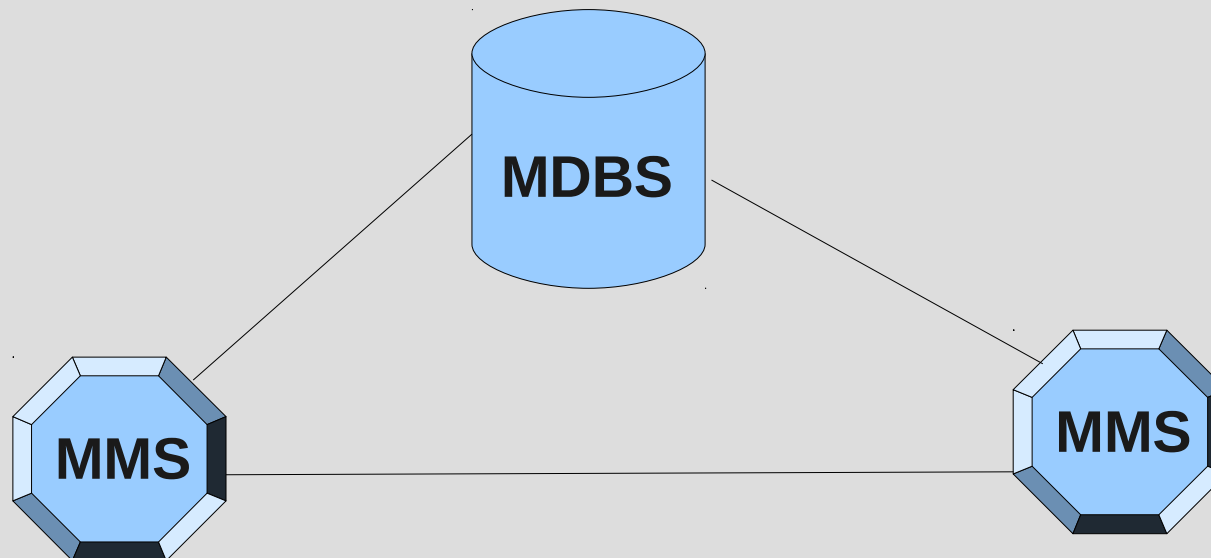


MPEG-7, MPEG-21

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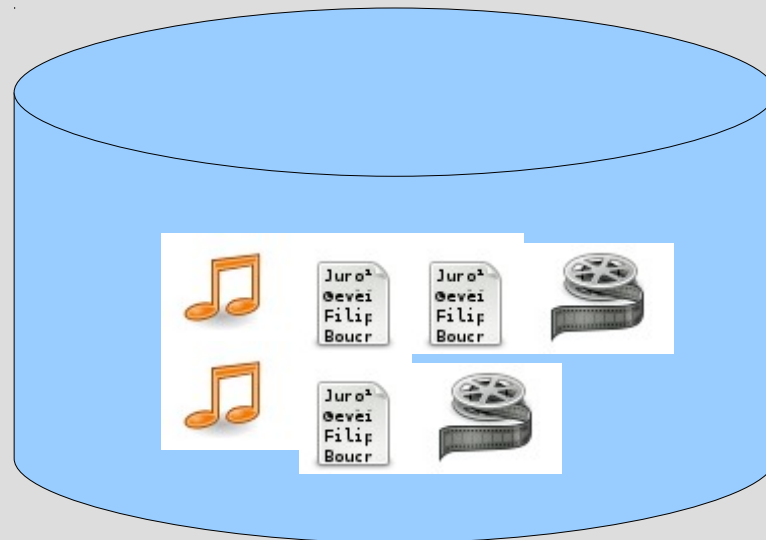
Purpose of MPEG 7, 21

- To build Multimedia Database Systems (MDBS)
- Enable interoperability between multimedia systems



