WWW2004: Semantic Web Implementation at Adobe

xmp™

Adding Intelligence to Media

Chuck Myers

Adobe Systems Incorporated

May 20, 2004

What is XMP?

- **Technical description**

"Adobe's Extensible Metadata Platform (XMP) is a <u>labeling</u> technology that allows you to <u>embed</u> data about a file, known as metadata, into the file itself."

- **WWW Description**

"Adobe Systems Inc. has built into its products Adobe XMP (Extensible Metadata Platform), an RDF-based metadata system that links contextual information with content files."

- Tim Berners-Lee, yesterday

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Imagine if your files could talk…

- **You would know where they've been**
  - Store contact info and e-commerce links
- **Whether it's appropriate to use them**
  - License usages, copyright notification
- **They could tell you what happened to them**
  - I've been cropped, rasterized, dithered…
- **They could provide information on the contents**
  - Map coordinates, people names, places, events
- **Who their relatives and friends are**
  - I'm related to or derivative of another file
- **Where they are going**
  - What expected next in the workflow
- **XMP provides a common language for interchange**

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What are the Challenges?

- **Capture**
  - Accuracy, consistency, ease of use
- **Compatibility**
  - Dropped or locked metadata
- **Overlapping Vocabularies**
  - Colliding properties from different standards (e.g., author, creator)
- **Extensibility**
  - Limited to specific domains (file formats, db, industries)
  - Cost of adding new properties & translation updates
- **Interoperability**
  - Preservation across diverse file formats, devices, applications, databases
  - Translating industry specific terminology

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Who cares about Metadata?

- **Content creators & producers**
  - Efficiently reuse & repurpose content
  - Proper usage of media assets
- **Technology & design managers**
  - Interoperability with variety of vendors & systems
  - Works with legacy systems
  - Extensible for future developments
- **Content Syndicators**
  - Better ways to browse, search & retrieve media files
  - Tighter integration & improved consumption of assets
- **Developers & integrators**
  - Interoperability & extensibility to expand opportunities
  - Open flexibility - not locked into proprietary technology

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How does XMP address these Challenges?

- **Neutrality**
  - File format independent
  - XMP 'packet' is stored in existing custom data locations for file formats
- **Speaking a common language**
  - Open standards based framework
  - Uses XML & subset of RDF
- **Building upon common vocabularies**
  - Schemas & properties from Dublin Core, IPTC, EXIF
- **Freely available 'language' resources**
  - Open source license SDK available for free
- **Open for discussion & dialog**
  - Creative Suite optimized to speak XMP
  - Partners & products joining in the discussion
- **User-friendly metadata collection and presentation**
  - Customized UI screens across products

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Schema Support in XMP

- **Get the latest spec from adobe.com/xmp**
- **Schema support**
  - Dublin Core
  - Basic XMP
  - Rights Management
  - Media Management
  - Job Ticket Management
  - XMP Page Text
  - Adobe PDF
  - Photoshop (IPTC subset)
  - EXIF
- **Aliasing**

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XMP packet

Header ← `<?xpacket begin=' '`
`  id='W5MOMpCehiHzreSzNTczkc9d'`
`  encoding='UTF-16'`
`?>`

