CrossRef is a not-for-profit membership association whose mission is to enable easy identification and use of trustworthy electronic content by promoting the cooperative development and application of a sustainable infrastructure.

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As the CrossRef service of Publishers International Linking Association (PILA) approaches its 10th anniversary, it is instructive to look at how far the organization has come since its launch. Incorporated in January 2000 with 15 member publishers, approximately three million journal articles registered in the system, and the financial uncertainty of a small startup venture, CrossRef today includes more than 2,800 participating publishers and societies, with more than 37 million content items registered, including not only journal articles but book chapters, technical reports, working papers, theses, and dissertations, as well as images, tables, and graphs. In an average month, the number of CrossRef DOI resolutions—instances of scholars and researchers clicking on links—now exceeds 25 million. As a well-established and financially secure organization, CrossRef has begun to extend beyond its core linking service to new services that allow publishers to add value to their content in a number of ways.

One such service is CrossCheck, which helps publishers evaluate the originality of content submitted for publication. Launched in June 2008, CrossCheck now includes more than 60 participating publishers, with more than 20 million content items deposited in a database against which submissions can be screened for duplication. The ALPSP has recognized the value of CrossCheck with its 2008 Award for Publishing Innovation, citing the collaboration between CrossRef and technology provider iParadigms as an important enhancement of the trust underlying successful scholarly publishing and the role publishers can play in promoting that trust.

With the online proliferation of multiple versions of published items, it has become more difficult for researchers to recognize a publisher-maintained version of the article. The CrossMark service will enable publishers to identify such versions by a distinct logo with associated metadata, allowing them to indicate and incorporate any corrections, a critical part of the publisher’s function in maintaining the scholarly record. A CrossMark pilot has been launched and will run through the end of the year.
Through CrossRef Metadata Services (CMS), CrossRef is now drawing on its collaborative structure to help promote content discovery and usage evaluation. Licensed CMS partners are given access to cross-publisher metadata for the purposes of reusing the bibliographic metadata (including CrossRef DOIs) in their services, which now may include developing citation metrics. CrossRef Members retain the right to opt out at their discretion. As in the core linking service, this arrangement eliminates the need for bilateral agreements, in this case between publishers and CMS partners.

In parallel with the development of new initiatives, CrossRef has been preparing for a system rewrite, a major investment that will enhance the operation of the core CrossRef services. The project will proceed in a modular fashion, with a rebuild of the query system recently begun as the first stage. The rewrite is being led by CrossRef’s Director of Technology, Chuck Koscher, in close collaboration with established technology partner Atypon Systems, Inc., an arrangement that will yield CrossRef intellectual property rights to the system as well as in-depth knowledge of its design.

As an organization successfully completing its first decade of operation, CrossRef is taking steps to ensure its long-term persistence, and has begun to draft an organizational will that should be finalized early in 2010. It is a multifaceted process. Our alternative data center in Denver, Colorado, provides us with comprehensive backup, and our proprietary involvement in the new software system will augment our ability to support CrossRef’s infrastructure. To safeguard the preservation of the scholarly citation record fully, however, requires that we prepare on fiscal and policy levels as well. To address financial contingency, the Board of Directors has established a cash reserve fund.

Since its inception, CrossRef has grown to be an indispensable part of scholarly publishing, an achievement recognized by the Council of Science Editors (CSE), which conferred its Meritorious Achievement Award on CrossRef at CSE’s annual meeting in May. The award cites CrossRef’s success in tapping collaboration to serve communication in the scholarly community. We are proud to have received this acknowledgement with CrossRef’s 10th anniversary on the horizon; it speaks to the value of the CrossRef mission as we look to a future of helping publishers collaborate to advance scholarly literature in a growing variety of ways.

