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# *New Standards for New Media: MPEG-4*

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Philo T. Farnsworth, Boy Area video pioneer, and his invention: television.

# History of Compression

In 1984 AT&T demonstrated the first digital transmission of television signals from the Summer Olympics in Los Angeles. The Digital Light wave Transmission System (DTLS) didn't compress the video, it took 8-bit video samples and put them on a fiber optic transmission link back to New York.

# History of Compression

In the late 1980's Bellcore, the research arm of the phone companies, undertook the first trial of compressed digital video, comparing proprietary codecs from NEC (DPCM) and Alcatel Telettra (DCT) among others in an 8 city video network. In 1992 Pacific Bell tarified this concept as  
**Advanced Broadcast Video Service.**

# International Organization for Standardization

- ISO is a non-governmental organization established in 1947
- Joint Photographic Experts Group (JPEG)
- Moving Pictures Expert Group (MPEG)  
ISO/IEC 13818 MPEG-2  
ISO/IEC 14496 MPEG-4
- SMPTE has an Official Liaison w/ ISO

# MPEG-1

## The First International Compression Standard

- MPEG-1 was developed between 1988 and 1992
- Included Motion Compensation for temporal compression
- Limited to CIF picture size (352x240)
- Approximately 1.5 Mb/s compressed data rate
- No tools to handle interlaced images

# MPEG-2

## The coming of Age of MPEG

- In 1991 the MPEG-2 process was started and MPEG-2 became a standard in 1995
- The success of MPEG-2 is best illustrated by the demise of MPEG-3
- The MPEG committee decided on a structure of profiles and levels for applications ranging from DVD to HDTV

# MPEG-4

The wheels of international standardization grind slowly

- By the time a standard is officially adopted there is often a backlog of desired enhancements and extensions
- MPEG-3 had been started and abandoned so the next project became MPEG-4
- Several versions of MPEG-4 are already complete and work is continuing on further extensions

# MPEG-7

## Why seven?

- MPEG-7 is not about compression; it is about Metadata “*bits about the bits*”
- Metadata is digital information that describes the content of other digital data
- The program material or content, the actual image, video, audio or data objects that convey the information, are known as data essence

# MPEG-21

The basic concept is fairly simple

MPEG-21 seeks to create a complete structure for the management and use of digital assets, including all the infrastructure support for the commercial transactions and rights management that must accompany this structure

*“to enable transparent and augmented use of multimedia resources across a wide range of networks and devices”*

# The MPEG Toolkit

- MPEG1 - 1.5 Mb Video On Demand
- MPEG2 - 2-15 Mb or 5-50 Mb DTV, DVD, etc
- MPEG4 - Interactive Multimedia
  - 5 Kb - 100 Kb Videophone
  - 100 Kb - 1 Mb Internet Video
  - 10 Mb – 100+ Mb Studio Profile
  - 100 Mb ? Digital Cinema
- MPEG7 - Metadata
- MPEG21 – Content Framework

# New Standards for New Media: MPEG-4

Overview of MPEG-4 Specification, Rob Koenen,  
Intertrust, President M4IF, Chair MPEG  
Requirements

MPEG-4 Encoding and Authoring, Brendan  
Kavanagh, Ivast

MPEG-4 in Post Production, Shawn Ambwani,  
Envivio

MPEG-4 Studio Profile, Hugo Gaggioni, Sony



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