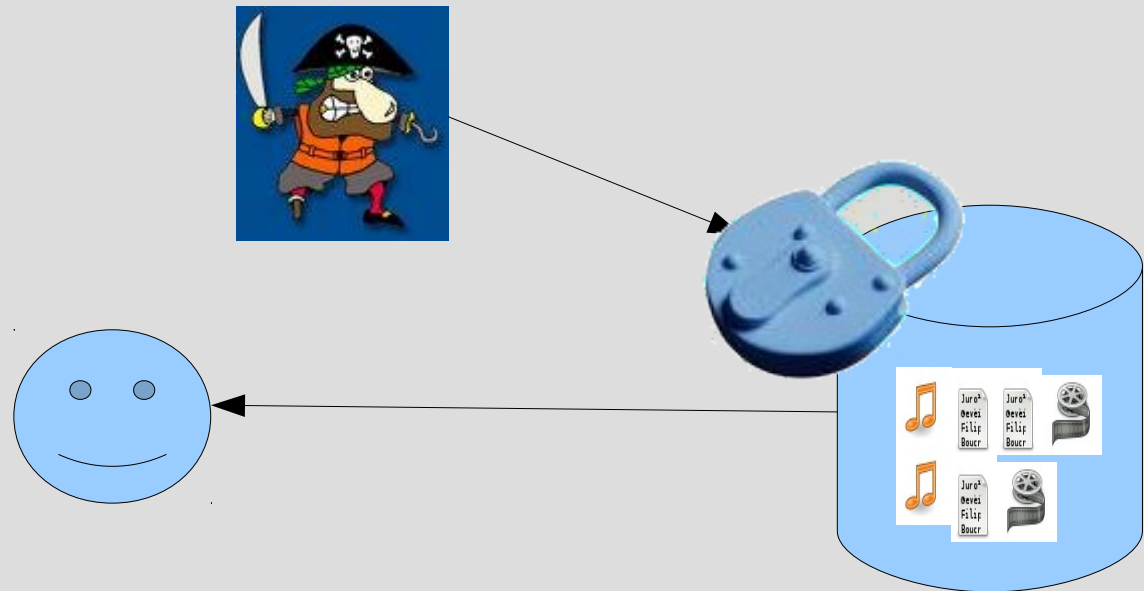
Multimedia Database Systems / 1

- Warehouses for multimedia elements
- Stored images, video sequences, audio records, lyrics, ...



Multimedia Database Systems / 2

- Find and retrieve the data (Information retrieval)
- Description (Metadata)
- Indexing
- Protection



Basic idea

- MPEG-7: Describe the multimedia resources
- MPEG-21: Framework for transparent (interoperable) usage of multimedia resources in wide range of networks and devices

MPEG-7

- ISO/IEC 15938
- MPEG
- formally named “Multimedia Content Description Interface”
- Metadata

MPEG-7: types of information

- The form
- Conditions for accessing the material
- Classification
- Links to other relevant material
- The context
- Harmonisation on Dublin Core and others

MPEG-7: types of information

example

- Video format: AVI, Video Codec: XviD, Resolution 512x304
- Free to use
- Documentary movie
- http://www.firma.cz/docs/20041211_123.pdf
- Movie from exhibition Prague GI Open 2004, Franta, Pepa, Kiosk, Audience, ...

MPEG-7: range of information / 1

- Creation and **production processes** of the content (director, title, ...)
- **Usage** of the content (copyright pointers, usage history, broadcast schedule)
- **Storage** features of the content (storage format, encoding)

MPEG-7:

range of information / 2

- Information about **low level features** in the content (colors, textures, sound timbres, melody description)
- Conceptual information of the **reality captured** by the content (objects and events, interactions among objects)
- Information about how to **browse** the content in an efficient way

MPEG-7:

