



ISO/IEC SC29 WG11 (MPEG)

Multimedia Application Formats (MAF)

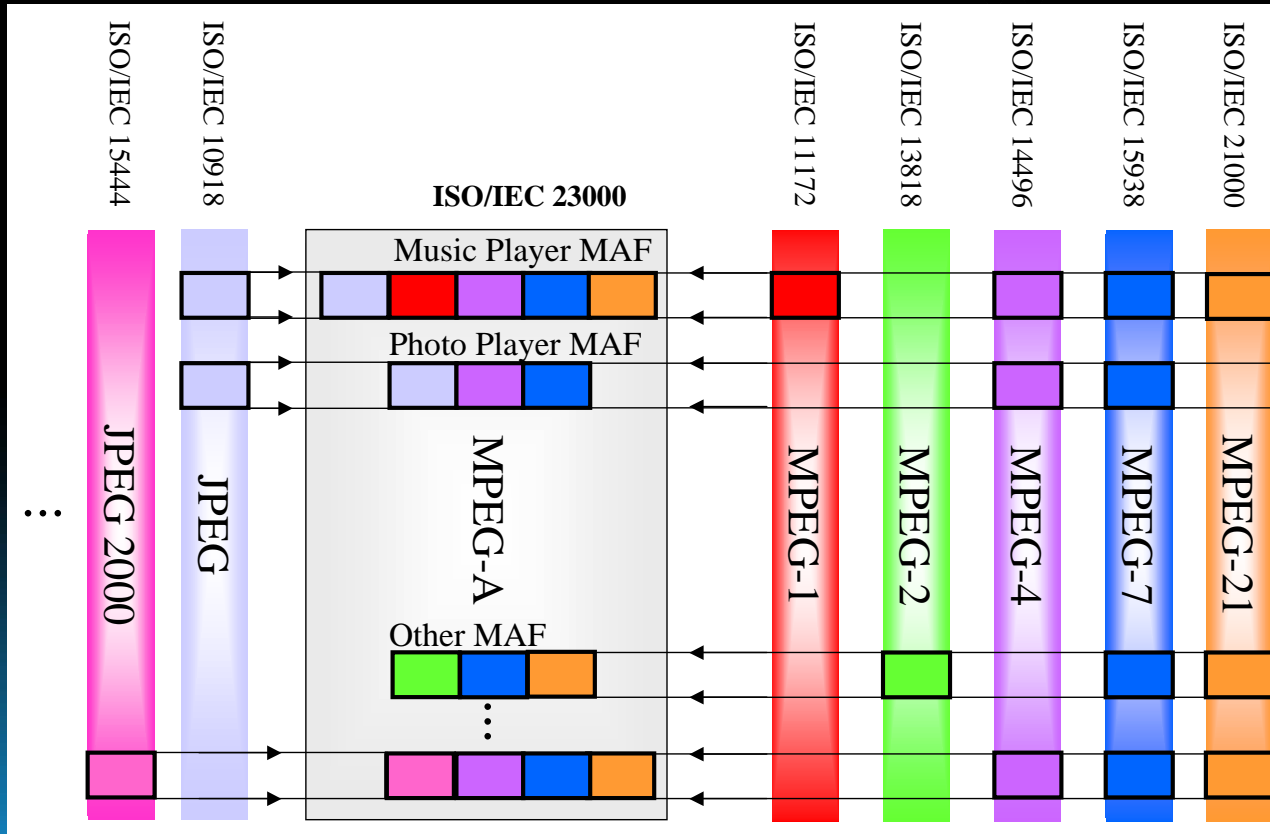
Packaging Multimedia Applications and Services

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MPEG-A: ISO/IEC 23000 family of standards

MPEG-A specifies a combination of already standardized MPEG and non-MPEG, tools providing an appropriate technical solution for a class of applications.



Companies involved (>100 participated, > 40 active):

- ▶ ADETTI/ISCTE
- ▶ CEDEO.net
- ▶ Coding Technologies
- ▶ ContentGuard
- ▶ Digital Media Project
- ▶ DRM Inside Inc.
- ▶ Enterprise of the Future, Inc.
- ▶ ETRI
- ▶ France Telecom
- ▶ Fraunhofer -IIS
- ▶ Information & Comm. University
- ▶ KAI MEDIA Co.
- ▶ KBS
- ▶ Korea Telecom
- ▶ LG Electronics
- ▶ MBC
- ▶ Medialive
- ▶ Microsoft
- ▶ Mitsubishi Electronics Research Laboratory
- ▶ NEC
- ▶ NIST
- ▶ OnionTech Co. Ltd.
- ▶ onTimetek Inc
- ▶ Panasonic
- ▶ Peking University
- ▶ Pixtree
- ▶ Samsung Electronics
- ▶ SBS
- ▶ SDAE
- ▶ SpID
- ▶ Streamazzo
- ▶ Technische Universität München
- ▶ Telecom Italia
- ▶ Telefónica
- ▶ Thomson
- ▶ Toshiba
- ▶ Universitat Politècnica de Catalunya
- ▶ Universitat Pompeu Fabra
- ▶ University of Seoul
- ▶ University of Tokyo
- ▶ Victor Company of Japan, Ltd.
- ▶ *others...*



ISO/IEC 23000 (MAF) family of standards

ISO/IEC 23000-1: Purpose of Multimedia Application Formats (TR)

ISO/IEC 23000-2: Music Player (FDIS in April 2007)

ISO/IEC 23000-3: Photo Player (FDIS in October 2006)

ISO/IEC 23000-4: Musical Slide Show (FDIS in April 2007)

