

MPEG-4¹ Video Coding

SEDA Solutions'® in-depth knowledge and expertise in video coding gathered through years of following the standard body as well as implementation of the MPEG-4 video codec allows SEDA Solutions® to confidently support its clients in their programs for developing systems or sub-systems based on video standards such as MPEG-4 and/or H.264².

MPEG-4 is an ISO/IEC standard with designation ISO/IEC 14496. It was finalized and made into a formal international standard in 2000. Since then several additions were made to the standard, notably the addition of the Simple Profile Level 0 with suitable complexity to be used in mobile environments such as the UMTS 3GPP networks. The MPEG-4 standard improves on the MPEG-2 standard in both compression efficiency and coding flexibility, and hence covers a wider range of applications. The MPEG-4 part 2 (visual coding) standard was developed to address applications in emerging fields including, but not limited to, digital television, interactive graphics with synthetic contents, interactive multimedia over the internet, and interactive video games.

SEDA Solutions® provides design and implementation services with particular attention to software/hardware partitioning, complexity reductions and fixed-point implementations for various video standards. SEDA Solutions® customizes and optimizes encoder and decoder algorithms to work on any targeted processor platform. In addition, SEDA Solutions® also provides support for integrating the encoder or decoder with the end-user system.

SEDA Solutions® has already implemented the MPEG-4 video encoder and decoder for the simple and core profile on multiple platforms. The implementations are based on existing fixed-point DSP core platforms. Due to the limitations of the DSP cores, several hardware accelerators were identified and designed to cope with the huge computational burden at the encoder as well as the decoder side. Typical encoder and decoder operation figures for Simple Profile Level Zero, on a conventional 16 bit fixed point DSP processor, are provided in the table below.

Module Name	MP3 Decoder	MP3 Encoder
Data Size	16/32	16/32
Instruction Width	32	32
Data RAM ³	<8k	<8k
Data ROM	7136	7136
Program Size	6685	7823
Cycle MIPS ⁴	35	65

SEDA Solutions'® approach is not just to depend on hardware resources but also to enhance the quality and simultaneously decrease the computational complexity through algorithmic modifications and carefully chosen design approaches. The end goal and result is a final product which is easily distinguishable by a large performance margin from that of its competitors.

For more information on Video related products and services please visit our web site at www.sedasolutions.com or contact us by email at info@sedasolutions.com.

¹ Moving Picture Experts Group

² H.264 is another name for the ISO MPEG-4 part 10 video.

³ Limit imposed by design restrictions

⁴ Million Instructions Per Second

Video