Edward N. Pentz, Executive Director/Secretary
Once again, CrossRef completed the year in a stronger financial position than the previous year. Revenue of $3,570,088 for 2008 was up 2.4 percent over prior year, with expenses of $3,325,399 up by 1.6 percent, and unrestricted net assets of $2,199,249 were 12.5 percent higher than for 2007. These results reflect CrossRef’s success in managing its operations and in developing and pricing its products and services in a way that supports the organization’s fiscal health while maintaining affordability for all levels of the CrossRef membership.

Backfile deposits have, as expected, continued to decline gradually from their peak level in 2006. The Board of Directors approved a backfile deposit fee of 15 cents per record for 2009, a small increase from the discounted 2008 level of 12 cents but still lower than the previous 17 cents, in keeping with the goal that CrossRef’s services should generate sufficient revenue to cover their expenses. The CrossCheck service, which launched in June 2008, has also been priced for cost recovery, to ensure that it does not incur expense for non-participating members by requiring additional support from other revenue-producing programs.

In late 2008, CrossRef began formal preparation for the long-anticipated system rewrite that is currently underway. CrossRef has arrived at an agreement in principle with technology partner Atypon Systems, Inc., that leverages CrossRef’s staff resources and our relationship with Atypon to minimize the cost of a major undertaking while bringing us intellectual property rights to the new system. This arrangement is in keeping with the prudent management of assets and resources that the Board of Directors and the CrossRef committees seek.

As in previous years, CrossRef’s 2008 audit proceeded smoothly, again reflecting the sound guidance of the Board of Directors and the Audit Committee.

CrossRef approaches its 10th anniversary as a financially strong organization providing a range of products and services that are well aligned with a carefully formulated mission. In mid-2009, we continue to see very strong performance despite the economic downturn. Our 2008 performance and ongoing success in 2009 demonstrate to me that CrossRef has become a critical component in the publishing of scholarly and scientific content. This achievement springs from the active support and participation of the Board of Directors and the CrossRef committees, with the collaboration of the entire CrossRef membership. I would like to thank all of them for all that they do.

Linda Beebe, Treasurer
The anticipated rewrite of CrossRef’s software system is now in the final planning stages, with the deployment of a new query system anticipated late in the first quarter of 2010. The project began in September 2008 when a group of CrossRef members joined to develop a set of requirements for the new system, working with consultant Simon Inger. In November, the group presented the Board of Directors with five detailed options that included cost estimates generated through a model provided by the consultant. The consensus was that the estimates were higher than seemed advisable, particularly in the current economic climate.

In late December, Director of Technology Chuck Koscher proposed that the project be divided into two phases, with the first addressing the query system and the second the deposit system. This approach will distribute both the cost and the demand on staff resources over time. The entire project will be a co-development effort with technology partner Atypon Systems, Inc., and will yield CrossRef full intellectual property rights to the new system while delivering complete transparency for the CrossRef membership. CrossRef is currently negotiating a five-year agreement with Atypon to ensure a smooth transition from their proprietary infrastructure, and a new senior software developer is being recruited to help with the rewrite.

The rewrite will enhance the overall performance of the system while rectifying specific issues that have emerged over time. The new query system will be able to process free text queries, which currently require the use of auxiliary tools. The new deposit system will have the ability to distinguish between a member, a publisher, and a title, solving a number of administrative and accounting problems. The design of the existing system makes it difficult to track activity for members that have multiple DOI prefixes because of acquisitions, title transfers, imprints, or society brands. The new system will be able to correlate such associations accurately and efficiently, substantially improving billing and record keeping.

With its core linking capability, CrossRef has functioned largely as a private service for member publishers, making it possible to anticipate demand on the system’s resources. CrossRef does make its metadata freely available through the OpenURL Query Interface, and end users are increasingly tapping that resource for their own bibliographic purposes. This activity can result in unpredictable usage spikes that place a load on the system. CrossRef is committed to meeting this growing demand, and the new query system will incorporate features to help accommodate it.