ISO/IEC 23000-5: Media Streaming (FDIS in October 2007)

ISO/IEC 23000-6: Professional Archival (FDIS in October 2008)

ISO/IEC 23000-7: Open Access (FDIS in January 2008)

ISO/IEC 23000-8: Portable Video (FDIS in April 2008)

ISO/IEC 23000-9: Digital Multimedia Broadcasting (FDIS in October 2007)

ISO/IEC 23000-10: Video Surveillance (FDIS in July 2008)

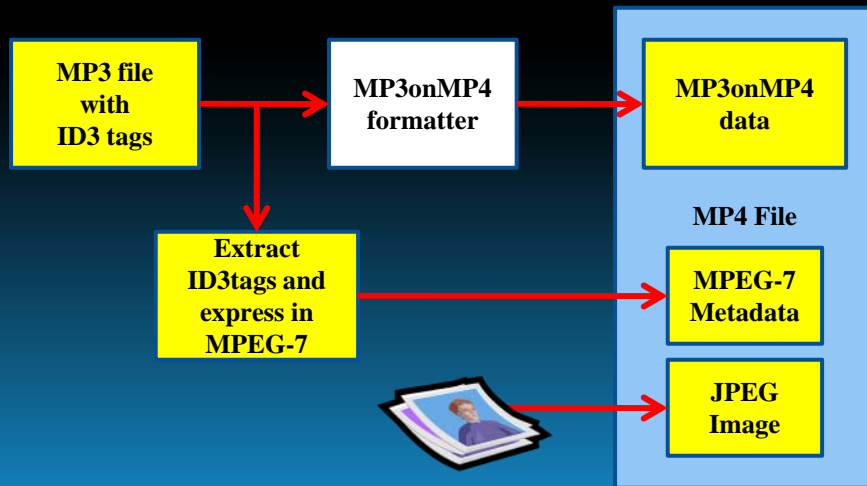
ISO/IEC 23000-11: Stereoscopic Video (FDIS in October 2008)

ISO/IEC 23000-12: Interactive Music (new)

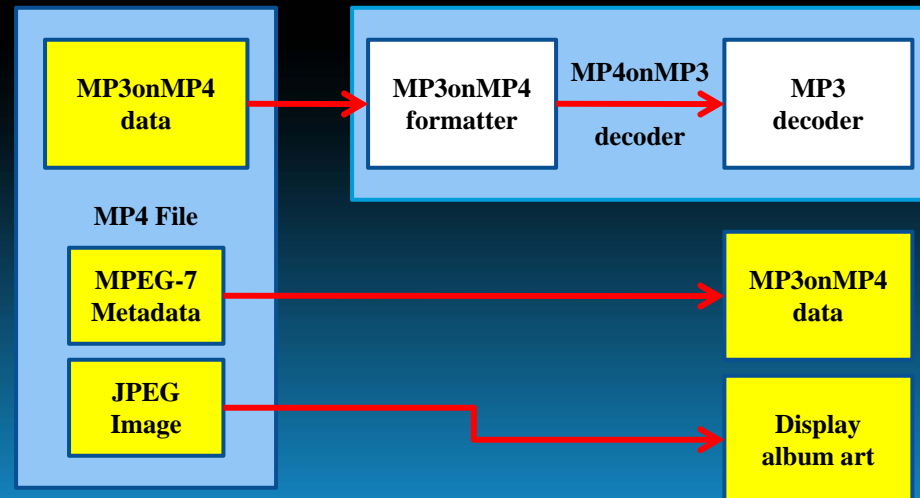
2. Music Player MAF

- Organize MP3 music library and photos into categories based on their content – for example, the song artist, album, title, and the people and places depicted, or events taking place in photos.
- Perform advanced content-based searches, through the music library and collections of photos.
- Bundle MP3 music library and photos and favorite ways (playlist) to show them, into a single MPEG-4 file.
- Link to external resources, such as other music library and/or images (outside the MPEG-4 file) or web-pages.
- ISO Base Media FF, MPEG-4 File Format
- MPEG-1/-2 Audio III (MP3)
- MPEG-7 Metadata for photo information like *who*, *when*, *where*, *how*, etc.
- ISO Standard JPEG still images

