# About Metadata

By simple definition, metadata is data about data. Metadata is structured information that explains, describes, or gives the location of the primary data, or that otherwise makes using the primary data more efficient. A wide variety of industries use metadata, but for the purposes of digital imaging, there are currently only a few technical structures or schema in use. A schema is a set of properties and their defined meanings, such as the type of value (for example, date, size, or URL).

## File Info

Prior to Adobe® Photoshop® CS2 software, the primary image metadata schema was File Info, which is nonimage data embedded in image files. Originally deployed by the International Press and Telecommunications Council (IPTC), this metadata contains only a few fields of limited text that is used to help organize and distribute photographic images for newspaper publishing. File Info, which is the Photoshop implementation of the IPTC specification plus additional data fields, defines both the storage format and the actual metadata. Text fields in the current specification include, but are not limited to, Caption, Caption Writer, Headline, Special Instructions, Keywords, Category, Supplemental Categories, Urgency, Byline, Byline Title, Credit, Source, Object Name, Date Created, City, Province-State, Country Name, Original Transmission Reference, and Preserve Additional Information. Mark As Copyrighted and URL are additional fields beyond the IPTC specification. Photoshop CS2 and Adobe Bridge incorporate the new IPTC for XMP specification in addition to legacy IPTC metadata.

The IPTC fields allow only a relatively small amount of text information to be embedded within the file, but it is critical that this information moves through publishing systems locked together with the file. This embedded information is critical for the thousands of digital images used in major newspaper companies. Surprisingly, a large number of Photoshop users don't realize that these metadata fields exist. Photographers routinely send out digital images without even marking them as Copyrighted or embedding simple ownership or contact information.

## EXIF

Several years ago, a group of major photographic manufacturers, in conjunction with the Japan Electronic and Information Industries Association (JEITA), developed a metadata schema called Exchangeable Image File Format (EXIF). This schema is designed to embed in a digital capture—right at the moment of exposure—information relating to the camera's function and image parameters, and additional miscellaneous information.

Unfortunately, the various schemas currently used in image file metadata do not yet meet the explicit needs and desires of imaging artists and photographers. For EXIF or any additional schema to reach broad adoption and acceptance, the creators of digital images must be brought into the process of designing and specifying metadata implementations.

## XMP framework

At Seybold San Francisco in the fall of 2001, Adobe Systems Incorporated announced a new technology initiative called Extensible Metadata Platform (XMP). XMP is a common metadata framework that standardizes the creation, processing, and interchange of document metadata across publishing workflows. Adobe has also committed to the World Wide Web Consortium (W3C) standards, including Extensible Markup Language (XML). Thus, XMP is XML-compatible. For the future of metadata and its usefulness to photographers and imaging artists, XMP holds the promise of providing a significant and extensive platform for a wide array of various metadata implementations. Both public and private metadata schemas can use a widely adopted framework schema that will enable a rich and extensive use of metadata for critical technologies, such as Digital Rights Management (DRM) and Digital Asset Management (DAM).

Adobe Creative Suite 2, which includes Adobe Photoshop, Adobe Illustrator®, Adobe InDesign®, Adobe Acrobat®, and Adobe Bridge, has achieved broad support for XMP across most Adobe applications. Photoshop CS2 and Bridge in particular offer an extensive deployment of XMP.

## Present and future possibilities of metadata

Because of the lack of coordination between manufacturers and organizing bodies, much of the potential of metadata remains unrecognized. Following are examples of metadata and how it can help photographers, both now and in the future.

