Cross Mapping with
The IPTC Video Metadata Hub

Exploring Potential Collaboration with MESA Members

Presented by Linda Burman, IPTC Member and CEO of L. A. Burman Associates Inc.

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What! *Another Standard!!!*

Oh NO!!

You’ve heard, ad nauseum, ‘that the good thing about standards is that there are so many to choose from.... ‘ Sigh!!

OK. So you picked one. You’re done!
Who am I?

- **President & CEO**, L. A. Burman Associates Inc.
- **Member**, IPTC
- **Previously, Manager, North Plains Systems – DAM**
- **Past President**, Content Management Professionals Organization
- **Founder & Former Chair**, IDEAlliance PRISM Metadata WG
- **Co-author**, *Mastering XML, Mastering XML PRO*
- **Instructor**: Ryerson University, University of Toronto, IDEAlliance eMedia Certificate Program, Rights Management, Metadata and Taxonomy Tutorials

**Consulting Focus**
- Business Analysis for DAM/CMS initiatives: workflow analysis, requirements gathering, implementation planning and vendor selection
- Metadata and taxonomy development
- User experience development
- Building consensus across business units and translating between users and technologists

**Additional Background**
- Publishing Evangelist, Apple Computer
- Vice President, Kinecta Inc. (now Oracle)
- Consulting Advisor, LingoMotors, Semantic Technologies
- Director of Marketing, SoftQuad (Xmetal)
What is the IPTC?

Members

What does IPTC do?

Are there cross-benefits with MESA?
What is the IPTC?

• International Press Telecommunications Council
• The global technical standards body of the news media
• A registered non-profit organisation
Established in 1965, IPTC started as a group of press agencies looking to file news faster and with less effort.
A global membership
Voting members

[Logos of various organizations]
Associate members

- Agencia EFE Spain
- Apex Content Solutions USA
- Aptoma Norway
- ATC - Athens Technology Center Greece
- BVPA Germany
- CNS - Catholic News Service USA
- Extensis USA
- CEPIC Europe
- DPP Digital Production Partnership United Kingdom
- EBU - European Broadcasting Union Europe
- Eidos Media Italy
- epa - European Pressphoto Agency Europe
- Fingerpost UK
- FotoWare Norway
- JIS - Jozef Stefan Institute Slovenia
- KNA - Kath. Nachrichten-Agentur Germany
- Korea Press Foundation Korea
- Lusa Portugal
- Mainstream Data USA
- Mecom Germany
- MENA Egypt
- Microstockolutions LLC USA
- NEWSCYCLE Solutions USA
- NTB - Norsk Telegrambyrå Norway
- PR Newswire UK
- Profium Finland
- RelaxNews France
- SDA Switzerland
- STA - Slovenian Press Agency Slovenia
- Sourcefabric Czech Republic
- STT - Suomen Tietotoimisto Finland
- TASS Russia
- Univision Communication Inc. USA
- Visual China Group China
- XML Team Solutions USA
- Yuanben China

- NOTE: There are also Individual Members
What does IPTC do?

- Create, maintain and promote open international technical standards such as IPTC Photo Metadata, NewsML-G2 and SportsML
- Work on newer standards for emerging technologies such as rNews, RightsML and Video Metadata Hub
What does IPTC do?
Software development

• We run development projects related to our work such as
  – The **IPTC EXTRA** open source rules-based text classifier
  – The PhotoMetadata Crawler to understand how publishers use IPTC Photo Metadata
  – Reference implementations of RightsML parsers
  – **SportsML parser** and SportsJS converter
• We work with open source developers
What does IPTC do?
Partnerships and Advocacy

• Collaborate with other standards associations
  – W3C
    • Joint work on Open Digital Rights Language (ODRL)
    • RightsML is a “profile” of ODRL
  – OASIS, JPEG, IEEE

• Help companies integrate the standards
  – Adobe, Google
  – Camera makers, newsroom software vendors, sports stats systems, etc…
What Does the IPTC Do?

• Best Known for IPTC Photo Metadata
• Originally based on (IIM), IPTC Information Interchange Model
• Still the ‘standard’ for many products
• Now, XMP embedded metadata framework
• Since 1995, also GIF, JPEG, PNG etc.
• Also, today, IPTC photo metadata used by:
  – All major camera manufacturers: Canon, Nikon, Sony etc
  – Photo software vendors: Adobe, etc.
  – Almost all DAM systems:

  – And ....Drum roll, please
Last September Google Announced

- Google will no longer strip off rights-related image metadata in Google images
- **Google search results** will now show Creator, Credit and Copyright
- [https://www.blog.google/products/search/image-rights-metadata-google-images/](https://www.blog.google/products/search/image-rights-metadata-google-images/)
- Resulting from advocacy from IPTC and CEPIC
What Does IPTC Do?