Encoder System Architecture

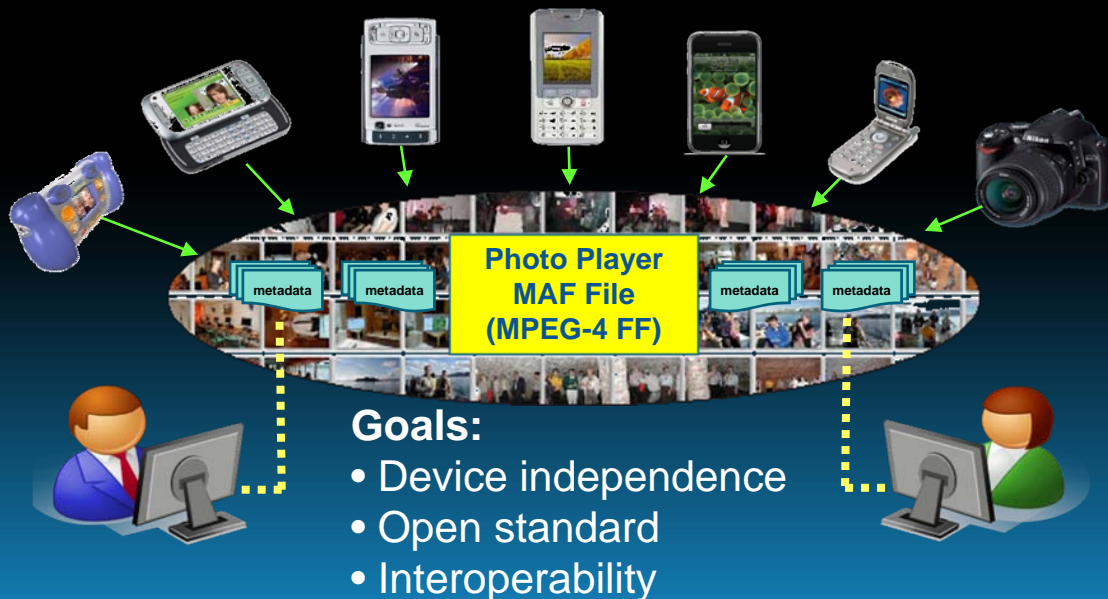


Decoder System Architecture



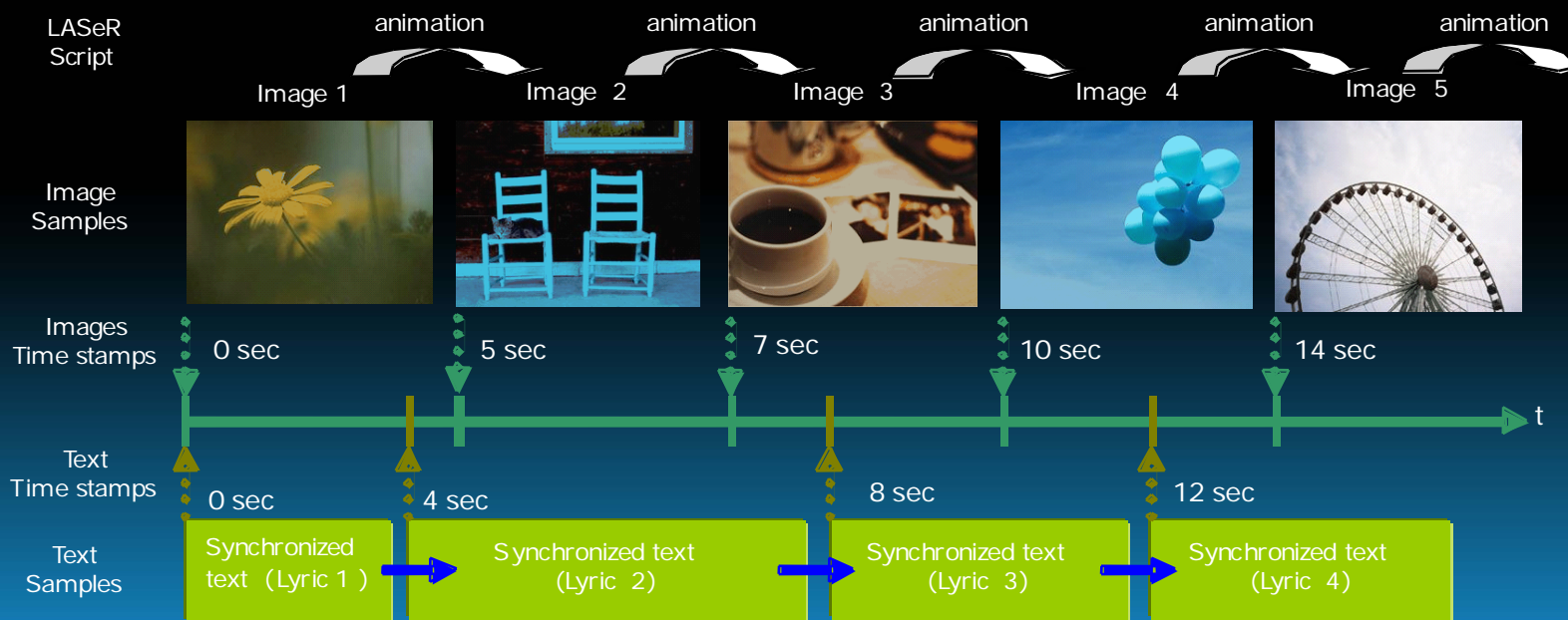
3. Photo Player MAF

- Organize photos into categories based on their content – for example, the people and places depicted, or events taking place in photos.
- Perform advanced content-based searches, through collections of photos.
- Bundle photos and favorite ways to show them, into a single MPEG-4 file.
- Link to external resources, such as other images (outside the MPEG-4 file) or web-pages.
- ISO Base Media FF, MPEG-4 File Format
- MPEG-7 Metadata for photo information like *who*, *when*, *where*, *how*, etc.
- ISO Standard JPEG still images