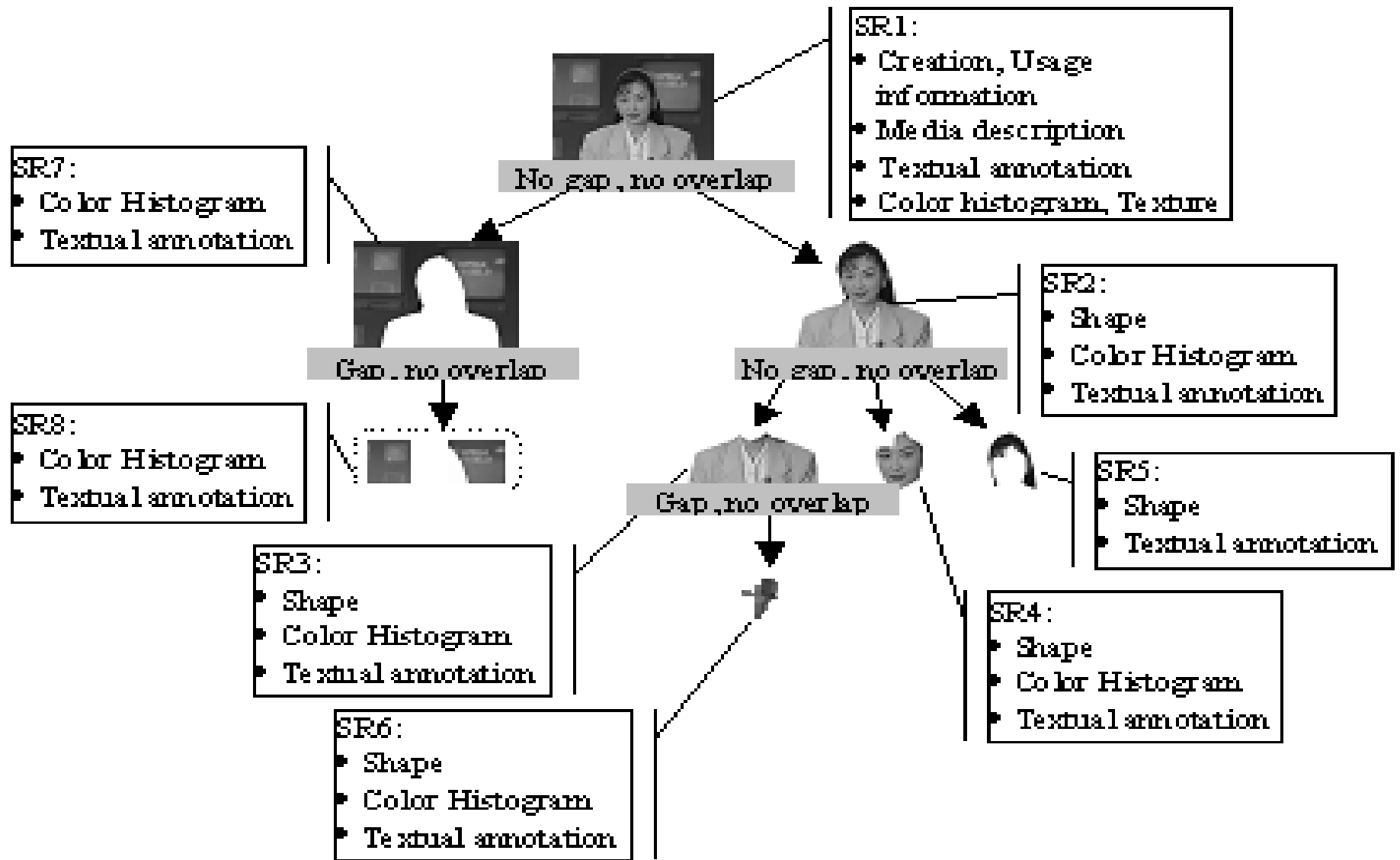
range of information / 3

- Structural information on spatial, temporal or spatio-temporal **components** of the content (scene cuts, segmentation in regions, region motion tracking)
- Information about **collections** of objects
- Information about the **interaction** of the user with the content (user preferences, usage history)