<XML> ← **XML Payload**

Padding ← **Whitespace padding for edits**

Trailer ← `<?xpacket end='w'?>`

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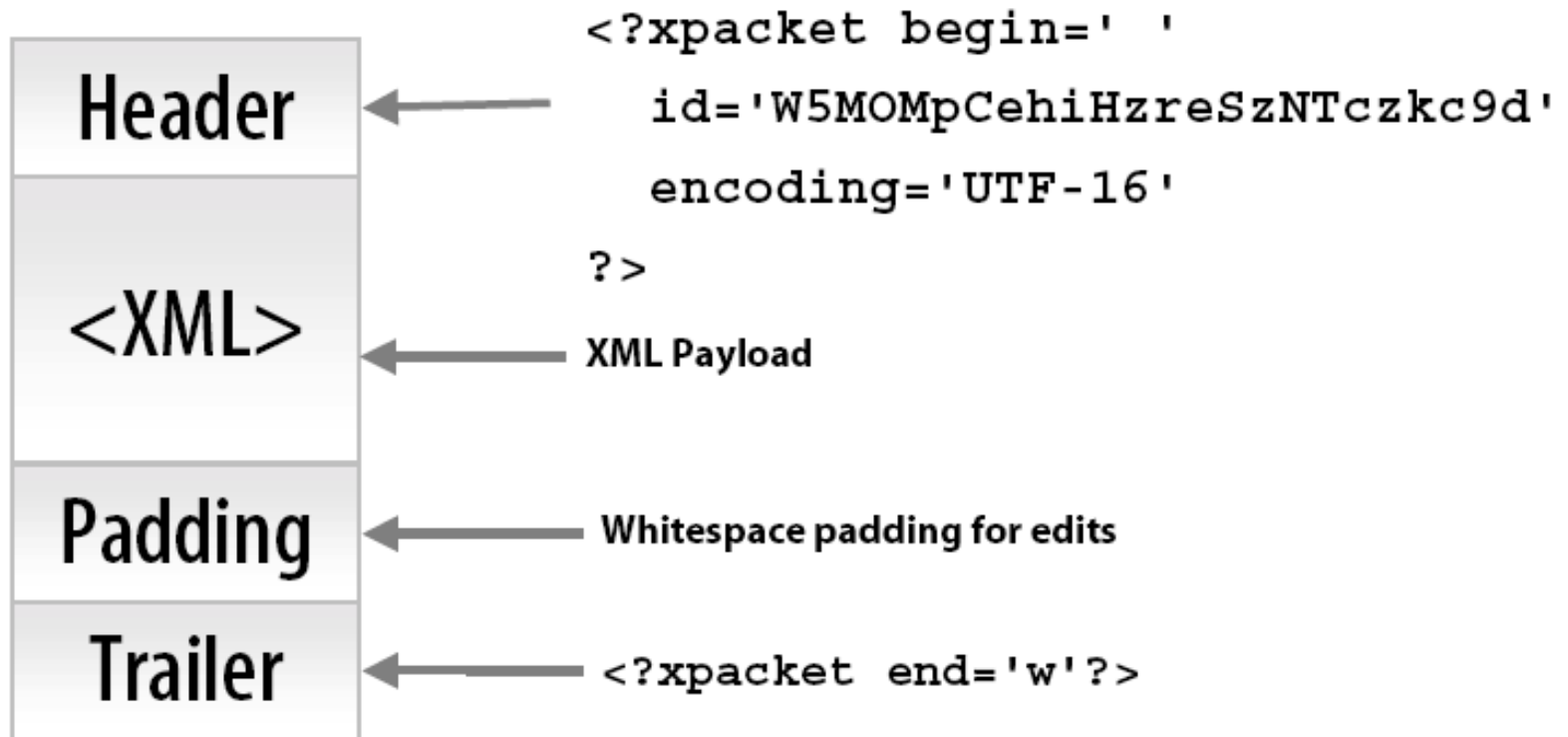
Demo: Photoshop CS

- **Photo organization and tagging**
  - Enhanced file browser metadata features
- **Metadata template application**
  - Copyright info, attribution
- **Preservation across transformations**
  - Camera EXIF info preserved from JPG to PSD
- **Custom File Info Panel**
  - Define custom UI and schemas

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File Edit Image Layer Select Filter View Window Help

Width: ☐ ⇄ Height: ☐ Resolution: ☐ pixels/inch ▼ | Front Image | Clear | | Brushe | Tool F | Layer |

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100% → △

Color | Swatches | Styles

R △
G △
B △

P0000716_edit.jpg

| Description |
| AP proto IPTC schema |
| Camera Data 1 |
| Camera Data 2 |
| Categories |
| History |
| Origin |
| Advanced |

Description

Document Title: River Scene

Author: Chuck Myers

Description: Sunday afternoon crew on Tsurumi River, Yokohama, Japan

Description Writer:

Keywords:

ⓘ Commas can be used to separate keywords

Copyright Status: Unknown ▼

Copyright Notice:

6_edit.jpg

ls | Paths
Opacity:
Fill:
ckground

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Width: [____] ⇄ Height: [____]   Resolution: [____] | pixels/inch ▼ | | Front Image | | Clear | | Brushe Tool F Layer

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| Description | Advanced |
| AP proto IPTC schema |
| Camera Data 1 |
| Camera Data 2 |
| Categories |
| History |
| Origin |
| **Advanced** |