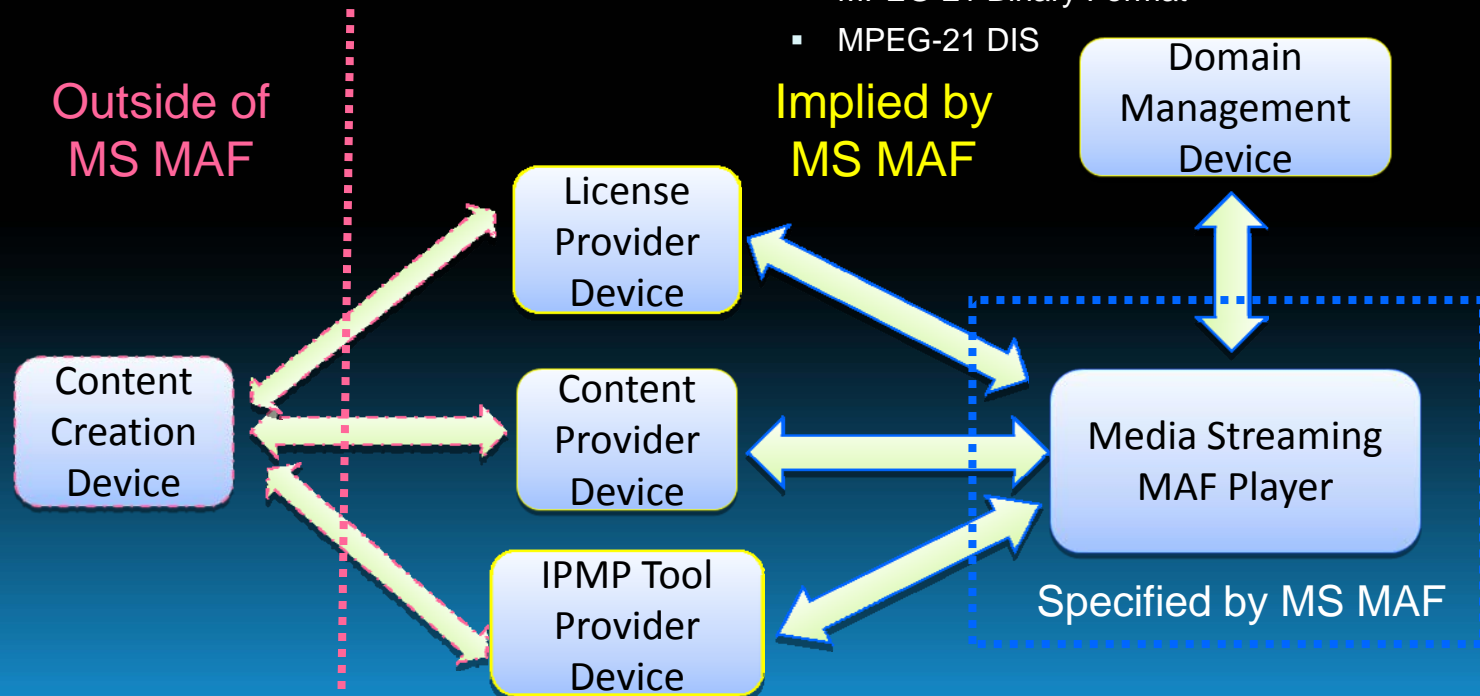
4. Musical Slide Show MAF

- Personal image slide show
- Photo-Music album
- Educational materials (foreign language exercise tools, e.g. Toefl)
- Storytelling, Karaoke applications
- ISO Base Media and MPEG-4 File Format
- MPEG-1/-2 Layer 3 (“mp3”) audio coding
- JPEG ISO Standard
- MPEG-7 Metadata (aligned to Music Player MAF and Photo Player MAF)
- MPEG-4 Part-20 “LAsER” Mini Profile
- 3GPP TS 26.245 Timed Text