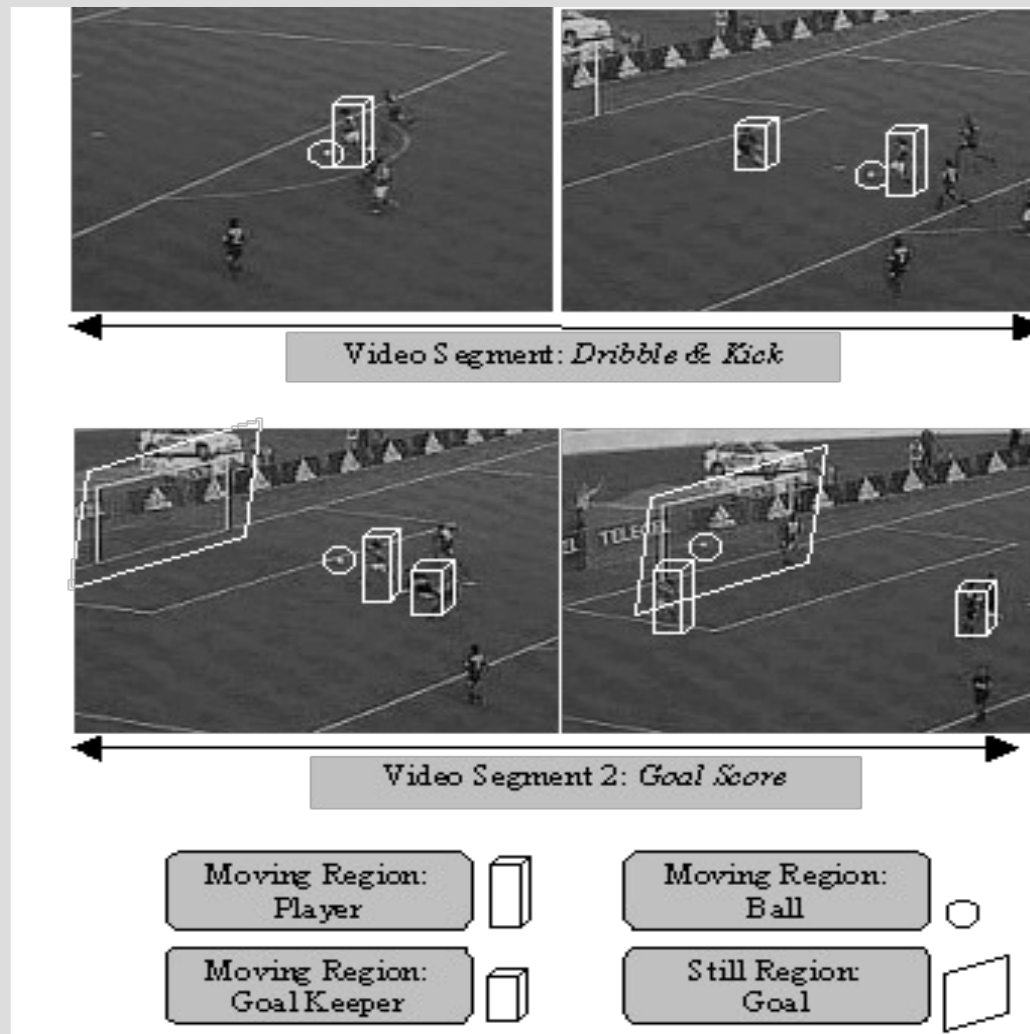
MPEG-7: depth / 1

Feature	Video Segment	Still Region	Moving Region	Audio Segment
Time	X	.	X	X
Shape	.	X	X	.
Color	X	X	X	.
Texture	.	X	.	.
Motion	X	.	X	.
Camera motion	X	.	.	.
Audio features	.	.	X	X

