Desperately Seeking Copyright -- Digital Object Identifiers: Just an Idea or an Innovation of Value?

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Desperately Seeking Copyright — Digital Object Identifiers: Just an Idea or an Innovation of Value?

by Edward Colleran (Director, Publisher Relations, Copyright Clearance Center, Inc.) <ecolleran@copyright.com>

The global groundswell for the adoption of yet another numbering system would appear to be underwhelming at best. After all, we already have ISBNs, URLs, EAN/UncPs and a plethora of other numbers. Why, indeed, should we invent another?

But an unusual convergence of interests among librarians, researchers and publishers has, in fact, already propelled the new Digital Object Identifier (DOI) in a few short years from an abstract concept to an operational numbering system for identifying and locating intellectual property in digital format.

DOIs have rapidly claimed a major role in the STM (Scientific, Technical and Medical) publishing world and are poised to venture forth to other publishing sectors and media formats as well. The first four DOI registration agencies already have issued five million DOI numbers identifying millions of individual articles in 6,500 journals. In addition, the Library of Congress National Digital Library Program and the Defense Advanced Research Projects Agency (DARPA) virtual library for the Defense Department use the same underlying technology. Recent announcements include a major Asian adoption and a large-scale multinational European DOI initiative. And a dynamic plug-in for Adobe's Acrobat has been developed which brings the power of DOI to pdf files. That's a lot of traction in only two and a half years!

What exactly is a DOI? DOIs are unique, permanent numbers assigned to specific objects (for example: digital articles, images, music or video), which remain unchanged (in effect, move with them from Website to Website, or publisher to publisher). For a simple analogy, DOIs are like cell phones which owners take with them wherever they go. URLs, in contrast, are like home or office phones in fixed locations; they are of limited usefulness when you are not at that location. Note that DOIs themselves are not an encryption or locking technology; they merely identify digital content as registered and provide a mechanism for the publisher to offer multiple viewing and payment options.

DOIs are enormously helpful to researchers, especially in hyperlinked footnotes, because they transport researchers directly to the article, irrespective of its location, rather than driving them to Web sites that no longer exist. DOIs also are helpful to those librarians who need to track and control the materials that researchers purchase.

The DOI has two components. The prefix is the naming authority, assigned to a publisher, for example; and the suffix — added by the publisher — identifies the specific article, image or media as well as its metadata (that is, data about data, such as the underlying...
ing information about works, rights, etc.). Together these guarantee a unique assignment to a piece of content. Naming authority prefixes are assigned by DOI Registration Agencies — the STM community’s CrossRef initiative is one such — each of which is free to offer its own business model to its relevant community. (CrossRef, for example, operates on the basis of a fee structure detailed on its Website, www.crossref.org.)

So what’s the big deal about DOIs anyway? Why should librarians and publishers care about them? First of all, DOIs have the ability to link to large quantities of metadata about a digital object; for example, bibliographic data required to cite the article in another journal, or information needed by librarians or retailers. That metadata can be dynamically updated by the assigner, yet becomes instantly available to users. It may include not just basic data such as the ISBN number but much more information, such as an author biography, for example.

Secondly, a DOI is tremendously powerful because of its multiple resolution or routing capabilities. Unlike a URL hyperlink that connects only one site to another, a DOI can call up a menu of hyperlink options simultaneously. A DOI could, for example, include hyperlinks to multiple servers where the same object is stored, or display a range of user options, such as reading an abstract, viewing an article or purchasing it in part or in its entirety.

Ultimately, DOIs could be used just like a bar code to track digital content through an entire digital distribution chain from the earliest stages of creation and production through distribution and final delivery to end user.

The technology backbone of the DOI network is the Handle System.* Created by Internet co-founder Robert Kahn, the Handle resolution process transports DOI requests to the DOI directories where the DOI identifiers are stored and resolved to appropriate data such as URLs. The DOI Foundation has now added to this another technical component, the structured metadata approach pioneered by the IndexDB (interoperability of data in e-commerce systems) initiatives and which now forms the basis for developing an international standards effort for rights management. Currently, the Handle system processes DOIs from five registration agencies: CrossRef (U.S.), Content Directions Inc. (U.S.), Enopia Systems (Korea), CAL (Australia) and Learning Objects Network (U.S.).

The impetus for the DOI began back in 1994. It was sparked by the Association of American Publishers (AAP), which was attempting to address the issue of online copyright management and protection, especially in anticipation of eBooks and future e-commerce opportunities. An AAP committee subsequently created the DOI as a numbering system to identify copyrighted content on the Internet; however, DOIs remained pretty much a theoretical concept until 1998 when an international collaborative venture set up the International DOI Foundation (www.DOI.org). CrossRef became the first registration agency at the end of 1999.

The DOI numbering system can become an even more powerful control tool for researchers and budget-conscious librarians alike who use library automation systems such as ExLibris’s SFX context-sensitive reference linking. For example, SFX enables librarians to create customized links to appropriate content within the library’s e-collections regardless of where the information is hosted. In this way a library-specific local resolution tool complements the DOI global resolution tool.

Because SFX links can identify content that is already included in an electronic license, it provides full access to researchers who might otherwise be charged for an individual article, unaware of the library’s periodical subscription. This is a major boost for librarians because it helps them restore control over their budget. The ability to avoid double payment is particularly welcome with the escalating cost of electronic subscriptions, which are consuming an ever-larger share of library budgets.

In conclusion, the establishment of a unique numbering system for identifying creative content fulfills the promise of digital rights management that encryption firms pledged when they adopted the name but fell short of delivering. Digital rights management is too complex to be solved by just a locking mechanism. Encryption itself can’t begin to address such questions as: Who owns what rights? How much should different uses cost? How many uses should be licensed? And other thorny issues.

But encryption and a digital numbering system can, together, truly open up broad access to information while ensuring that creators are paid for their work — a fundamental concept upon which the continued progress of the world depends. That’s why I predict that DOIs are here to stay — and sure to spread.

Adventures in Librarianship — First Draft

by Ned Kraft (Ralph J. Bunche Library, U.S. Department of State) <kraftno@state.gov>

DRAFT RESPONSE - PLEASE EDIT BEFORE SENDING TO THE DEAN!

To: Dean Horkner, Darkmound University

From: Dr. Samuel Prudent, Fraught Memorial Library

Subject: Space Planning

The Library’s Space Planning Committee met on 1 January to review the University’s proposed demolition? renovation of the library.

The proposed new office configuration for the technical services division, described by the architects as a “flexible and innovative approach to right-sizing the work flow,” anyone want to guess what that means? is certainly eye catching if you are colorblind and easily bewildered. However, we believe it may violate several municipal codes. Four-by-four might be too small for a cubicle, no matter how rich the wood grain.

Though we appreciate your suggestion that the library include a sports bar televising the University’s basketball triumphs by last count, those triumphs numbered two, we suspect that the rare book room is not the appropriate place to offer such a service. We wonder, in fact, whether that service might duplicate the sports bar already established in the student union building.

The staff enjoyed meeting Mr. Harrison at the reception. We appreciate his skill in the business world and his willingness to fund the renovation. We hope, however, that you will find some delicate way to decline his offer to microfilm all of our monographs without making the lunacy of the idea too obvious. Again, there may be some legal

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