□ TIFF Properties (tiff, http://ns.adobe.com/tiff/1.0/)
 ├ Make: Eastman Kodak Company
 ├ Model: KODAK DIGITAL SCIENCE DC260 (V01.00)
 ├ Orientation: 1
 ├ XResolution: 150/1
 ├ YResolution: 150/1
 ├ ResolutionUnit: 2
 ├ YCbCrPositioning: 1
 ├ DateTime: 2003-11-18T05:26:18-08:00
 ├ Software: Adobe Photoshop CS Windows
 ├ □ ImageDescription (alt container)
 │ └ [x-default]: Sunday afternoon crew on Tsurumi River, Yokohama, Japan
 └ Artist: Chuck Myers
□ XMP Core Properties (xmp, http://ns.adobe.com/xap/1.0/)
□ XMP Media Management Properties (xmpMM, http://ns.adobe.com/xap/1.0/mm/)
□ Dublin Core Properties (dc, http://purl.org/dc/elements/1.1/)
 ├ format: image/jpeg
 ├ □ title (alt container)
 │ └ [x-default]: River Scene
 ├ □ description (alt container)
 │ └ [x-default]: Sunday afternoon crew on Tsurumi River, Yokohama, Japan
 └ □ creator (seq container)
    └ [1]: Chuck Myers

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| Replace... | | Append... | | Save... | | Delete |