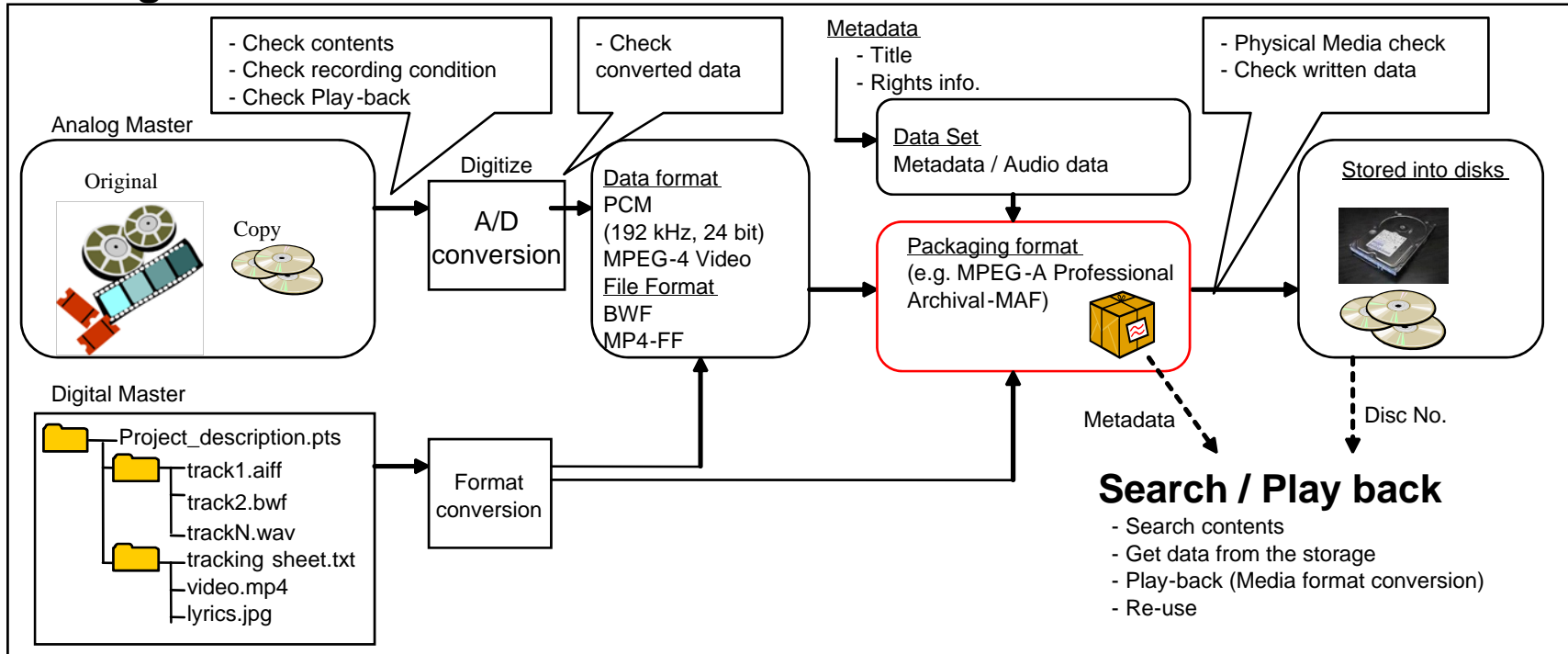


5. Media Streaming MAF

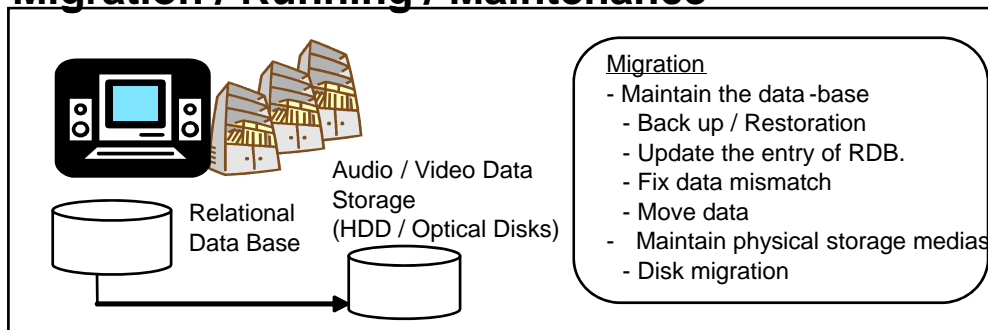
- Public broadcasting in the digital world
- Commercial broadcasting in the digital world
- Internet streaming via Multicast
- Pay TV
- IPTV
- Internet Television
- Storage and subsequent play of content in a domain
- MPEG-21 File Format and its reference ISO Base Media File Format
- MPEG-2 and MPEG-4 IPMP-X
- MPEG-21 DID
- MPEG-21 DII
- MPEG-21 IPMP Components
- MPEG-21 REL
- MPEG-21 Binary Format
- MPEG-21 DIS



Making data sets 6. Professional Archival MAF



Migration / Running / Maintenance

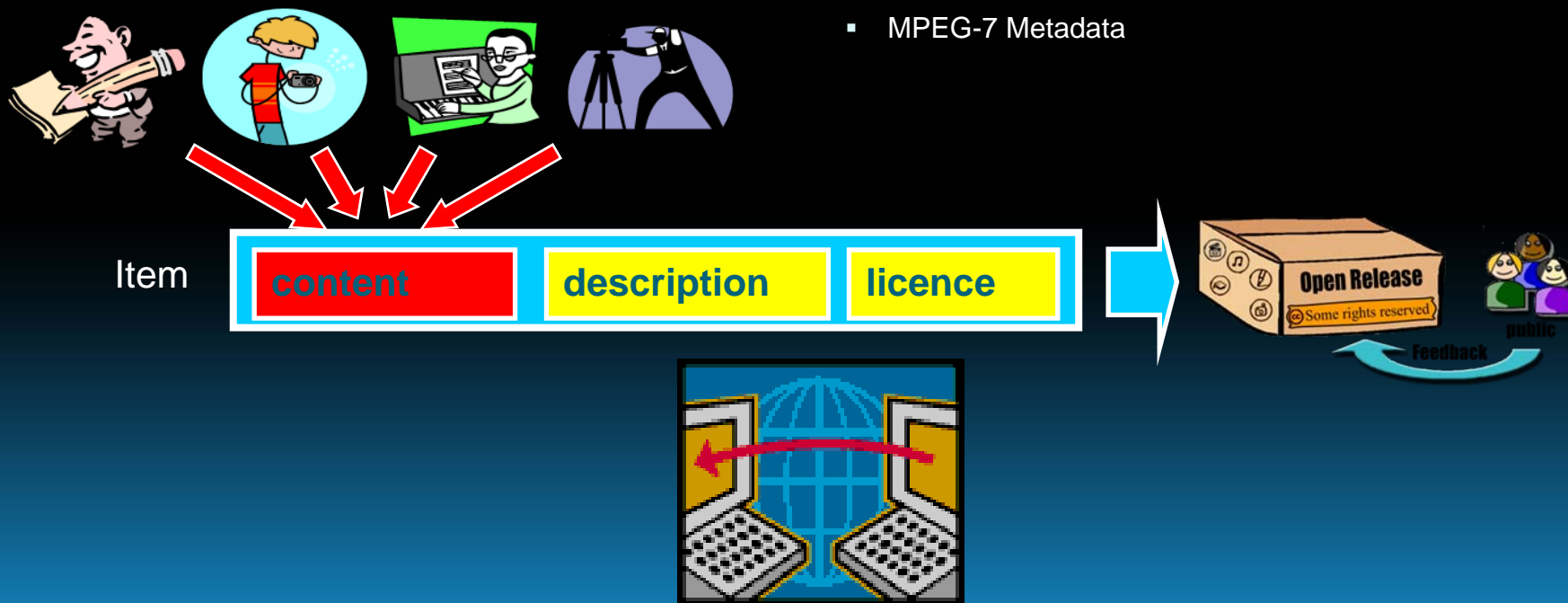


Technologies involved:

