MP3

By

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Overview

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- MPEG standards
- MPEG 1 / 2 Layer III
- Why audio compression through Mp3 is necessary?

Overview

- MPEG Applications
- Mp3 Devices
- Mp3PRO
- Conclusion

Definition

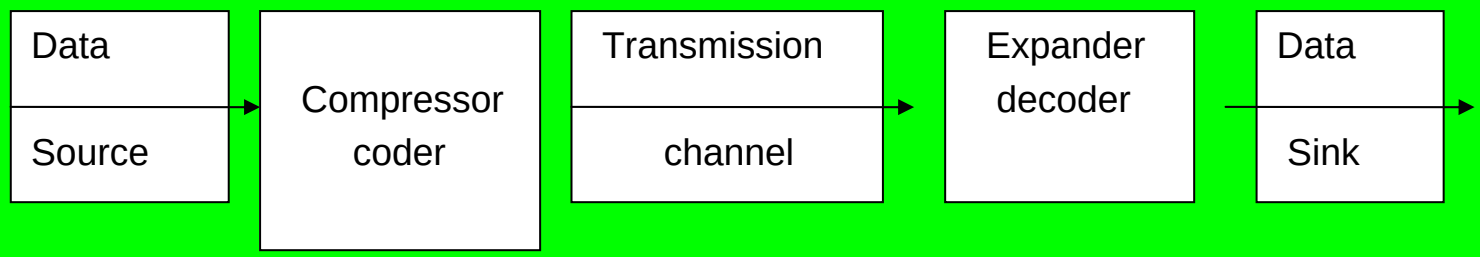
- MP3 is the file extension for MGEG 1/2, audio layer III

- MPEG is an acronym for the Moving Pictures Experts Group which was formed by the ISO to set standards for audio and video compression

- Please, don‘t confuse MPEG-1/2 Layer III (Mp3) with MPEG-3 !!!

Definition

- The data rate is reduced at source by the compressor



History

- 1988: first set up of MPEG
- 1988-1992: MPEG-1
- 1991: MPEG-1 Layer III
- 1992-1994: MPEG-2

History

- 1994: MPEG-2 AAC (Advanced Audio Coding)

- 1994- ~: MPEG-3, MPEG-4, MPEG-7,MPEG-21

MPEG standards

MPEG Standard	Targeted Usage
MPEG-1 MPEG-2 MPEG-3 MPEG-4	Coding of audio/visual content
MPEG-7	Providing metadata that describes multimedia content
MPEG-21	Providing a framework for the all-electronic creation, production, delivery and trade of content.

MPEG 1 / 2 Layer III

- MPEG works in stages

- 1st stage: MPEG 1 establishes the coding of monophonic and stereophonic sounds

- 2nd stage: a) Extension to weaker recording frequencies

  b) Extension to sounds

MPEG 1 / 2 Layer III

- MPEG-1 and MPEG-2 have both a structure of 3 layers. Each layer represents a family of coding algorithms

MPEG 1 / 2 Layer III

Layers

- Layer I

  - It possesses the lowest complexity

- Layer II

  - It requires a more complex encoder as well as a slightly more complex decoder

MPEG 1 / 2 Layer III

- Layer III

  - It is again more complex that the previous 2 layers

  - It suppresses the redundant signal and its improved extraction of audible frequencies using its filter

MPEG 1 / 2 Layer III

Comparison

1:4	by **Layer 1** (corresponds to 384 kbps for a stereo signal),
1:6...1:8	by **Layer 2** (corresponds to 256..192 kbps for a stereo signal),
1:10...1:12	by **Layer 3** (corresponds to 128..112 kbps for a stereo signal),

MPEG 1 / 2 Layer III

Sound Quality (mono)

Sound Quality	Bandwidth	Mode	Bitrate	Reduction Radio
telephone sound	2.5 kHz	Mono	8 kbps	96:1
better than short wave	4.5 kHz	Mono	16 kbps	48:1
better than AM radio	7.5 kHz	Mono	32 kbps	24:1

MPEG 1 / 2 Layer III

Sound Quality (stereo)

Sound Quality	Band width	Mode	Bitrate	Reduction Radio
similar to Fm radio	11 kHz	Stereo	56...64 kbps	26...24:1
near-CD	15 kHz	Stereo	96 kbps	16:1
CD	> 15 kHz	Stereo	112...128 kbps	14...12:1

Why audio compression through Mp3 is necessary?

