



Preface

Special Issue on Advanced Technology and Application of H.264/AVC

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Video compression technology has a long history, and after a long period of basic research, ITU-T H.261 was established as the world's first video compression standard in 1990. After that, video compression technology progressed steadily, giving rise to the MPEG-1 standard followed by the MPEG-2 and MPEG-4 standards. The MPEG-2 standard came to be used in a wide variety of video fields such as digital versatile discs (DVDs), broadcast-satellite broadcasting, digital-terrestrial broadcasting, and surveillance equipment. Its widespread adoption has prompted the replacement of almost all conventional analog video equipment by digital video equipment over the last ten years. The MPEG-4 standard, meanwhile, has led to new applications such as videophones and video-clip playback on mobile devices.

In recent years, flat-screen TVs compatible with high-definition television (HDTV) specifications and broadband network connections have been spreading to ordinary households, reflecting the rapidly expanding role of information in everyday life. The fields of broadcasting, home appliances, communications, and information are merging, and there are increasing expectations for new services such as IPTV to enable anyone to access diverse and high-quality content with ease. At the same time, the need has been felt for a coding system with an even higher compression ratio than that of MPEG-2.

In response to this need, the H.264/AVC standard, which can achieve compression efficiency far higher than existing technologies, came to be developed as a joint effort by the International Telecommunication Union (ITU) and the International Organization for Standardization and International Electrotechnical Commission

(ISO/IEC). This standard incorporates technology based on proposals made by Fujitsu arising from more than 20 years of Fujitsu R&D of video compression technology. The superb performance that has been demonstrated by H.264/AVC so far is encouraging its adoption in next-generation DVDs, communication satellite digital broadcasting, and IPTV. However, the H.264/AVC standard requires an encoding complexity ten times that of MPEG-2, so this problem must be overcome to enable its practical application.

In this special issue, we introduce the results of Fujitsu's R&D efforts toward solving this problem from the viewpoint of providing a common platform suitable for new services and solutions that meet the needs of the H.264/AVC market.

1) Practical H.264/AVC technology

H.264/AVC high-picture-quality technology based on original video compression experience accumulated over more than 20 years

2) LSI

Fujitsu's H.264/AVC-compliant codec LSI based on world-leading technology

3) Video transmission equipment

H.264-compliant HD transmission equipment based on IP network technology with a proven track record

4) Audio encoding technology

High-quality audio encoding technology combining high-efficiency quantization technology and original audio models developed in speech-coding research

With the aim of creating new services that make use of HDTV and broadband networks, Fujitsu will continue to provide outstanding products and perform fundamental R&D under the catchphrase "Fujitsu for Image Processing".