- Technologies from Music Player MAF
- MPEG-21 IPMP Components Base Profile
- MPEG-21 REL MAM Profile.
- ISO Base Media File Format 2nd Edition for:
 - 'stsd' (sample description box)
 - 'sinf' (protected scheme box) - to protect audio track and signalization of the protection format
 - 'ipro' (item protection box) to protect metadata
- ISMACryp 1.1 and OMA2.0 DCF to enable random access to encrypted content
- AES128 CTR encryption tool (default encryption)

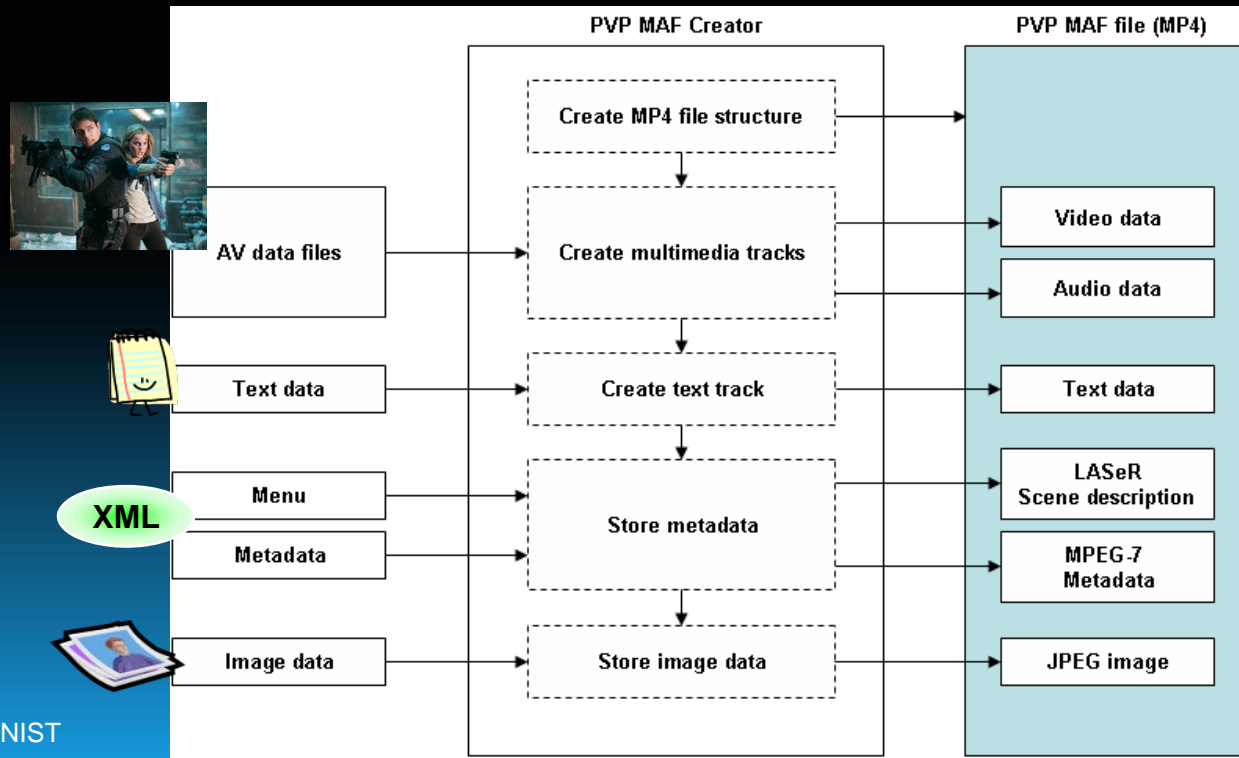
7. Open Access MAF

- Sharing and re-use of contents
- Release materials in a single package to public
- Feedback to author
- License Management
- Publish public funded research results
- Publish E-Learning material
- Creative Commons Licenses
- MPEG-21:
 - Rights Expression Language
 - Digital Item Declaration
 - Digital Item Identification
 - Event Reports
 - File Format (based from ISO Based Media FF)
- MPEG-7 Metadata



