

◆ *Is Your Journal Prepared to Make the Most of the DOI?*

Moderator:

Joy Moore
Malden, Massachusetts

Speakers:

Ed Pentz
Publishers International Linking
Association
Lynnfield, Massachusetts

Tim Ingoldsby
American Institute of Physics
Melville, New York

Reporter:

Pritpal S Tamber
BioMed Central
London, UK

Some people have suggested that an article that is not online does not exist. Ed Pentz began this session by contending that we should take that further—if it's not linked to, it doesn't exist. Creating links, however, is not easy when, according to Pentz, the average half-life of a URL is 44 days, 20% of links found in references do not work, and some publishers are creating long, confusing URLs.

Those problems have been exacerbated by recent changes in the workflow, use, and economy of journals. Many now publish their articles online ahead of print, have different versions for online and print, and even have articles online only. Pentz described this as the “deconstruction” of journals from issue-by-issue to article-by-article products. Furthermore, users have become accustomed to accessing articles online before they're available in print—a process that has been consolidated by pay-per-view schemes.

Recognizing the importance of stable URLs and the business potential of being able to link to cited references, the world's leading scholarly publishers formed the Publishers International

Linking Association (PILA)—a nonprofit membership association—in January 2000. PILA operates CrossRef, the company that manages the assignment of digital object identifiers (DOIs) to each article published by a PILA member. A DOI is a unique alphanumeric string comprising a prefix assigned to the publisher by CrossRef and a suffix assigned to the article by the publisher. When a user enters a DOI in the space provided at dx.doi.org/, the user's browser then goes to a Web site (URL) associated with that DOI. For instance, article cc2325

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by publisher 10.1186 becomes available at dx.doi.org/10.1186/cc2325. To ensure a unique, persistent, and stable link, the publisher can easily update the URL stored in the DOI directory.

Tim Ingoldsby said that before CrossRef was created, publishers were involved in laborious and time-consuming talks to form agreements whereby one publisher's articles could link to another's. He believes that CrossRef has made the agreements not only more manageable but also more profitable by making them many-to-many; that is, a new PILA member is able to link to all existing members, and vice-versa. He also believes that users have come to expect “rich links” in articles. American Institute of Physics data suggest that over 20% of visits to its articles come via outside

links, including those using CrossRef.

When a PILA member turns the references listed in each article into a query, it is processed by CrossRef's metadata database. If a query is successfully answered, the database returns a DOI for the referenced article, which enables the publisher to create a link for the listed reference. The process is periodically repeated so that any unsuccessful queries can be answered if the DOIs have since been deposited. Ingoldsby described the process as an “essential service”, saying that the work for the publisher “is not overwhelming”.

Pentz and Ingoldsby described how the DOI is about more than just linking articles—or to be precise, how linking articles can lead to more. By processing references, CrossRef is encouraging publishers to ensure that articles have been accurately cited and to correct them when they have not been. A DOI assigned on acceptance allows different versions of the same article to be traced with a single number. By requesting metadata in a standard form, CrossRef is helping to develop standards for all publishers and, Pentz contests, to “level [the] playing field”. Not only does this provide a stable business infrastructure, but publishers can “maintain their own business models”. Finally, changes in journal ownership will be smoothed by making articles accessible via the DOI-based URLs.

The speakers ended by offering a glimpse of CrossRef's plans. Ingoldsby described how forward linking will become possible; PILA members will know which of their articles are being cited and by which journals, and this will permit additional links to be created. If approved, that functionality could be available by the beginning of 2004. Pentz said that CrossRef is hoping to help ISI track citations for individual articles, in the hope of producing a per-article “impact” measure. Pentz ended by recommending that journal editors make DOIs visible in their journals. 