You can use the File Info dialog box to view and append or replace metadata in image files.
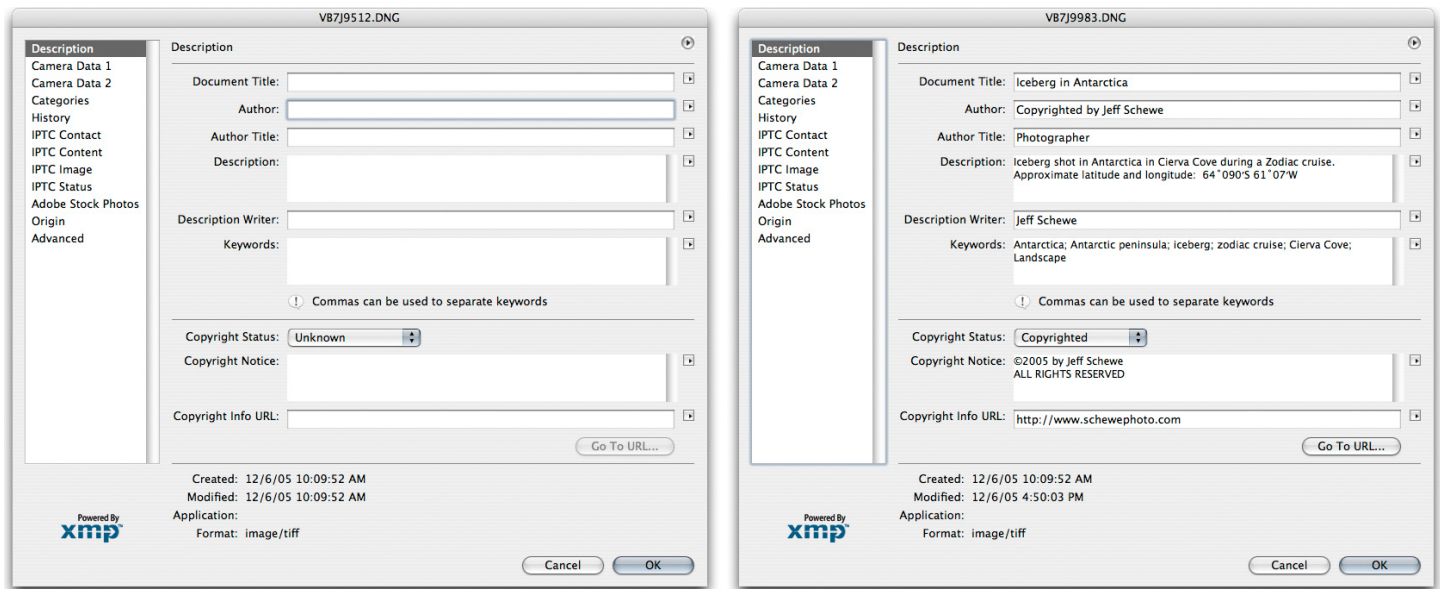


*The basic File Info dialog box in Photoshop CS2 (left) and the fields entered with metadata (right)*

Embedded metadata can be in XMP form and is also aliased to other schemas for backward compatibility. Some of the information, such as the IPTC metadata, is editable; other information is read-only. The creator of an image file should adopt a policy regarding whether subsequent users should replace or simply append existing metadata. For example, it would be inappropriate for users who didn't create the image file to remove or replace the Author information or change an image marked Copyrighted to Unknown.

You can view a variety of metadata for any file in the File Info dialog box, including IPTC, EXIF, Camera Raw settings (for raw files), and more. You can even view the saved edit history of an image if you use the history tracking feature in Photoshop CS2, and the history is embedded in the file as metadata.
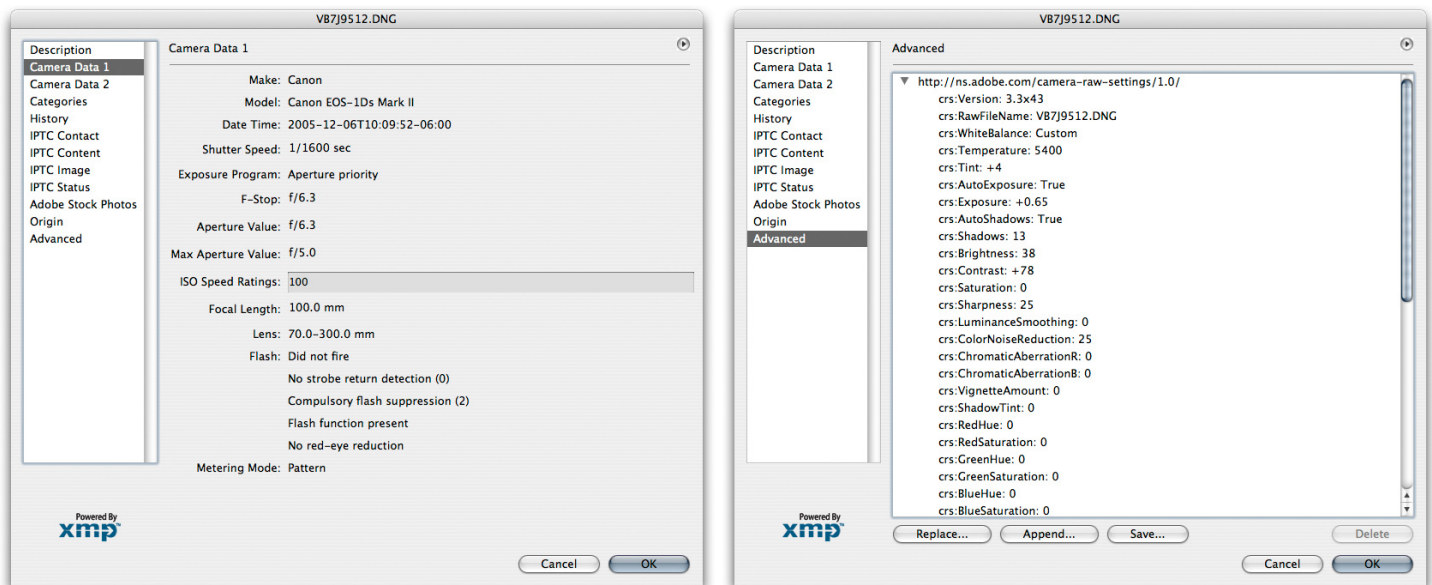