- it extends the playing time,
- it allows miniaturization,
- fewer data: storage density can be reduced

MPEG Applications

- Digital television broadcasting
- CD-Video and DVD

MPEG Applications

- Digital television broadcasting

- by MPEG-2 coding:

  - Reducing the bit rate
  - Multiplexing
  - Digital modulation schemas

MPEG Applications

- CD-Video

- by MPEG-1 coding:

  - video signals handled in a better way

- DVD

- by MPEG-2 coding:

  - progressively scanned or interlaced material can be handled

MP3 Devices

- Impression MAX Car Adapter Kit for MP3 Player

MP3 Devices

- Sony's Network Walkman Digital Music Player

MP3 Devices

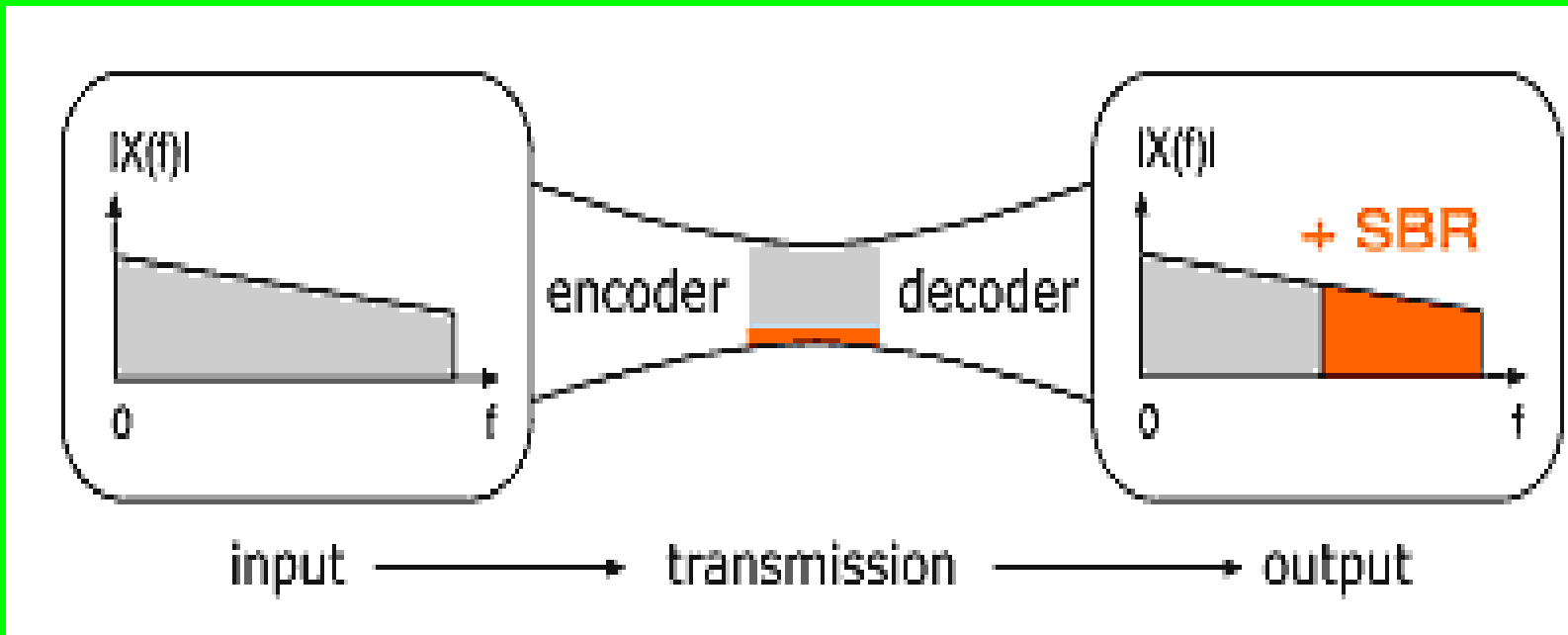
- Creative Labs Nomad Zen Digital Audio Player

Mp3Pro

- Mp3Pro is the name of combination of two things: Mp3 and an audio coding enhancement toll from Coding Tecnhlogies named Spectral Band Replication (SBR)

Mp3Pro

- The goal of SBR is to enhance the audio quality compressed sound files



Conclusion

- Less is always more
- Less amount of capacity
- More space because of fewer saving resources

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Thank for your patience !!!