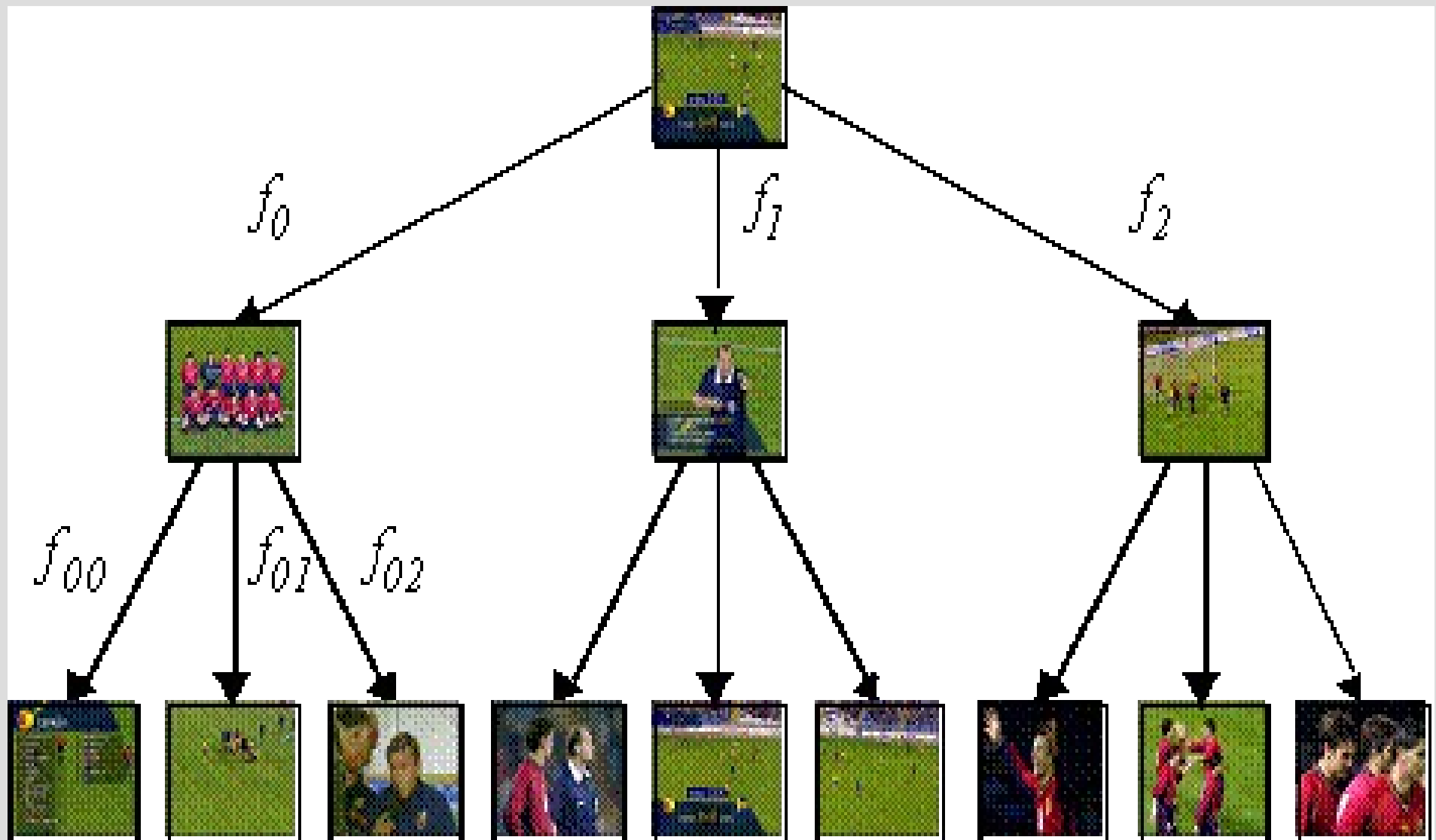
MPEG-7: depth / 2



MPEG-7: depth / 3 segments

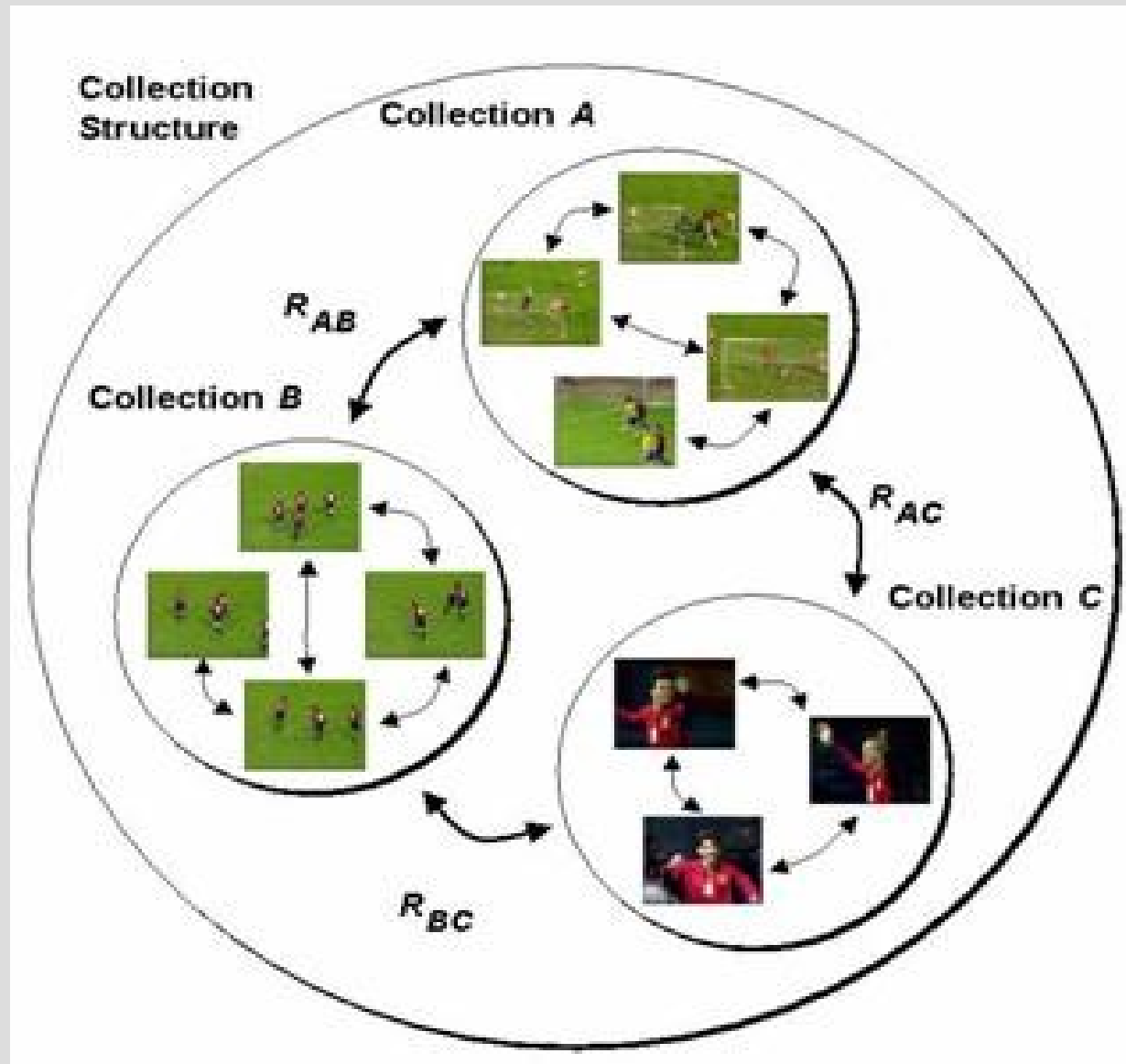


MPEG-7: depth / 4 partitions, decompositions

