

ITU-T Workshop

Video and Image Coding and Applications (VICA)

Abstract

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Session: 1: Network platforms

Title of Presentation: Video and image coding in mobile networks

Perhaps the largest growth potential of image and video coding lies in the use of mobile technology. Already a significant percentage of mobile phones include a camera and a color display. UMTS networks currently in the phase of mass deployment allow, for the first time, the use of multimedia communication outside the home/office environment.

The Third Generation Partnership Project continues, as a successor of ETSI's highly successful GSM project, with the creation of Technical Specifications and Reports for mobile phone technology. 3GPP2 serves in a similar role for those communication industries that did not fully embrace GSM, i.e. in North America and Japan. While differing in the details and the terminology used, key concepts of 3GPP and 3GPP2 specifications are aligned: the use of IP technology standardized by IETF, and visual media codecs standardized by ITU-T and ISO/IEC. Both 3GPP and 3GPP2 also work on a similar set of services, namely point-to-point and multicast/broadcast streaming, IP-based video telephony, and upload/download/playback of multimedia files conforming to variants of the ISO container format.

Due to their high error rates on the link layer, the networks employed by mobile phones pose specific challenges to the protocol implementations and to the media formats. These environmental constraints and the complexity restrictions stemming from the nature of battery powered devices, lead to a very specific set of requirements.

As of today, almost all mobile phones include JPEG. Many video capable phones include H.263 and MPEG-4 Part 2 simple profile. H.264 is appearing in phone-based broadcast services in Korea, and as an option for local recording/playback in premium phones from various manufacturers. Mass deployment of H.264 in mobile phones is expected with the roll-out of 3GPP Rel. 6 capable devices. No other image/video compression standards are currently deployed or under consideration, and a significant percentage of the industry does not see a need for a very quick adoption of standards currently under development.

3GPP's and 3GPP2's codec working groups (and specifically the video ad-hoc group in 3GPP-SA4) are active in the selection of codecs for certain services, and in sub-profiling the codecs (and packetizations). This is done according to the requirements of our specific products and services. However, we are becoming increasingly concerned about the service quality offered by mobile video transmission, especially for real-time and broadcast/multicast services. This is addressed by a Work Item with the goal of specifying the minimum codec performance under error prone conditions. Here our industry would certainly welcome more guidance from the image/video standardization groups, e.g. in the form of test model modes and software for low complexity and error resilient video transmission.