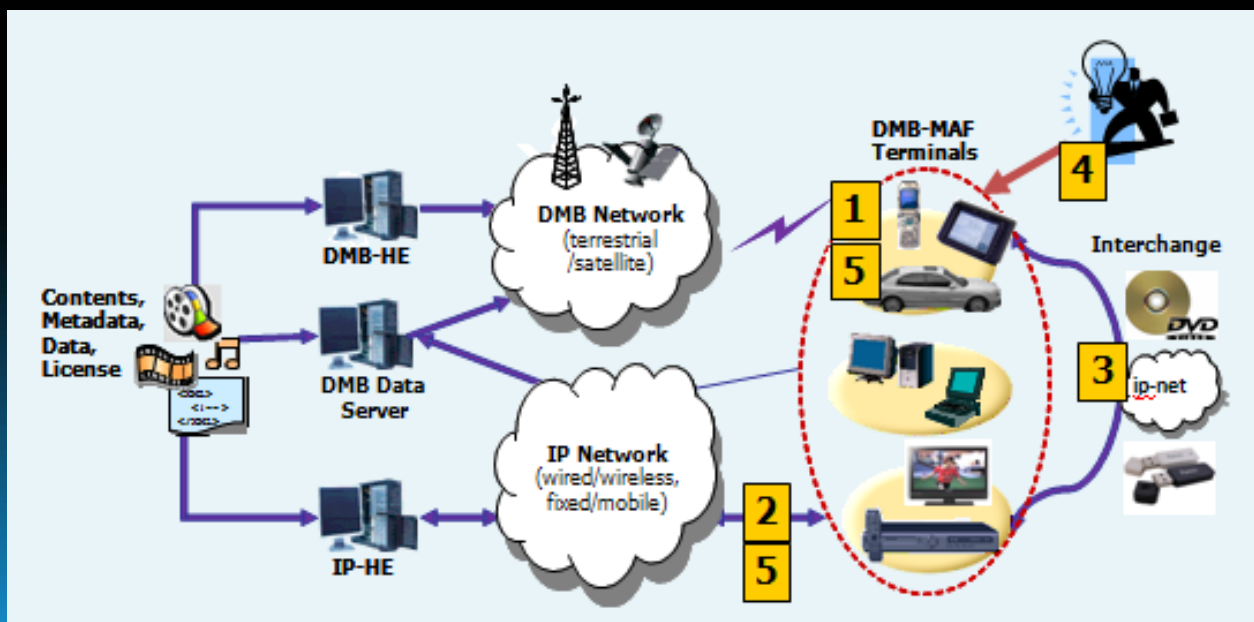
8. Portable Video Player MAF

- File structure that contains the components of "Portable video player MAF" Playback modes
- User interface for accessing multiple video tracks
- Timed text format for subtitling
- Descriptive metadata for video summary, usage history, and bookmarks
- ISO Base/MP4 file format
- MPEG-4 AVC
- MPEG-1/2 Layer III
- MPEG-4 HE-AAC, BSAC, LAsER
- JPEG ISO standard for images
- 3GPP timed text format
- MPEG-7 metadata



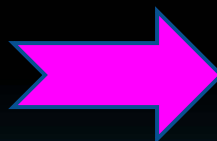
9. Digital Multimedia Broadcasting MAF

- Storage of Mobile Broadcasting Contents
- IP Media Services
- Interchange of DMB contents between Terminals
- User-Creative DMB contents
- Metadata Applications with DMB MAF
- ISO Base Media File Format
- DMB Video: MPEG-4 AVC Baseline Profile Level 1.3
- DMB Audio: MPEG-2 AAC+, MPEG-4 ER-BSAC
MPEG-4 HE-AAC
- System: IOD/OD, BIFS, MPEG-4 File format, AVC
File format
- DMB Data Services: BWS, MOT slide show, TTI
- Content description and user metadata: TV-Anytime
- Protection and Governance information: MPEG-21
IPMP, REL, etc.



10. Video Surveillance MAF

- Video surveillance in public places for crime prevention
- Enhance pure video streams by appropriate metadata
- Transmit video streams to appropriate experts for cross examination
- Efficient archival of video and metadata information
- ISO Media File Format, AVC File Format
- AVC
- MPEG-7 simple meta data profile and visual descriptors

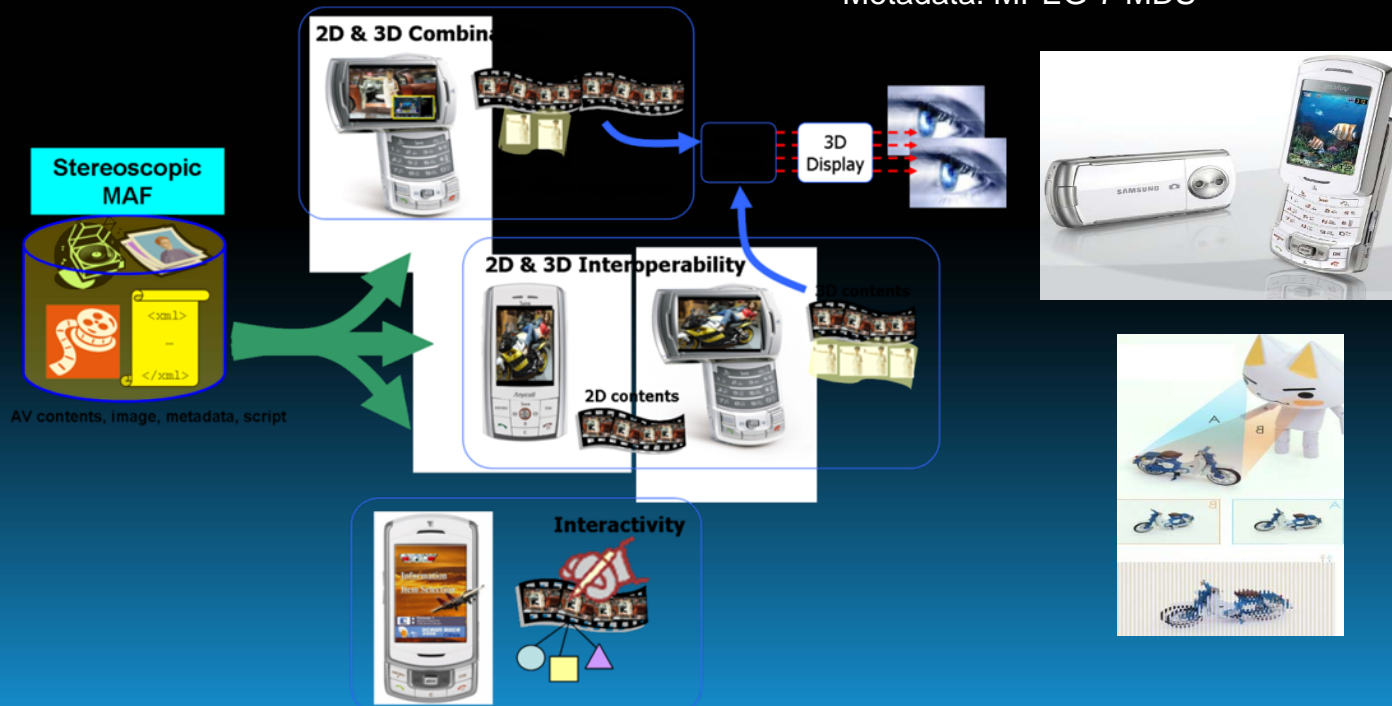


MPEG-7 Descriptor Integration for On-line Video Surveillance Interface

Daniel Jean-Baptiste, Hanif Azhar, and Aishy Amer, IEEE Xplore. Downloaded on December 1, 2008