As a collaborative venture, CrossRef depends on the active participation of its membership to achieve the optimum performance of its DOI-based linking service. Through the ongoing Metadata Quality initiative, CrossRef continues to seek improvement in deposit submissions, and members are encouraged to follow the guidelines provided for these processes as closely as possible.

CrossRef came into existence to serve publishers and researchers in their navigation of the online environment. The growth of the organization’s capabilities has been incremental and gradual, calibrated to membership need. While CrossRef has expanded significantly over its first decade both in volume of activity and the features it offers, its greatest achievement has been its assimilation as an indispensable part of the scholarly endeavor.
The PILA Board of Directors has defined the following goals and projects as the current focus of the CrossRef organization:

**Goals for 2009**
- Continue to deliver value to the industry and fulfill the CrossRef mission while expanding activities.
- Maintain and develop the core CrossRef system while enabling new services; develop procedures for moving projects from the development and pilot phases to production.

**Projects for 2009**
- For the CrossCheck service, achieve the full participation of the largest member publishers, with comprehensive indexing of their content.
- Determine a course of action for the system rewrite and begin implementation by the second quarter of the year.
- Move forward with a CrossMark pilot.
- Continue to investigate Contributor ID.
- Continue the Metadata Quality initiative through improved quality checks and rejection of low-quality submissions.
- Add new international members and members from developing countries.
- Promote the CrossRef DOI as a key element of bibliographic data and public identifier for content; work with librarians to raise awareness of the DOI among end users and develop marketing materials that support the effort.
- Continue to review administrative procedures with the goal of streamlining operations.
- Continue to participate in relevant industry groups and associations such as Transfer, TicTOCS, SSP, STM, ALPSP, NISO, and IDF.

Content: 78,000 books are registered in CrossRef. The Book Working Group has released a set of “best practices” guidelines to promote linking, and to enhance the discoverability and usage of books.
In three major strategic initiatives—CrossCheck, launched in June 2008, and CrossMark and Contributor ID, now in development—CrossRef is providing publishers with the means to ensure the trustworthiness of the content they publish online, and to communicate that trustworthiness to readers. This supports the CrossRef mission and serves a central need of researchers, for whom reliance on flawed content can have serious consequences.

CrossCheck, now operating with the participation of more than 60 publishers, helps to establish the provenance of a submitted work by screening it against a database of scholarly literature to detect any unattributed appropriation. The CrossMark service will enable publishers to identify their maintained versions of works with a logo and a tool to evaluate trustworthiness. CrossCheck will help safeguard the integrity of scholarly publications by providing researchers with a way to evaluate trustworthiness.

Established as a business-to-business service to enable linking among its member publishers, CrossRef is now serving individual researchers and other organizations in a variety of ways. Researchers are increasingly interested in incorporating persistent linking into their writings, and style guides such as that of the APA now recommend use of the DOI for that purpose. CrossRef is building tools to encourage researchers’ use of DOIs (including Firefox and OpenSearch plug-ins), and is also collaborating with social citation tools such as Connotea, CiteULike, Zotero, Mendeley, and Papers so they can retrieve CrossRef metadata that can then be collected by researchers for insertion into their publications in bibliographic format. Publishers also benefit when submitted manuscripts incorporate linking and correctly formatted metadata, simplifying their production processes.

As a member of the ticTOCs Consortium, CrossRef has helped launch the ticTOCs Journal Table of Contents (TOC) service, which aggregates publishers’ TOC RSS feeds for researchers. CrossRef is developing a set of “best practices” guidelines for the structure of these feeds, which, while generally consistent for a given publisher, have not been uniform across the industry. This will also benefit other automated services that compile RSS feeds, to facilitate their harvest of CrossRef metadata.

One challenge that CrossRef faces is that as its services diversify, the CrossRef brand needs to be managed to extend beyond its strong identity with DOI-based citation linking. With the creation of new DOI registration agencies, different uses for the DOI are emerging, some commercial in nature. CrossRef’s message should focus on its mission and the services that support it, with less emphasis on the DOI as an enabling element.

