Fraunhofer Institut
Integrierte Schaltungen

MPEG-4 Video Solutions

The MPEG-4 standard is a synonym for highest video quality at lowest bit rates. With MPEG-4 Part 2 Video and MPEG-4 Part 10 AVC the standard contains two of the most efficient video codecs available.

Fraunhofer IIS offers quality and speed optimized software implementations of MPEG-4 Part 2 Video and MPEG-4 AVC encoding and decoding algorithms on various platforms.

MPEG-4 AVC / H.264

MPEG-4 Advanced Video Coding (AVC), also known as MPEG-4 Part 10 or ITU-T H.264, represents the latest video coding standard. Due to its high coding efficiency, screen-filling video in good quality at data rates of less than 1 Mbit/s becomes possible. Using more sophisticated coding algorithms, it offers a highly increased coding efficiency compared to MPEG-4 Part 2 or MPEG-2 Video, while being more challenging in terms of computing power or memory requirements.
Fraunhofer IIS MPEG-4 AVC encoder and decoder implementations offer support for all AVC profiles (baseline, main, extended, high) on various platforms.

Applications

MPEG-4 AVC: A worldwide standard

MPEG-4 AVC can be implemented in a variety of applications from broadcasting to mobile devices. Amongst others, it is integrated in the following standards:

- 3 GPP, the multimedia standard for the next generation of mobile phones
- Digital Video Broadcasting (DVB)
- HD-DVD and Blue-ray, the next DVD generations
- Internet Streaming Media Alliance (ISMA) which enables streaming of multimedia content over the Internet

DSL TV

High-quality video transmission with multi-channel sound through DSL connections is one of the numerous applications of the MPEG-4 AVC codec implemented by Fraunhofer IIS. This is realized by the combination of MPEG-4 AVC with today´s most efficient audio coding format within MPEG: MPEG-4 High Efficiency Advanced Audio Coding (HE-AAC). Enhanced by the Spatial Audio Coding extension of Fraunhofer IIS, this audio codec provides multi-channel

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High-quality movie playback on mobile devices

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sound at very low bit rates. Thus, a total bit rate of only 500 kbit/s is sufficient for ISMA 2.0 compliant streaming of video in TV size and surround sound.

Movies in your pocket

Due to highly optimized implementations for embedded processors by Fraunhofer IIS, MPEG-4 AVC and MPEG-4 HE-AAC can also be combined for real-time movie playback on ARM® based mobile devices, like Personal Digital Assistants (PDAs). With the MPEG-4 AVC Baseline Profile, optimized for Wireless MMX™ on Intel XScale PXA27x processors, a video resolution of QVGA (320x240 pixels) at 25 frames per second can be achieved.
Together with MPEG-4 HE-AAC, high-quality movie playback on mobile devices becomes possible.

MPEG-4 Part 2 Video

MPEG-4 Part 2 Video was standardized in 1999 and is widely used in a huge number of devices and players, such as 3G mobile phones or digital cameras.
The MPEG-4 Part 2 Video codec offers several profiles for video coding:
The "Simple Visual Profile" (SP) features a very low computational complexity and is designed for applications requiring low bit rate and resolution.
The "Advanced Simple Visual Profile" (ASP) offers better video quality at higher resolutions and is more complex in terms of computational complexity.
The Fraunhofer IIS MPEG-4 Part 2 Video encoder and decoder fully support SP and ASP profiles at all levels as well as Core and ACE profiles for coding of arbitrarily shaped video objects.

Video-on-demand through DSL connections can easily be implemented using Fraunhofer IIS MPEG-4 video and audio coding solutions

Availability

The Fraunhofer IIS MPEG-4 video software is designed platform-independently. The main target platforms are Windows and Linux PCs, MacOSX and PocketPC-PDAs with ARM® processors.
The Fraunhofer IIS MPEG-4 Part 2 Video and MPEG-4 AVC encoders and decoders are available as source code and as object code for Win32, x86-Linux and Windows Mobile 2003 for PocketPC.
Support for other platforms as well as free evaluation software are available upon request.

Licensing

The software licensing of Fraunhofer MPEG-4 video and audio software is handled by Fraunhofer IIS.
For more information, please contact amm_info@iis.fraunhofer.de.

The MPEG-4 AVC patents, however, are licensed by MPEG LA (www.mpegla.com) and VIA Licensing (www.vialicensing.com) while the MPEG-4 Part 2 Video and Systems patent licensing is done by MPEG LA.