Creates and maintains the IPTC NewsCodes, a huge set of multi-lingual controlled vocabularies useful for subjects in addition to news. Opportunity for collaboration with MESA members:
News Codes: concept taxonomies for news

- Media Topics
  - 1,200 terms for categorising news content
  - Terms and definitions in 6 languages:
    - (British) English, French, German, Spanish, Arabic, Swedish. Soon Portuguese and Chinese
- All freely available from cv.iptc.org in these formats:
What does IPTC do?

• How does the technical work get done?
• Meetings – in great places!
• Next IPTC meeting in Lisbon in April
• IPTC + CEPIC Photo Metadata Conference: Paris, June 2019
What is the Video Metadata Hub

NOT! Yet Another Standard!!!

A single set of video metadata properties mapped across QuickTime, XMP, MPEG4, MPEG7, MXF, EBUCore, PBCore and NewsML-G2 -- plus manufacturer-specific metadata formats such as Sony XDCAM and Panasonic/SMPTE P2.
Core properties

The Video Metadata Hub’s set of metadata properties includes:
~ 20 properties describing what can be seen and heard in the video
~ 15 properties providing rights-related information
~ 15 properties for administrative purposes
~ 25 properties covering technical characteristics
~ 15 structures of properties which are used for the properties listed above

Broadcasters and video producers: encourage your software vendors and systems manufacturers to implement IPTC Video Metadata Hub in their systems for seamless interchange.

Technical implementation

All Video Metadata Hub properties can be expressed by:
• **EBU Core** – for metadata in stand-alone documents associated with the video binary
• **XMP** – for metadata embedded into the binary video file
• **JSON** – for a stand-alone and light-weight exchange of metadata, e.g. by APIs

Recommended mappings

• Apple Quicktime
• MPEG 7 (ISO 15938-5)
• NewsML-G2 (IPTC)
• EBUCore
• PBCore
• Schema.org
• Sony XDCAM & planning *
• SMPTE P2 as used by Panasonic *
• Canon VideoClip XML *
* new in VMH Recommendation 1.2

https://iptc.org/standards/video-metadata-hub/
Video Metadata Hub: What problem are we solving?

- Metadata is stored in different ways in existing video formats.
- For video editors it is very hard to move video metadata between systems and the semantics are not always clear.
- For example, location information can be described in all of the ways described in the table.
- Includes two location fields, **Location Shot** and **Location Shown**, with very clearly defined semantics, so metadata can be moved between systems from different vendors.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QuickTime</strong></td>
<td>location with role=0</td>
</tr>
<tr>
<td><strong>MPEG7</strong></td>
<td>creation/location</td>
</tr>
<tr>
<td><strong>Sony XDCAM</strong></td>
<td>PlanningMetadata/Properties/Meta[@name=&quot;Location&quot;]</td>
</tr>
<tr>
<td><strong>schema.org</strong></td>
<td>locationCreated</td>
</tr>
<tr>
<td><strong>SMPTE P2</strong></td>
<td>ClipMetadata/Shoot/Location</td>
</tr>
<tr>
<td><strong>EBUcore</strong></td>
<td>coverage/spatial/location + typeLink=&quot;ivqu:locationShot&quot;</td>
</tr>
<tr>
<td></td>
<td>coverage/spatial/location + typeLink=&quot;ivqu:locationShown&quot; OR subject +</td>
</tr>
</tbody>
</table>
## Mapping Table: Benefits

