

## MPEG-4

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MPEG-4 is the standard of choice for the converging world of digital audio and video. MPEG-4 is the new standard providing core technologies for efficient storage, transmission and manipulation of multimedia data in audiovisual environments.

The standard is developed by the Moving Pictures Experts Group (MPEG) of the ISO who has also introduced the two successful standards MPEG-1 and MPEG-2 used for storage of audiovisual information on CD-ROM at low bit-rates (MPEG-1) and the generic coding of digital TV and HDTV signals at higher bit-rates (MPEG-2).

The main goal of the new MPEG-4 standard is to provide an open standard in order to cope with the requirements of current and future multimedia applications. MPEG-4 has been developed in response to the growing interest of consumer electronic industries, telecommunication companies, broadcasters and computer enterprises as a new standard for the coding of audiovisual information in multimedia environments. Therefore MPEG-4 covers a wide range of applications, bit-rates, resolutions, qualities and services. This makes MPEG-4 the ideal format for media delivery over different types of transmission or storage technologies.

Because most multimedia applications possess an interactive character, MPEG-4 allows a facilitated access to both natural and synthetic video and audio data called content based access. Whereas MPEG-1 and MPEG-2 only provide frame based functionalities as fast forward, MPEG-4 using content based functionalities makes it possible to access and interact with single objects of the coded scene.

Further, MPEG-4 offers two new functionalities referred to as robustness in error-prone environments and content based scalability. These functionalities allow MPEG-4 encoded data to be accessible over a wide range of media and with a various quality in terms of temporal and spatial resolutions.

Also, regarding existing coding standards like MPEG-1, MPEG-2 or H.263 - MPEG-4 offers a better coding efficiency, which improves the quality of coded video and audio.

Possible applications of the MPEG-4 standard are broadcast, internet video, interactive video games, infotainment applications, interactive storage media, content based image and video databases, real-time video communications (videoconferencing, videophone), mobile multimedia, digital television set-top boxes, studio and TV (post-) production and many others.