

Workshop 6:

MPEG-7 Audio: What is it about ?

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Why This Workshop ?

- MPEG Audio standards: A success story
- Past workshops about MPEG-4 Audio
(Version 1 @ 106th AES, Munich;
Version 2 @ 108th AES, Paris)
- Next member of MPEG standards family:
MPEG-7, to be published in 10/2001
- It's time for an update ...



MPEG-7 or: “Is there an MPEG life after source coding ?”

MPEG

“Moving Pictures Expert Group”,
ISO/IEC JTC1/SC29/WG11

- | | |
|-------------------|---|
| MPEG-1 (1992) | • First generic audio coding standard, Layers 1-3, (DAB, Worldspace, DVB, Internet Audio/“MP3”) |
| MPEG-2 (1994) | • Extending MPEG-1 coders towards lower sampling rates & multi-channel... |
| MPEG-2 AAC (1997) | • More powerful mono ... multi-channel coding |
| MPEG-4 (1999+) | • New functionalities (scalability, object oriented representation, interactivity ...) |
| MPEG-7 (2001) | • “Multimedia Content Description Interface” Metadata standard (<u>not</u> compression!) |



Explosive Growth of Available A/V Data

Drowning in data ...

- Rapid growth of available A/V material on world wide scale
- Huge A/V databases → WWW/Internet !

How to find ?

- How is efficient search for multimedia content possible ?
- Currently: Efficient text-based search is provided by well-known search engines (e.g. Yahoo, Lycos, ...)

Vision

- "Audiovisual data should be just as 'searchable' as text!"
- Enable intelligent navigation & search



The Concept of Content Description ("Metadata")

Idea

- Supplement A/V data with Content Description ("data about data")

A description is ...

- linked to actual A/V data, but not necessarily on same location/media
- independent of format of actual A/V data

Descriptions ...

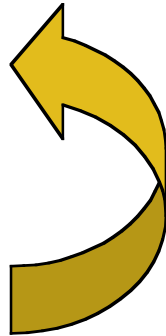
- characterize
 - enable search / filtering
 - enable navigation
 - ...
- enable efficient content handling
→ see also Workshop W-14 (Tue) !



How to Generate Descriptions

Types of extraction/creation:

Automatic
(Extraction)



- Signal-based attributes - low semantic level (level, pitch, color, shape, ...)

Manually

- Higher level attributes (title, composer, scene description including persons / objects)

Note

- Frequently descriptions are created as a by-product of the production process (e.g. storyboard for a movie production)



Areas of Work in the “Metadata” Context

What are
the issues ?

Advancement of extraction methods

- automatic / semi-automatic
- Analysis of complex content
- Semantically meaningful
- Efficient

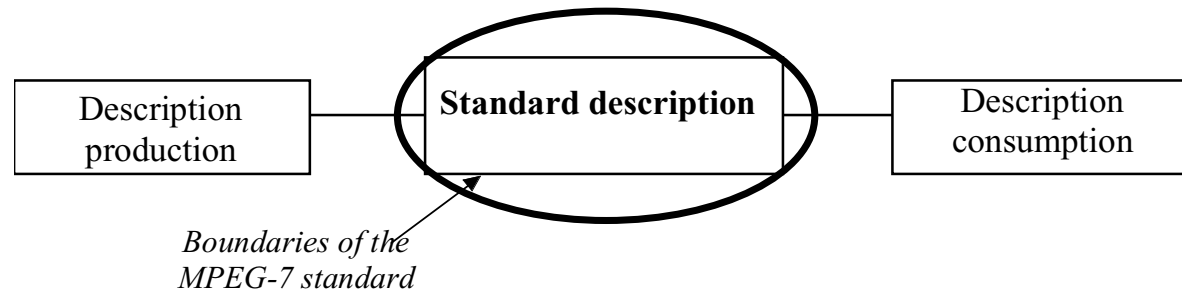
Standardization of description formats

- Enables interoperability between metadata databases and applications on world wide scale
- Some standards already on the way (SMPTE, EBU, Dublin Core, MPEG-7, ...)



The MPEG-7 Standard

- Standardization of “description language”:



- Extensible by means of *Description Definition Language* (XML-based, describes/defines MPEG-7 syntax)
- Provides elaborated concepts for describing
 - Generic properties of A/V data
 - Visual data
 - Audio data

Questions To Be Answered ...

- What is MPEG-7 Audio about ?
- What are the basic concepts ?
- What novel functionalities can MPEG-7 Audio give you ?
- What are the applications ?
- “Could we see some demos ?”



The Presentations ...

Introduction of
MPEG-7 / MPEG-7 Audio

Adam Lindsay
University of Lancaster, UK

Melody Description

Youngmoo Kim
MIT Media Labs, USA

Spoken Content

Philip Garner
Canon Research Center Europe, UK

Musical Timbre Similarity

Geoffroy Peeters
IRCAM, France

General Sound Recognition &
Similarity Tools

Michael Casey
MERL, USA

Robust Audio Matching

Jürgen Herre
Fraunhofer IIS, Germany