In parallel with its widening implementation, the DOI System is now in the final stages of becoming an ISO standard, with CrossRef a member of the IDF’s ISO Working Group.

The amount of non-journal content represented in the CrossRef system continues to grow. Approximately 78,000 books are now registered, and the CrossRef Book Working Group has released a set of “best practices” guidelines to promote linking among books and other types of content, and to generally enhance the discoverability and usage of books.
With Executive Director Ed Pentz serving as Chair, the UKSG (UK Serials Group) Project TRANSFER Working Group released the TRANSFER Code of Practice 2.0 in September 2008, providing guidelines for the transfer of journals between publishers with minimum disruption to online access. More than 20 publishers formally endorsed the Code in March 2009.

The PILA Board of Directors comprises 16 representatives, listed further on in this report and at www.crossref.org. Four Board members were re-elected, and two newly elected, at the 2008 Annual Member Meeting in Boston, Massachusetts, on November 18. Re-elected were Tim Ingoldsby, AIP; Linda Beebe, APA; Anthony Durniak, IEEE; and Rebecca Simon, University of California Press. Newly elected were Paul Reekie, CSIRO, and Patricia Shaffer, Informs. PILA continues to seek balanced representation of the CrossRef membership in the Board, as highlighted by the recent addition of Hindawi Publishing Corporation, a publisher of Open Access journals based in Cairo, Egypt, replacing University of Chicago Press.

In spite of challenging economic conditions, there is continued growth in the CrossRef membership, notably in the End-User Lookup Affiliates category, which includes new types of organizations that draw on CrossRef’s authoritative metadata to provide bibliographic tools for researchers, as described earlier in this section. A full listing of CrossRef Affiliates appears further on in this report, and also at www.crossref.org.

The 2008 Annual Member Meeting was the most successful to date, on the theme “Towards the Future of Scientific Communication.” With 2009 marking the 10th anniversary of CrossRef’s formation, a 10th Anniversary Celebration Dinner will be hosted the evening of Monday, November 9th, at the Museum of Science in Boston, Massachusetts. The Annual Member Meeting will be held the following day, with Onora O’Neill, Baroness O’Neill of Bengarve, speaking on trust and communication in academic publication, and T. Scott Plutchak discussing plagiarism in academia.

After nearly eight years with CrossRef, Amy Brand, formerly Director of Business and Product Development, left in October 2008 to become Program Manager at Harvard University’s new Office of Scholarly Communication. Amy contributed in a major way to CrossRef’s emergence as a successful organization, and Harvard is certain to benefit by her knowledge and skills. Also in October, Kirsty Meddings joined CrossRef as Product Manager, and in November, Carol Meyer, well known in the industry for her consultant work with many prestigious clients, joined as Business Development and Marketing Manager.

CrossRef staff members continue their engagement with communities of interest. Ed Pentz is now Treasurer of UKSG, and continues to chair the UKSG Project TRANSFER Working Group. Chuck Koscher, Director of Technology, has taken on the role of Chair of NISO, the National Information Standards Organization, and Carol Meyer is a Board Member of the Society for Scholarly Publishing. CrossRef continues to generate industry press coverage and promote awareness of its offerings through participation in major industry conferences and meetings.

CrossCheck shines the spotlight on plagiarism.

You want to ensure that the content you publish is original and trustworthy. CrossCheck compares texts against a vast database of current and archival scholarly content. The powerful iThenticate software identifies and highlights passages that are similar to other works. CrossCheck is the only plagiarism screening service that lets you compare manuscripts against millions of relevant academic publications. It flags suspicious content for further review and action.

To learn more about how CrossCheck can help protect your publications visit www.crossref.org/crosscheck.html.
CROSSREF AND THE ENVIRONMENT.

Crossref is committed to the conservation of precious natural resources and the continued health of our planet. As a global citizen, we continually strive to reduce the environmental impact of the work we do.