*Some of the EXIF metadata fields (left) and the recorded Camera Raw settings (right).*

Some metadata is known as public data and some of it is referred to as private data. While there are standards for all public metadata fields, the private fields are largely undocumented. That is one of the problems associated with some of the private maker notes embedded in proprietary raw digital camera files.
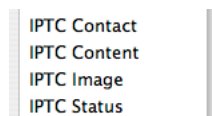


*New to Photoshop CS2 and Adobe Bridge is the addition of IPTC Core, four custom metadata fields that conform to the new IPTC for XMP.*

**VB7J9512.DNG**

IPTC Contact

Description
Camera Data 1
Camera Data 2
Categories
History
IPTC Contact
IPTC Content
IPTC Image
IPTC Status
Adobe Stock Photos
Origin
Advanced

Use this panel to record the photographer's contact information.

Creator: Copyrighted by Jeff Schewe
Creator's Job Title: Photographer
Address: 624 West Willow St.
City: Chicago
State/Province: Illinois
Postal Code: 60614
Country: USA
Phone(s):
E-Mail(s): info@schewephoto.com
Website(s): http://www.schewephoto.com

Metadata templates can populate multiple fields at once.

Access metadata templates from the upper right corner of this dialog.

Support and updates for these IPTC panels can be found at http://www.iptc.org/iptc4xmp

Powered By XMP

Cancel    OK

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**VB7J9512.DNG**

IPTC Content

Description
Camera Data 1
Camera Data 2
Categories
History
IPTC Contact
IPTC Content
IPTC Image
IPTC Status
Adobe Stock Photos
Origin
Advanced

Use this panel to describe the visual content of the image.

Headline:
Description: Iceberg shot in Antarctica in Cierva Cove during a Zodiac cruise. Approximate latitude and longitude: 64˚090'S 61˚07'W
Keywords*: Antarctica; Antarctic peninsula; iceberg; zodiac cruise; Cierva Cove
IPTC Subject Code*:

Subject codes are defined at http://www.newscodes.org

Description Writer: Jeff Schewe

* Multiple values may be separated by a comma or semicolon.

Powered By XMP

Cancel    OK

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**VB7J9512.DNG**

IPTC Image

Description
Camera Data 1
Camera Data 2
Categories
History
IPTC Contact
IPTC Content
IPTC Image
IPTC Status
Adobe Stock Photos
Origin
Advanced

Use this panel for formal descriptive information about the image.

Date Created: 12/6/05
Intellectual Genre:
IPTC Scene*:

Scene values are defined at http://www.newscodes.org

Location: Antarctica
City:
State/Province:
Country: Antarctica
ISO Country Code:

Country codes may be either 2- or 3-letter codes as defined by the ISO 3166 standard.

* Multiple values may be separated by a comma or semicolon.

Powered By XMP

Cancel    OK

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**VB7J9512.DNG**

IPTC Status

Description
Camera Data 1
Camera Data 2
Categories
History
IPTC Contact
IPTC Content
IPTC Image
IPTC Status
Adobe Stock Photos
Origin
Advanced

Use this panel to record workflow and copyright information.