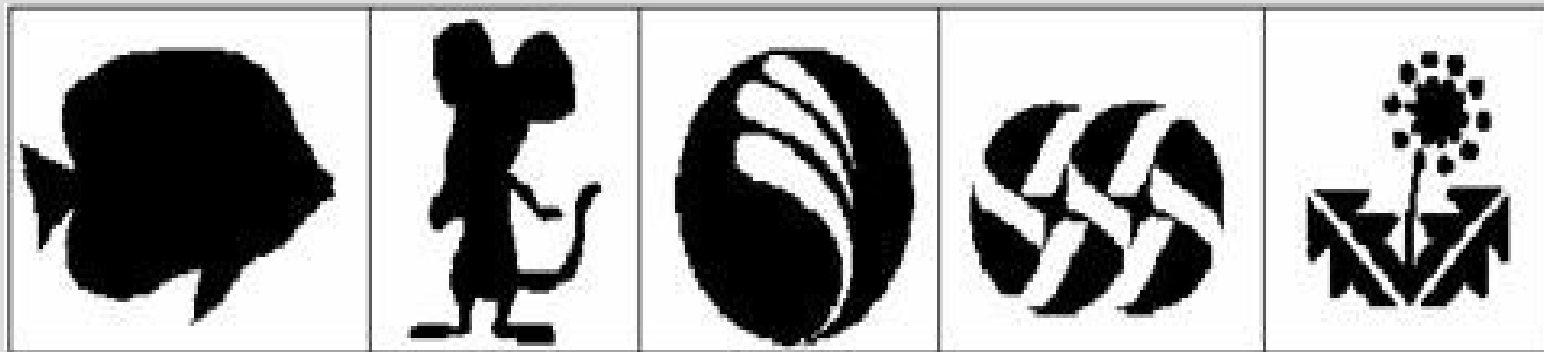


MPEG-7: depth / 6

Collections, Relationship



MPEG-7: depth / 7 Shapes



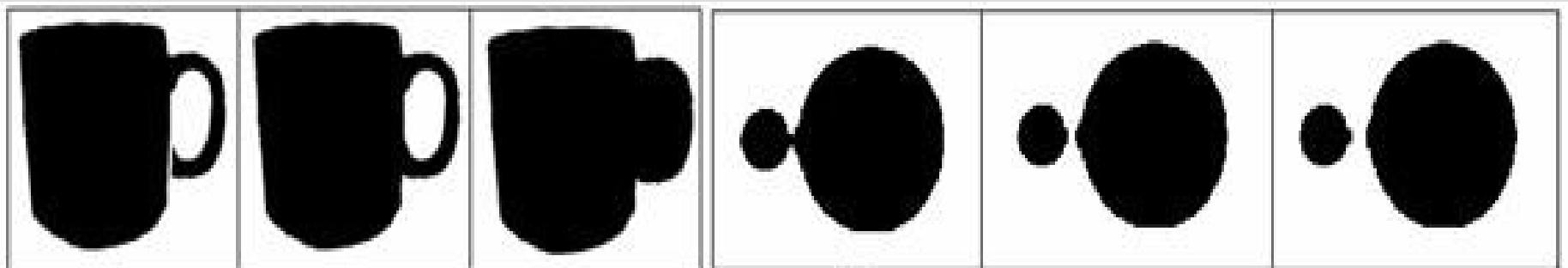
(a)