<table>
<thead>
<tr>
<th>Administrative</th>
<th>Circa Date Created</th>
<th>Description</th>
<th>New</th>
<th>Text</th>
<th>XML</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Created</td>
<td></td>
<td>Date and optionally time when the video was created</td>
<td>New</td>
<td>Date</td>
<td>Date/modified OR date + typeLink=&quot;lvq:created&quot;</td>
<td>date/created</td>
</tr>
<tr>
<td>Date Modified</td>
<td></td>
<td>Date and optionally time when the video was modified last time</td>
<td>New</td>
<td>Date</td>
<td>Date/released OR date + typeLink=&quot;lvq:released&quot;</td>
<td>date/released</td>
</tr>
<tr>
<td>Date Released</td>
<td></td>
<td>Date and optionally time of the public release of the video</td>
<td>New</td>
<td>Date</td>
<td>Date</td>
<td>date/created</td>
</tr>
<tr>
<td>Episode</td>
<td></td>
<td>Episode in a specific season of a TV or video series this video is a member of.</td>
<td>New</td>
<td>Episode</td>
<td>Episode + typeLink=&quot;lvq:episode&quot;</td>
<td>episode</td>
</tr>
<tr>
<td>External Metadata URL</td>
<td>Link(s) to an external web resource for retrieval of further metadata about this video</td>
<td>New</td>
<td>URL</td>
<td>use relations and relatedInformations/links for contacts/owners and organisations</td>
<td>url/externalMetadataLink</td>
<td>links</td>
</tr>
<tr>
<td>Feed Identifier</td>
<td></td>
<td>Identifier of the feed/source this video was delivered by</td>
<td>New</td>
<td>Text</td>
<td>identifier + typeLink=&quot;lvq:feedIdentifier&quot;</td>
<td>feedIdentifier</td>
</tr>
<tr>
<td>Publication Event</td>
<td>Date and optionally the time of publishing this video with name and identifier for the event of this publication.</td>
<td>New</td>
<td>Publication Event structure</td>
<td>publicationEvent/publicationDate</td>
<td>publicationEvent</td>
<td></td>
</tr>
<tr>
<td>Rating</td>
<td></td>
<td>How the video is rated by a public source or an authority for the video.</td>
<td>New</td>
<td>Boolean</td>
<td>rating</td>
<td>rating</td>
</tr>
</tbody>
</table>

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The IPTC Video Metadata provides fields for asserting rights and licensing a use of a video:

- Many variants of Creator (director, … of photography)
- Many variants of Contributor
- Copyright Owner + Copyright Notice + Copyright Year
- Supplier of this copy of the video
- Licensor of this video
- A structure for expressing what use of the video has been licensed
Video specific: parts = clips

Metadata of the video, including:

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video ID</td>
<td>UUID: 7890</td>
</tr>
<tr>
<td>Title</td>
<td>Sun shines in all videos</td>
</tr>
<tr>
<td>Description</td>
<td>Exciting phenomenon: it looks like the sun shines in all videos.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video ID</td>
<td>UUID:...</td>
</tr>
<tr>
<td>Title</td>
<td>News At Noon</td>
</tr>
<tr>
<td>Description</td>
<td>All relevant news at today's noontime.</td>
</tr>
</tbody>
</table>
### Area of IPTC’s control

(some) IPTC Video Metadata Hub properties:

#### Name | Value
--- | ---
Video ID | 10.5240/EA73-79D7-1B2B-B378-3A73-M
Title | Blade Runner
Description | Deckard (Harrison Ford) is forced by the police Boss (M. Emmet Walsh) to continue his old job as Replicant Hunter.

#### Property | Value
--- | ---
com.apple.quicktime.title | See above
com.apple.quicktime.description | See above

dc:identifier | See above
dc:title | See above
dc:description | See above

#### Property (ebucore: ...) | Value
--- | ---
identifier + @typeLink | See above
title + @typeLink | See above
description + @typeLink | See above

#### Property | Value
--- | ---
Object Identifiers/GUID | See above
Titles/Main title | See above
Textual Description/Description | See above

---

Genuine md processor

.mov Quicktime metadata

.mp4 XMP metadata

.mts (sidecar)

.??? MPEG7 metadata

XMP specified for embedded metadata

EBUcore specified for non-embedded metadata
The Semantic Hub

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
<td>Ridley Scott</td>
</tr>
<tr>
<td>Title</td>
<td>Blade Runner</td>
</tr>
<tr>
<td>Description</td>
<td>Deckard (Harrison Ford) is forced by the police Boss (M. Emmet Walsh) to continue his old job as Replicant Hunter.</td>
</tr>
</tbody>
</table>

- **.mov** Quicktime metadata
- **.mp4** XMP metadata
- **.mts** (sidecar) EBUcore metadata
- **.???.** MPEG7 metadata
Use Case 1: Footage

Transform differently named/identified metadata fields into a single set of metadata fields → the Video Metadata Hub

People at your company have to know only a single set.
Use Case: Export

Video Metadata (Hub)

Your dear customers have different needs …

Field mapping solves that!!