Title: Iceberg in Antarctica
Job Identifier:
Instructions:
Provider:
Source:
Copyright Notice: ©2005 by Jeff Schewe ALL RIGHTS RESERVED
Rights Usage Terms: ALL RIGHTS RESERVED, no reproduction in any form is authorized without the express written consent of Jeff Schewe

Powered By XMP

Cancel    OK

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*IPTC Core has new fields for use with digital images.*

Embedding metadata image by image isn't particularly productive. While IPTC metadata can be embedded using Actions and Batching operations in Photoshop, it's useful and more productive to use Adobe Bridge to add metadata to multiple files at once.
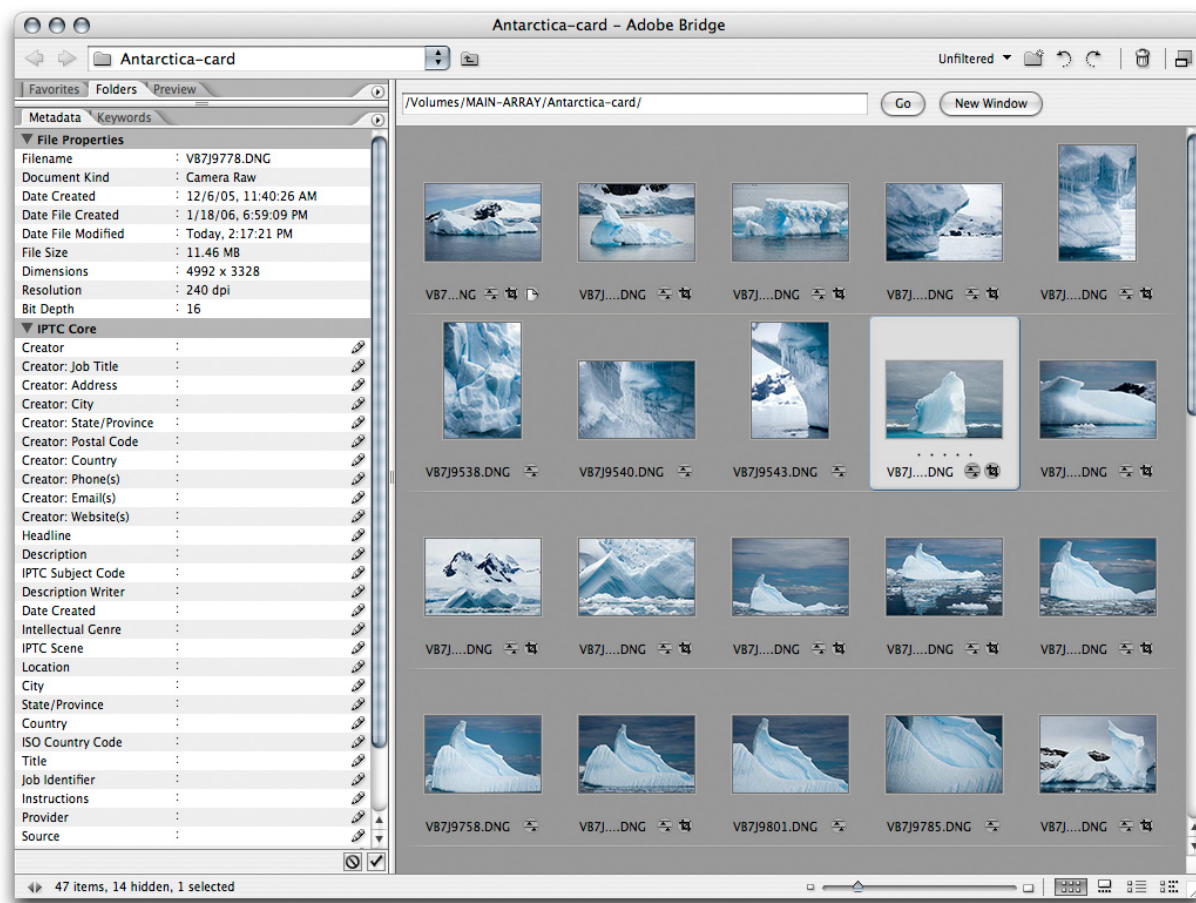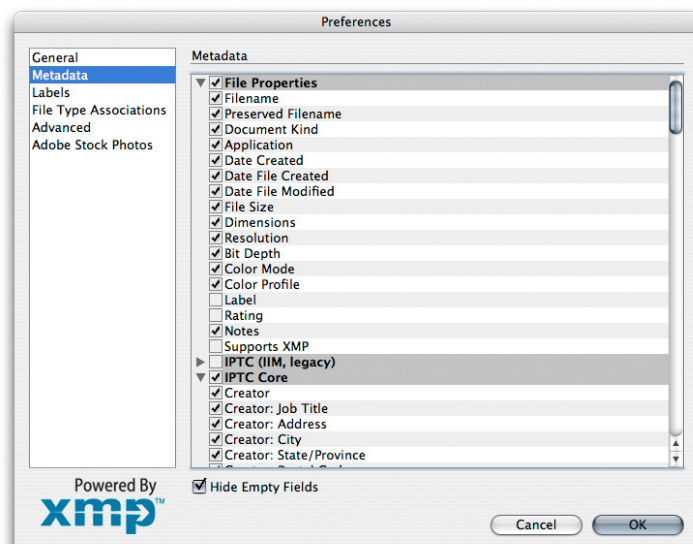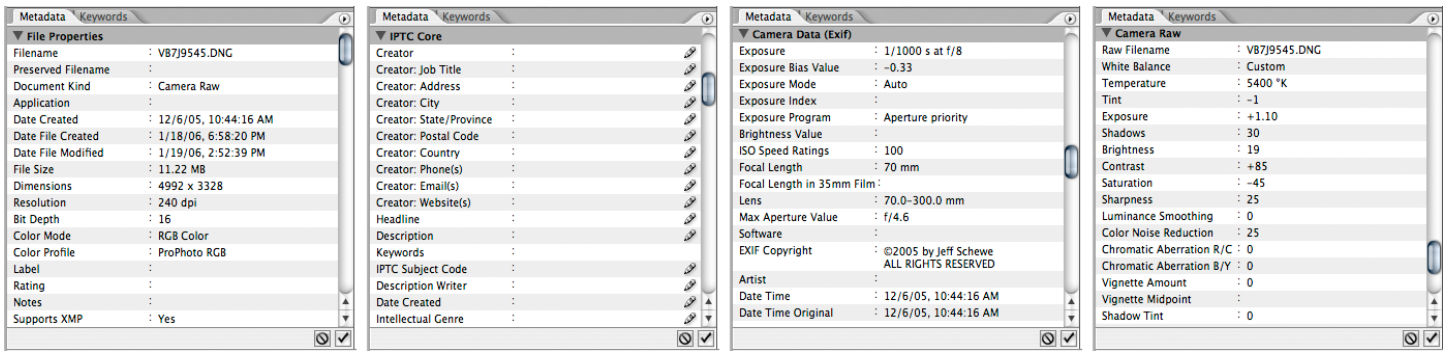