                                                        | OK | | Cancel |

File   Edit   Image   Layer   Select   Filter   View   Window   Help
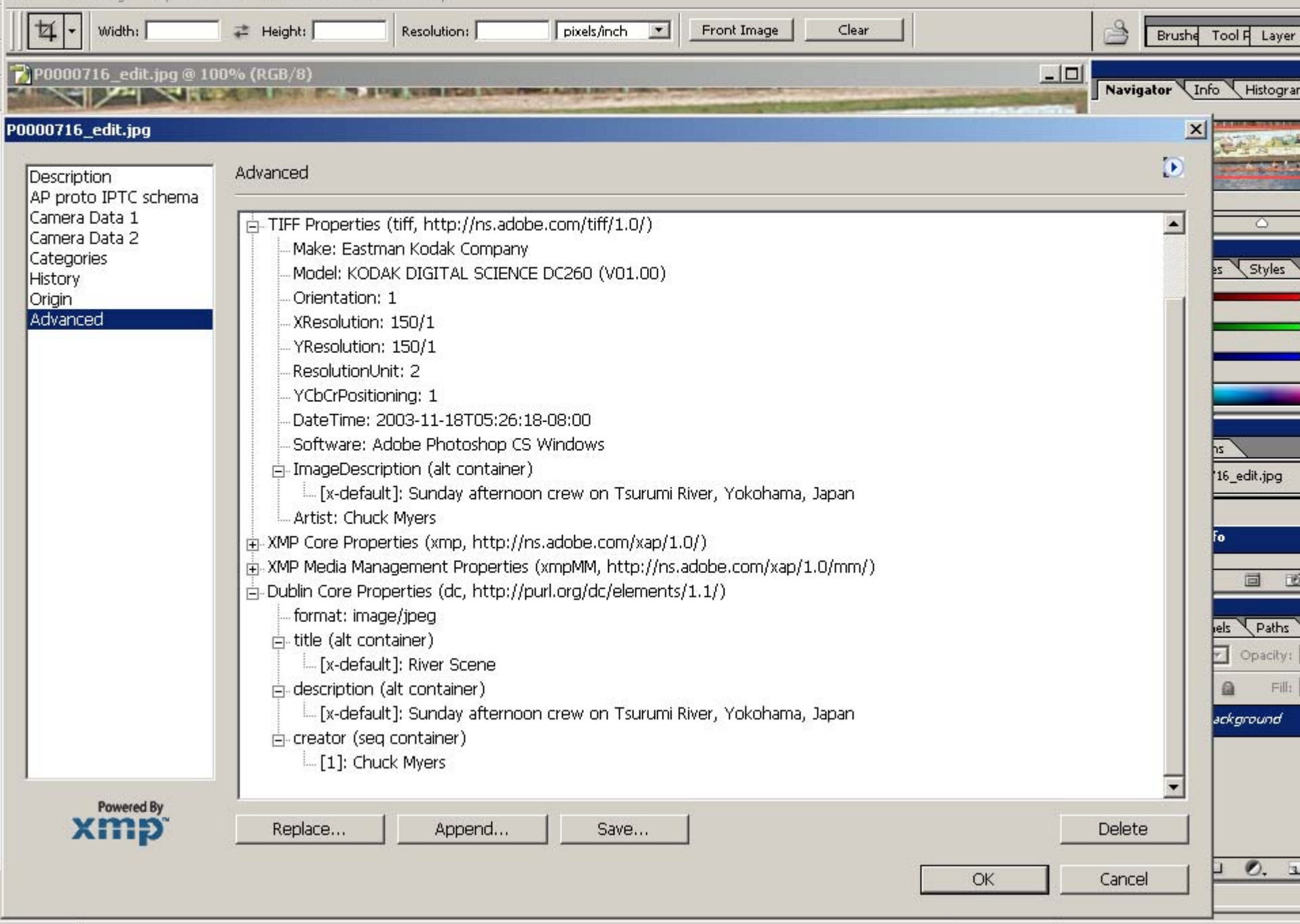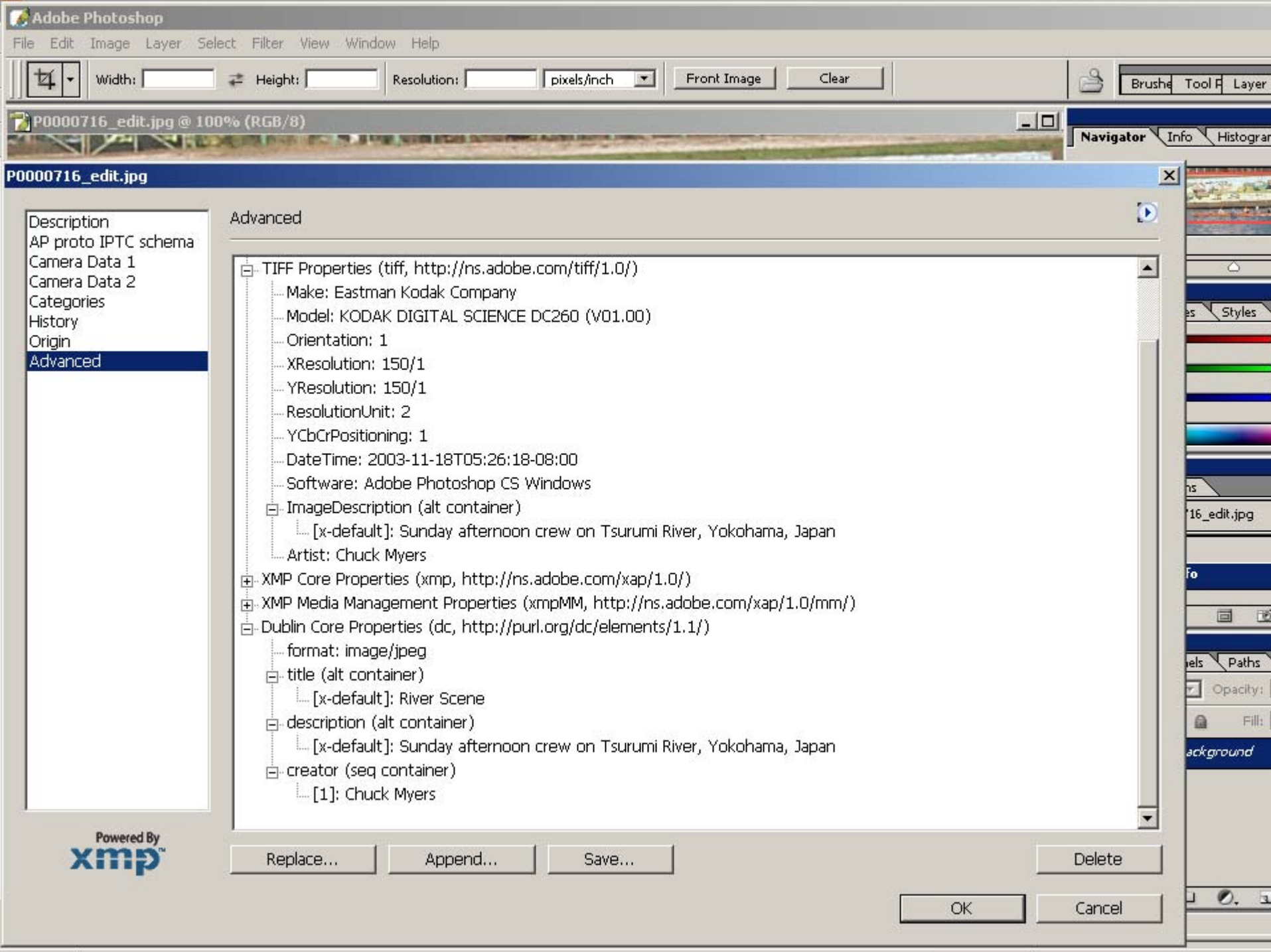
Width: [   ]   ⇄   Heigh[