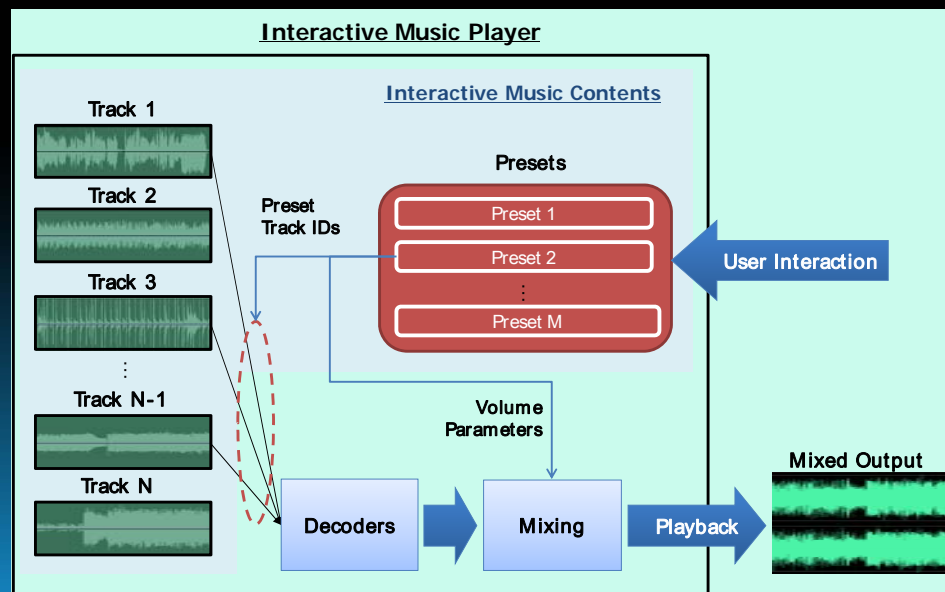
11. Stereoscopic MAF

- Storage of Stereoscopic Richmedia Contents
- Support of the combination contents of 2D and stereoscopic sequences
- Support of interaction functionality on stereoscopic contents
- Interchange of stereoscopic contents between mobile devices including phones
- Metadata Applications with stereoscopic MAF
- ISO Base Media File Format
- Video compression format : MPEG-4 part2 (SP@level 3) , MPEG-4 part10 (BP@level 1.3)
- Audio code: AAC-LC, AAC+
- Voice Codec: AMR, EVRC
- Scene description codec: LAsE R
- Still Image: JPEG, PNG
- Metadata: MPEG-7 MDS



12. Interactive Music AF (new)

- Listening to music selected/controlled to user's taste
- Karaoke and performing exercise
- Music UGC production by control/addition of audio tracks
- ISO Base Media File Format, MPEG-21 File Format
- Audio
 - MPEG-4 Audio AAC profile
 - MPEG-D SAOC
 - MPEG-1 Audio Layer III
 - PCM (Uncompressed)
- Image: JPEG
- Text: 3GPP Timed-Text Format
- Metadata: MPEG-7 MDS CreationDS



How to Create New MAF?

- Documentation of the technologies (MPEG & non-MPEG) used, and these technologies are advanced enough in standardization (at FDIS)
- Clear statement of requirements and value proposition
- Technologies comparison between existence MAFs
- Documentation of enough industry support to successfully complete the work
- Commitments for reference software and crosscheck of content encoded between multiple parties and multiple independent implementations
- Commitment to produce relevant marketing materials, including at least one white paper explaining the benefits of the new MAF

- MAF website:
- <http://maf.nist.gov>
- General Question:
- Wo Chang, NIST
- wchang@nist.gov

Multimedia Application Formats (MAF) - Home - Microsoft Internet Explorer provided by U.S. GPO

http://maf.nist.gov/welcome.html

MAF-News MAF-Tech

MAF Home page

welcome to MAF Special Interest Group

Home | Downloads |

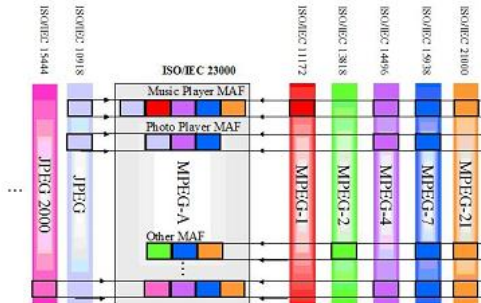
LATEST NEWS:

- [MAF Overview](#)

Mission: To transfer ISO/IEC SC 29 WG11 (MPEG) Multimedia Application Formats (MAF) standard technology into the market place by products interoperability and to support a seamless and easy-to-use integrated MPEG and non-MPEG standard products to industries.

MAF Special Interest Group is:

- INFORMATION on MAF standardization, providing guidance and examples on how to use the emerging multimedia technologies
- FORUM of potential users of scientific work and the creators of the MAF standard, forging new partnerships



1st MAF Awareness Event
San Jose, CA, USA, April 28, 2007

10 reasons
[Why Your Company Should Invest in MAF](#)

[MPEG-A: A Step Forward in MPEG Standardization](#)
by [Diepold, K.](#), [Pereira, E.](#), [Chang, W.](#)
IEEE Multimedia, Volume 12, Issue 4, Oct-Dec, 2005