*Image selected in Adobe Bridge*

In the File Browser, there are movable panes that contain the fields of metadata that you have chosen to show. You can control which fields are visible by choosing them from the Metadata Display Options in the Edit menu of the File Browser.



*Select fields you wish to see in the Metadata preferences in Adobe Bridge.*

*Selected fields appear as a scrollable list in the Metadata panel in Adobe Bridge.*

You can edit metadata directly in the fields that allow editing (such as IPTC) either image by image or in selected groups. However, it's more productive if you create and save custom meta-data templates.
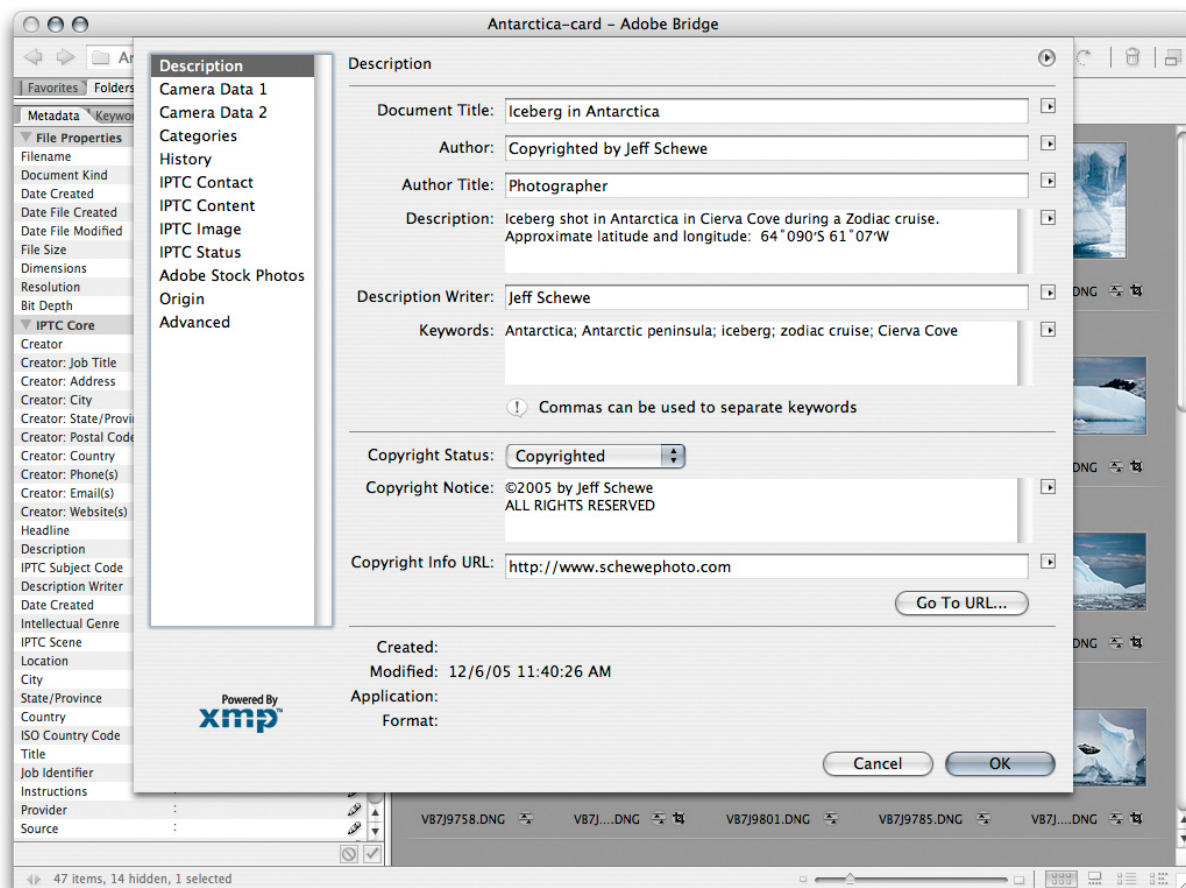


*The figure above shows the File Info dialog in Adobe Bridge. You can fill it out manually as I've done here and then save it out as a metadata template to apply to multiple images.*

To create a custom template, first select an image in the File Info dialog box. Then choose File > File Info and fill in the fields that can be applied to a wide variety of the images you'll be working on, such as Copyright Status, Author, and Copyright Notice. Choose Save Metadata Template from the pop-up menu, and then close the dialog box. You can name the template in the Save dialog box that appears. The template will then be saved and will appear in the pop-up menu of the File Info dialog box and also in the File Browser.
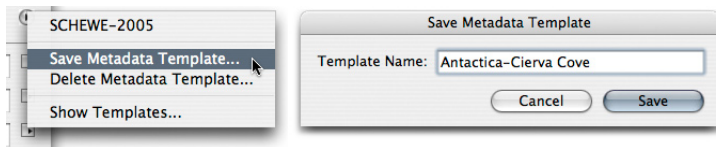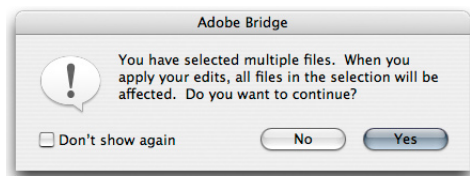


*Saving a custom metadata template (left) with a descriptive name (right)*
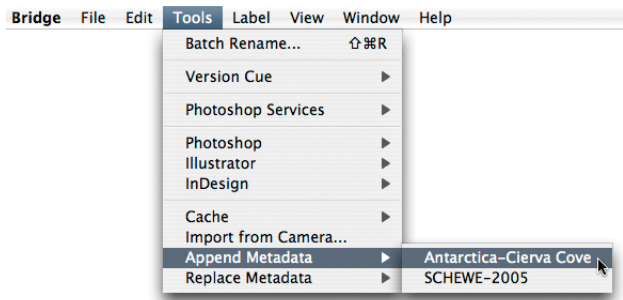


*A saved template appears in the Edit menu of Adobe Bridge.*

After you select the template, you'll be alerted that you are applying metadata to multiple selected files. Choose Don't Show Again if you don't want to see the alert the next time you apply the template.



