12 – Conferencing and telemeeting assessment

(Continuation of Question 10/12)

1 Motivation

In today's society, audio and audio-visual telemeetings and audio- and video-conferences are gaining in importance. The term telemeeting is used here to cover with one term all means of audio or audio-visual communication between distant locations.

If the perceived quality is good enough, telemeetings can be used instead of face-to-face meetings, which will reduce the needs for travelling and in turn reduce the negative effects on our climate. The travel time and cost can also be reduced.

To achieve this goal there is a need to develop an agreed way of quantifying the quality of experience of multi-party services that are conversational and interactive.

A telemeeting is often a multipoint communication, where the participants can use different types of equipment to connect to the (virtual or real) meeting space, e.g. by fixed phone, mobile phone, PC, videoconferencing or eXtended Reality (AR, VR, MR) equipment. To obtain a good evaluation of the telemeeting quality of experience, the quality perceived by all participants in a telemeeting needs to be assessed.

There are standardized subjective and objective test methods for several components in a telemeeting, such as speech, audio and video codecs, characterized by bit rate (fixed or variable), frame rate, resolution, noise cancellation, acoustic reproduction quality, background noise, and synchronization and transmission impairments. Some recommendations on how to assess the interaction between these factors are available, too. In a telemeeting context, however, these factors need to be assessed in the light of multiple users connected via possibly asymmetric links. The initial focus has been on subjective assessment strategies. The results from performed tests can then form a base for objective quality assessment of telemeetings and can provide insights on quality aspects for telemeeting services. So, the scope of Q10 includes multimedia subjective assessment, objective modelling as well as QoE.

The following Recommendations/Supplements, in force at the time of approval of this Question, fall under its responsibility:

P.1301, P.1302, P.1305, P.1310, P.1311, P.1312, P Suppl. 26

2 Question

Study items to be considered include, but are not limited to:

- How can the quality of experience of multiparty audio, audiovisual and XR telemeetings be evaluated?
- What is the quality impact of the different ways of connecting to a telemeeting?
- What is the quality impact of multiple users connected to the telemeeting from one single-location, from multiple locations or via links of highly different quality?
- What aspects of communication performance need to be addressed when it comes to multiparty interaction across links with delay or limited resources for audio and video?

- How can different quality aspects related to telemeeting quality be quantified, and how can their relative importance for the whole telemeeting quality be assessed with standardized subjective and objective evaluation methods?
- How do telemeeting assessment methods scale with the number of participants?
- Which performance criteria need to be assessed, when it comes to telemeetings in a group-collaboration context?
- How can spatial sound and video be evaluated in a telemeeting (via headphone- or loudspeaker reproduction, with problems such as the microphone placement, echo-cancellation, camera adjustment, lighting conditions, etc.)?
- What are the relative roles of the transmission, the conference bridge or server, and the terminal equipment being employed on quality perception, with regard to the user experience of the service?
- What is the additional impact of data media such as presentation slides on user perception?
- Which are the new challenges when it comes to the use of XR technologies for telemeetings?
- Which measures beyond conventional quality scores, (e.g. communication behaviour, cognitive effort, or task completion) should be considered for a comprehensive assessment of telemeeting quality?

3 Tasks

Tasks include, but are not limited to:

- maintain a Recommendation (P.1301) on how to subjectively quantify the quality of audio and audiovisual multiparty telemeetings, where the participants can have different types of connections to the meeting
- maintain a Recommendation (P.1305) on how different delays for different participants affect the meeting quality. Suitable test tasks for evaluation methods of interactive multiparty audio and audiovisual telemeetings are needed
- maintain a Recommendation (P.1302) on subjective and objective methods for simulated conversation tests addressing audio and audiovisual call quality
- maintain a series of Recommendations (P.1310, P.1311, P.1312) on how to evaluate the perceived quality of telemeetings using spatial audio. The methods should be applicable to listening through both headphones and loudspeakers
- develop a Recommendation on the use of auditory and visual cues for high-quality telemeetings in different application contexts such as business and private meetings (including, for example, aspects such as eye-contact and other visual cues, e.g. in the light of technical characteristics such as screen sizes)
- develop a Recommendation on how the quality impact of separate components in a telemeeting that have been tested separately can be weighted together to give an overall telemeeting quality value
- develop a Recommendation on how to assess the QoE of eXtended Reality (XR) telemeetings
- develop a Recommendation listing all different types of telemeetings and relevant QoS and QoE aspects in form of a taxonomy including time to join, screen sharing, application feedback, etc.

- develop a Recommendation on remote operations including communication aspects
- develop a Recommendation on the QoE aspects of haptics in remote control and telemeetings
- develop a Recommendation on the importance of audio-visual congruence (congruence between individual audio and video streams, placement of participants on the screen)

An up-to-date status of work under this Question is contained in the SG12 work programme: http://www.itu.int/ITU-T/workprog/wp_search.aspx?q=10/12.

4 Relationships

WSIS Action Lines

- C2

Sustainable Development Goals

- 9

Recommendations

- P-series, G-series

Questions:

- 5/12, 6/12, 7/12, 9/12, 13/12, 14/12, 15/12, 19/12

Study Groups:

- ITU-T SG5, SG9, SG16
- ITU-R WP6C

Other bodies

- ISO-MPEG, 3GPP, IETF, ETSI, VQEG, VR-IF, Qualinet