Quicktime

MP4 with XMP

MTS with PB Core

MPEG HD422 with EBUcore

A little bit of everything Shaken, not stirred

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### Use Case: DAM Metadata Design

You can pick metadata fields

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
<th>IPTC Advice</th>
<th>Technical Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Identifier</td>
<td>Globally unambiguous identifier of the video regardless of renditions, formats, encodings etc. This identifier should be shared across all renditions.</td>
<td>ICTP advises to follow the guidelines by ISAN (<a href="http://www.isan.org">http://www.isan.org</a>)</td>
<td>Text (0..1)</td>
</tr>
<tr>
<td>Video Rendition</td>
<td>Unambiguous identifier of the video specific to a rendition.</td>
<td>Definitions of specific renditions are not provided by ICTP. Definitions of renditions may be based on format or encoding etc and can be set by producers of videos and/or system vendors.</td>
<td>Text (0..1)</td>
</tr>
<tr>
<td>Video Version</td>
<td>Version of the video identified by the Video Identifier</td>
<td>Could be used to indicate footage, edited video, program masters, etc. Values are typically codes defined by a production company.</td>
<td>Text (0..1)</td>
</tr>
<tr>
<td>Workflow Tag</td>
<td>Indicator for the role of this video in a production workflow.</td>
<td></td>
<td>Concept structure (0..1)</td>
</tr>
<tr>
<td>Registry Entry</td>
<td>Identifier of the video issued by an identified registry.</td>
<td>What is considered a registry can be interpreted in a wide sense as the controlled management of assets with asset-specific identifiers</td>
<td>Registry Entry structure (0..unbounded)</td>
</tr>
<tr>
<td>CV Term About the Content</td>
<td>What the video is about expressed by term(s) selected from taxonomies or controlled vocabularies</td>
<td></td>
<td>Concept structure (0..unbounded)</td>
</tr>
<tr>
<td>Data Displayed on Screen</td>
<td>Text or other data shown in some region of the image.</td>
<td></td>
<td>Text with region delimiter structure (0..unbounded)</td>
</tr>
<tr>
<td>Description</td>
<td>Textual description of the content of the video</td>
<td></td>
<td>Text + language tag (0..1)</td>
</tr>
<tr>
<td>Dopesheet</td>
<td>Shotlist with descriptions</td>
<td></td>
<td>Text + language tag (0..1)</td>
</tr>
</tbody>
</table>

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Just for fun...

Let’s have a look at a full video production workflow
Videos from many cameras can be ingested
Videos from many sources can be ingested
System-internal editing is supported
Many delivery formats are supported

- .MP4 (XMP)
- EBUcore / PBcore XML
- .MOV (Quicktime)
- webpage with schema.org
The Goal

Video Metadata – still flexible but more consistent
Our standards

- **Photo (and Video) Metadata**
  - Used since 1995 to store descriptive, administrative and rights metadata embedded in image files
  - Originally based on IPTC IIM standard, now based on XMP in-file metadata platform

- **Video Metadata Hub**
  - Canonical mapping between video metadata standards: IPTC Photo/Video, EBUCore, ….

- **News Codes, Media Topics**
  - Hierarchical taxonomies of subjects for describing news content

- **NewsML-G2 and NewsML-1**
  - Exchange of packages of text, images, video, audio, events and/or sports data
  - NewsML-G2 is newer, extensible version but NewsML-1 is still maintained

- **RightsML**
  Machine-readable rights format

- **NinJS**
  News markup in JavaScript

- **rNews**
  Linked Data news markup

- **SportsML-G2**
  Syndication of sports results and sports data

- **EventsML-G2**

- **Historical standards**
  - NewsML-1
  - Subject Codes
  - IPTC7901
  - IIM format
Wrap UP

• The Video Data Hub
  – Provides a single set of metadata for videos in many different formats
  – Maps to many of the file and formats your customers and partners
  – However, there are considerable gaps in metadata for broadcast video including language-specific fields such as those being specified by the LMT working group.
  – We look forward to working with you to add the additional fields and values that you need.
Thank You!!!!
Demo of DPP file delivery system

- BBC’s work for Digital Production Partnership standards
- Showed a live demo of the queue of programmes, how playout staff can view problems and rectify them
DPP Metadata Exchange for News – using NewsML-G2

1: Connect to XDCAM Air via API calls
2: Checking for new assets (every 30 sec)
3: Query asset metadata via XDCAM air API
4: Pass asset metadata to G2 XML creation services
5: Get MP4 from XDCAM air S3 bucket
6: Send NewsML-G2 XML and MP4 to AWS S3 bucket for Ooyala
7: Get G2 XML and MP4 by Ooyala services
8: Send NewsML-G2 XML and MP4 to AWS S3 bucket for Reuters
9: Get G2 XML and MP4 by Reuters Connect