*Bridge returns an alert when you apply a metadata template to multiple files.*

If you are adding metadata to raw files, note that the data will be stored only in separate sidecar files in the same folder as the file or in the Camera Raw database, depending on your preferences.

Camera Raw and Photoshop CS2 embed the metadata directly in the processed file when it is saved. Note also that all public metadata fields will also be in the file, including EXIF, Camera Raw settings, and image history (if you selected that option).
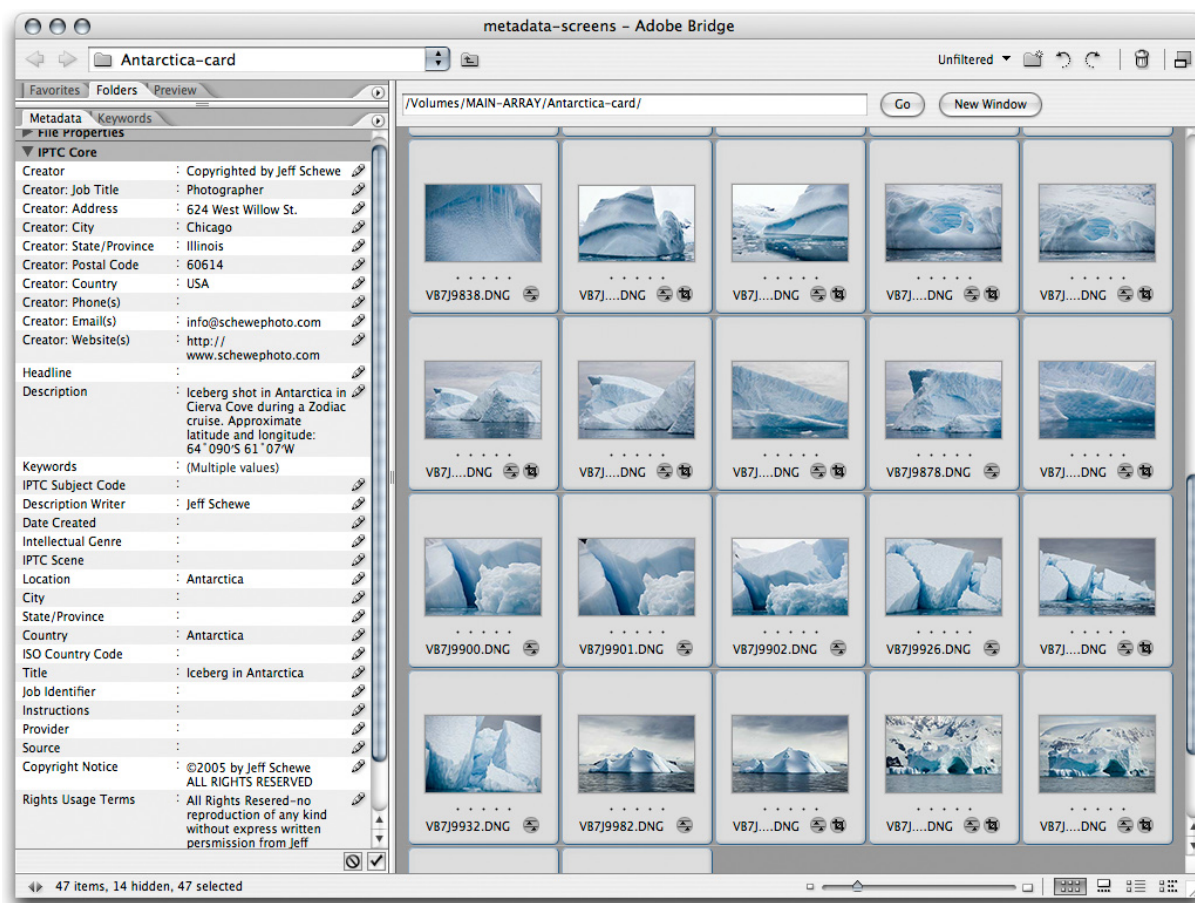


