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DISCUSSION ON VOICE AND AUDIO COMMUNICATION INTEROPERABILITY IN SPACE MISSIONS

Abstract

This paper presents a thorough discussion on the interoperability of voice and audio communication, which is essential and vitally important in space missions. The result of the discussion is prepared for and ready to be included in the recommendation document of the Voice working group of CCSDS. The voice and audio communication models in space missions can be identified as real time voice communication and non-real time voice communication. The real time voice communication has two categories which are point to point communication and that among multi-points.The services in voice and audio communication systems include voice summation, voice recording and playback, voice and audio file, and voice/message translation. The applicable compression algorithms are mainly from ITU-T standards and MPEG standards. Many key factors should be considered while making the decision,such as data rate, voice and audio quality, codec delay, application status, and patent as wll. As for the ground segment,G.711, G.729/G.729A,and G.722 are recommended while G.729/G.729A are recommended for communication in gound to space segment.Besides, AAC can be used for scenario with high quality audio requirement. The transmission protocol stacks are specified as well for voice and audio communication. As for real time communication in ground segment, DS0 channel of E1/T1 can be used and VoIP are much more popular. As for the voice communication in ground to space segment, vitual channels of data link layer can be directly used for voice and audio data transmission while VoIP used when IP over CCSDS is implemented.