(b)

(c)

(d)

(e)



(g)

(h)

(i)

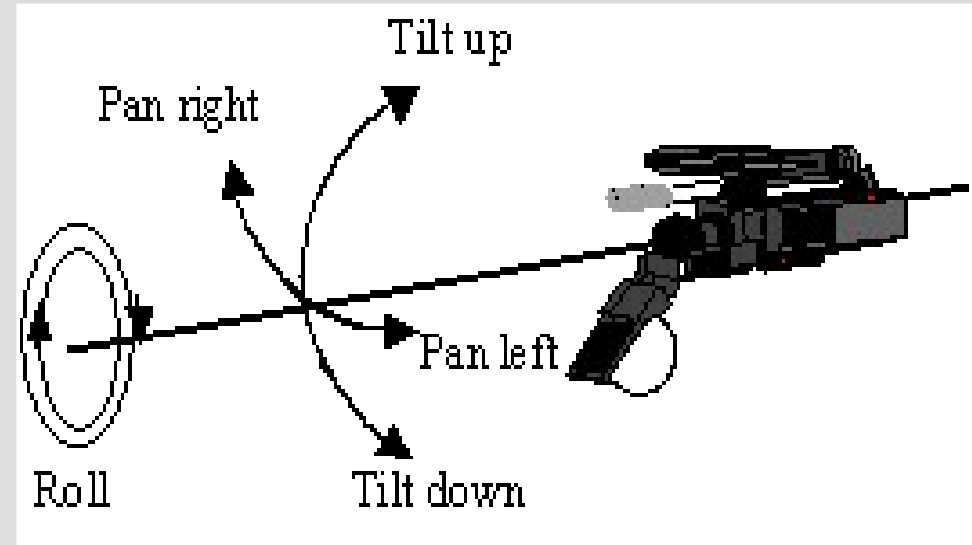
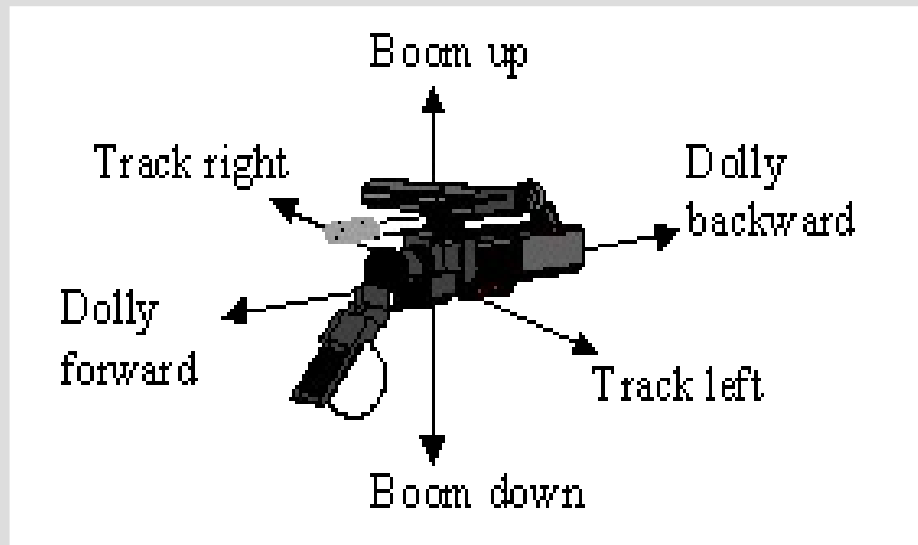
(j)

(k)

(l)

MPEG-7: depth / 8

Camera motions



MPEG-7: application's areas

- Architecture, real estate, and interior design (e.g., searching for ideas)
- Digital libraries
- E-Commerce
- Multimedia directory services (e.g. yellow pages, Tourist information, Geographical information systems).