*Embedded metadata in selected files*

After you apply the template, all of the images will have updated metadata from the template. You can still edit individual fields (for example, adding keywords) on an image-by-image basis.
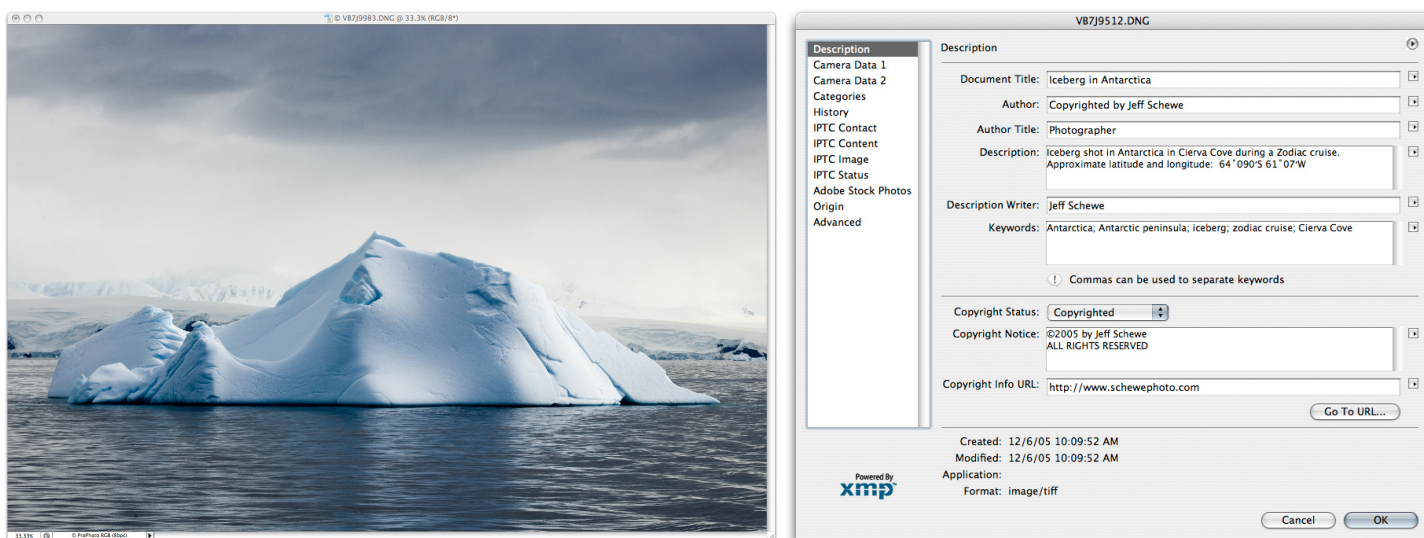


*This processed raw file (left) has had the common metadata (right) entered and saved as part of the raw processing.*

## Conclusion

Metadata has phenomenal potential for the photography industry. For example, suppose two photographers are on assignment and shoot from the identical position with identical lighting. For all practical purposes, the images would be identical, and you would be unable to differentiate who shot which image. By using metadata, you would be able to see the serial number of the camera body and the owner's copyright, providing conclusive proof of ownership.

By using metadata to embed keywords in the images you intend to place in stock libraries, you can reduce or elimate the large amounts of time and money currently spent adding keywords. The current cost of placing a film-based image into a stock library and duplicating it can be as high as $140.00 per image. Reducing the amount of time that an agency spends applying keywords, along with solving other image identification problems, could drastically reduce the actual cost of placement within a system. Adding rich keywords and additional information actually makes an image more valuable.

Photographers and imaging artists can take advantage of metadata for many aspects of their imaging businesses. They can incorporate licensing information for an image, along with the password security for opening the file, into a metadata schema. Imagine being able to embed a unique image identification that will travel wherever the image goes—Photoshop CS2 does that right now. Users could generate and complete invoices and transactions by using metadata or billable time while image processing, or to track exactly what was done to an image file, and when.

## Additional resources about metadata

Adobe XMP
www.adobe.com/products/xmp/main.html

Dublin Core Metadata Initiative
www.dublincore.org

Japan Electronic and Information Industries Association (EXIF)
www.jeita.or.jp/

International Press Telecommunications Council (IPTC)
www.iptc.org

IPTC for XMP
www.iptc.org/IPTC4XMP

World Wide Web Consortium (XML)
www.w3.org

**ABOUT THE AUTHOR**

Jeff Schewe, a summa cum laude graduate of Rochester Institute of Technology, has been an advertising photographer in Chicago for over 25 years. He has been doing digital imaging for over 14 years and is widely known and respected in the digital imaging community as a leading pioneer in the field. Jeff is a feature consultant and alpha tester for Photoshop.

**FOR MORE INFORMATION**

For a comprehensive overview of Photoshop CS2, please visit www.adobe.com/products/photoshop/main.html.