File   Edit   Automate   Sort   View

Folders

- SeyboldSF2003
- SpeakerOrganize
- SPITBOLOld
- StufftoTake
- TAXML
- TechSummit2003
- UbiquityAndToshiba
- UBL
- W3C-RDF
  - **XMP Demo Files**

Preview

Metadata   **Keywords**

Assigned Keywords: New York, Tom

- ▼ Event
  - Birthday
  - Graduation
  - Wedding
- ▼ People
  - Julius
  - Michael
  - ✓ Tom
- ▼ Place
  - ✓ New York
  - Paris

25%

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apmultimedia_MO_PAN__003VS.jpg

| Description |
| AP proto IPTC schema |
| Camera Data 1 |
| Camera Data 2 |
| Categories |
| History |
| Origin |
| Advanced |

Description

Document Title: MO PAN FLAGPOLE DEMAND

Author: DARREN HAUCK

Description: ADVANCE FOR WEEKEND EDITIONS JAN. 19 - 20 Tom Fontaine plant man
Flag in Oak Creek, Wis., unloads a shipment of flag poles early Wednesday,
Oak Creek, Wis. Tom unloads the truck before the normal work force arrive

Description Writer: RM DJH

Keywords: New York; Tom

ⓘ Commas can be used to separate keywords

Copyright Status: Unknown ▼

Copyright Notice:

Copyright Info URL:

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Created: 9/8/2003
Modified: 11/18/2003

Application: Photoshop
Format: image/jpeg

OK

5 Item(s)

File Edit Image Layer Select Filter View Window Help

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Folders

apmultimedia_MO_PAN__003VS.jpg

| Description |
| AP proto IPTC schema |
| Camera Data 1 |
| Camera Data 2 |
| Categories |
| History |
| Origin |
| Advanced |

AP proto IPTC schema

Caption:

ADVANCE FOR WEEKEND EDITIONS
JAN. 19 - 20 Tom Fontaine plant
manager for Eder Flag in Oak Creek,

Headline:

FONTAINE

Instructions:

DIGITAL IMAGE, ADVANCE FOR
WEEKEND EDITIONS JAN. 19 - 20

Creation Date:

Creation Time:

Graphic Type:

Category: A (News or Features)

Supp Category: ADV (Advance)

Object Name:

Source: AP

Credit: AP

Byline:

Byline Title:

Caption Writer:

City: OAK CREEK

State: WI

Country:

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Preview

Metadata Ke

Assigned Keyword

▼ ☐Event
    Birtl
    Gra
    We
─ ▼ ☐People
    Juliu
    Micl
✓ Ton
─ ▼ ☐Place
✓ New York
    Paris

OK   Cancel

66.67%

5 Item(s)

XMP in Adobe Products

- Creative Suite:
- Photoshop CS
- GoLive CS
- Illustrator CS
- InDesign CS
- InCopy CS

- Acrobat 6
- FrameMaker
- Adobe Graphics Server
- Adobe Document Server

As well as Quark publishing tools, through partners

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Industry Support

- Ancept/Stellent
- Apago
- Artesia
- Context Media
- CoreMedia
- BearingPoint
- Data Technologies International (DTI)
- DeepBridge
- Documentum/EMC
- Extensis
- Getty Images
- **IBM/NICA**
- IfilterShop

- **IxiaSoft**
- Kodak
- MediaBin/Interwoven
- Media Systemen
- **North Plains Systems**
- Pindar Systems
- Pine Tree Systems
- **Pound Hill Software**
- Profium
- **Sansui**
- W3C
- WaveCorp/MediaBank
- **WebWare/Insci**
- Xerox

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Other Standards Efforts building on XMP

- **DISC to release first custom panel**
  - Digital Image Submission Criteria for photographers submitting photos to magazines
  - http://www.disc-info.org/
- **Creative Commons**
  - Licensing for distributing and sharing content
  - http://creativecommons.org/technology/xmp-help
  - Embedding license with XMP in media
- **PDF/A – PDF for Digital Document Archive**
  - Adopting XMP as metadata archive standard

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Conclusions

- **Users have business problems, not knowledge problems**

- **Once appropriately framed, support for metadata effort and products has been quite positive**

- **XMP (and RDF) is now in millions of files, providing source content for semantic web activities**

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Community Support & Resources

http://www.adobe.com/xmp

- **Spec and SDK available via open source license**
- **Resources via XMP Web site**
  - White papers
  - Datasheet
  - Conference presentations
  - Developers Toolkit
  - Online knowledgebase
- **Community**
  - Contributors free to add to the open source
  - Requests, bug-fixes, changes, enhancements

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