MPEG-21: Basics / 1

- Framework for access, delivery, management and protection processes
- E-Commerce
- MPEG-21 Multimedia Framework initiative
- Status: Working Draft

MPEG-21: Basics / 2

- Normative open framework
- Multimedia delivery and consumption
- For all the players in the delivery and consumption chain
- The MPEG-21 enabled open market

MPEG-21: Components

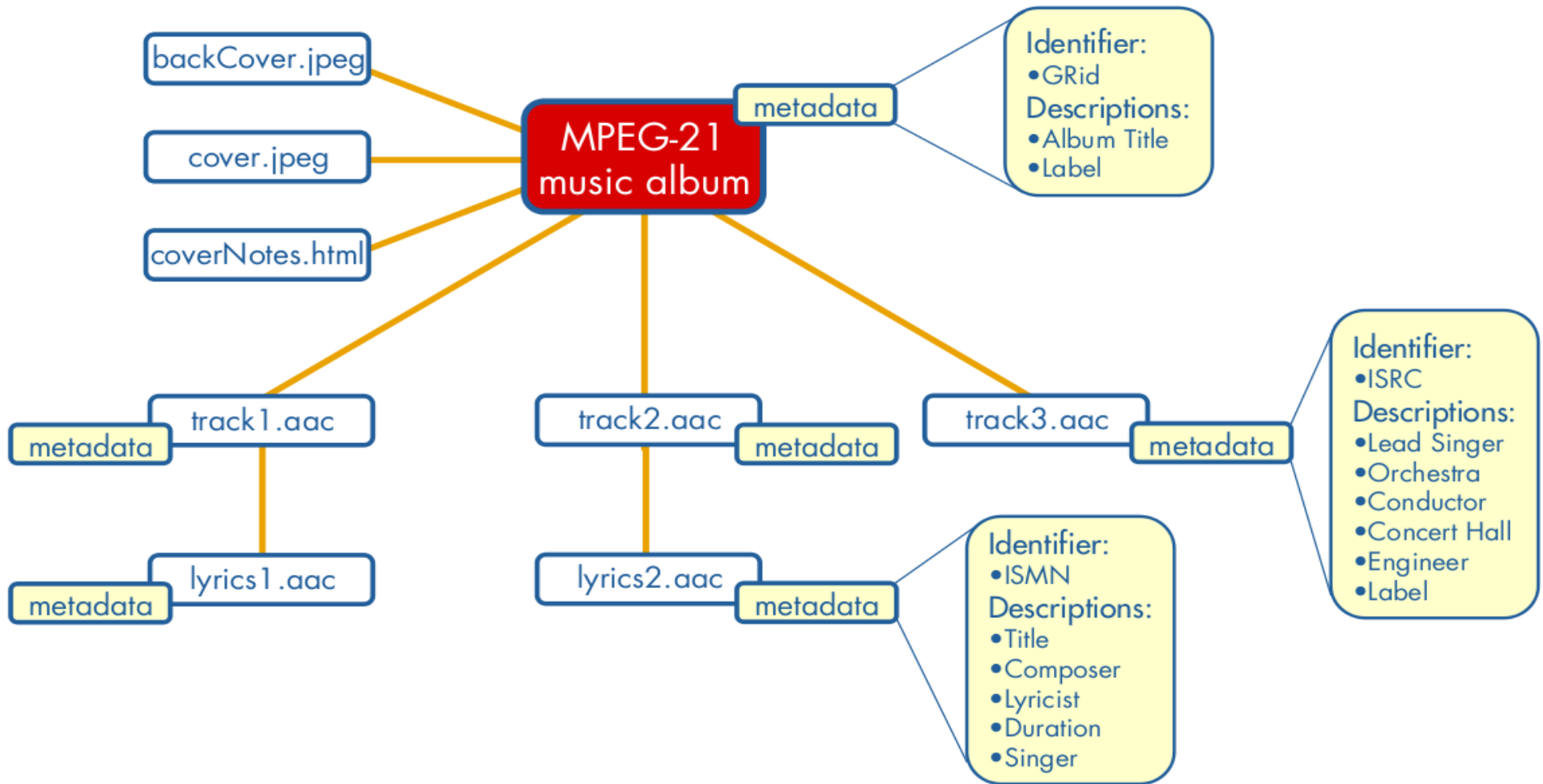
- User model (User)
- Digital Item
- Way of interaction
- Distribution and transaction
- Operations

MPEG-21: Parts / 1

- Vision, Technologies and Strategy
- Digital Item Declaration
- Digital Item Identification
- Intellectual Property Management and Protection (IPMP)

Digital item identification

N5231



MPEG-21: Parts / 2

- Rights Expression Language
- Rights Data Dictionary
- Digital Item Adaptation
- Reference Software

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