

# Annual Report

2014 — 2015

**15** | fifteen  
year  
anniversary



We are Crossref, a not-for-profit membership organization for scholarly publishing working to make content easy to find, link, cite, and assess. We do it in five ways: rallying the community; tagging metadata; running a shared infrastructure; playing with new technology; and making tools and services to improve research communications.

**It's as simple — and as complicated — as that.**

**The Art of  
Persistence**

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# Letter from the Executive Director



**Ed Pentz** —————  
Executive Director

As Crossref celebrates its 15th anniversary, I am proud of everything that has been achieved by our board, community, and loyal staff. We continue to grow steadily in both the size and the diversity of our membership, with a notable increase in small publishers participating from around the globe, many of them open access. In Brazil alone, more than 100 publishers have joined Crossref through our partnership with the Associação Brasileira de Editores Científicos (ABEC). We have collaborated with the Public Knowledge Project (PKP) to make the Crossref system directly accessible through PKP's Open Journal Systems (OJS) platform, where many new members host their journals. We have also expanded Crossref's program of international seminars to help new members implement our services.

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To develop Crossref's member services and outreach efforts, we have revisited our organizational structure, creating the new position of Director of Member and Community Outreach; Ginny Hendricks was appointed in May 2015 and has reorganized the team, with roles filled by a mix of new and existing staff. The rebrand project started anew with fresh messaging and contemporary visual identity. We have also created a Director of Product Management position; joining in September 2015, Jennifer Lin oversees the development, launch, and uptake of new Crossref services, which are increasingly complex and rely on the collection of substantially more information than the foundational DOI assignment and persistent linking services. The Crossref board has guided these developments as part of an examination of how to best utilize Crossref's assets going forward, including a self-appraisal of governance and oversight.

Use of the Crossref system continues to grow significantly, with the number of digital object identifier (DOI) resolutions (clicks on links) for the first half of 2015 at 780 million, up 21 percent over prior year. There are nearly three million DOIs indexed in the system for figures, components, and datasets; almost 200,000 for standards; and more than 620,000 books—a 16 percent increase over last year.

Implementation of the CrossMark service has accelerated, with close to two million deposits and more than 630 article retractions captured, a significant contribution to the self-correcting process in scholarly research. CrossCheck has become an essential part of the editorial process for the more than 670 publishers participating in the service, with the number of documents checked in May 2015 surpassing 250,000, up from just over 150,000 in May 2014. Improvements in accepting funding data deposits means the service is growing steadily. There are over 10,000 funder names in the Open Funder Registry (formerly FundRef), up from 4,000 at launch. The Crossref API is gaining traction with uptake from the developer community as well as with publishers making the necessary system and workflow changes to allow, for example, text and data mining.

With the increase in DOI-enabled citations in Wikipedia articles, social media posts, and other channels outside scholarly publishing, there is a need to track wider DOI activity. Crossref began piloting a DOI Event Tracker in 2014, collecting a live stream of DOI citations from Wikipedia as a first source. The pilot was upgraded to a project and will launch in 2016 as a new Crossref service providing data on all DOI activity that publishers and vendors can process and interpret for their own services.

Crossref continues its involvement and collaboration with key industry initiatives. I Chair the board of ORCID and recently, Crossref introduced a feature to automatically update ORCID records with publication information, where authors have supplied publishers with their iDs. Our ongoing work with DataCite has yielded a system that enables linking between data and publications. Crossref is represented on the Communications and Technical Working Groups of CHORUS, for which I also serve as an advisor to the board, and we are represented on the Joint Working Group of SHARE.

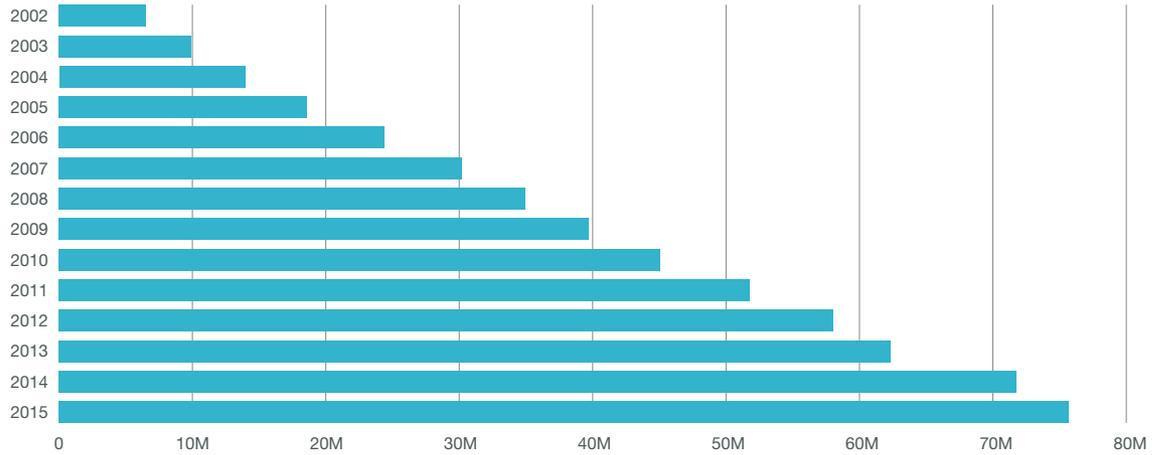
In 2014, Crossref shared honors with Inera Inc. as first-prize winners at the New England Publishing Collaboration (NEPCo) Awards. The award was given in recognition of our 14-year partnership with Inera. Their technological expertise in publishing technology has made an indispensable contribution to Crossref's robust linking system and enables an expanding range of services that facilitate interaction with other scholarly research tools.

**Our focus is on outreach and engagement with scholarly publishing's diverse community, and the collaborative foundation of Crossref is a guiding principle for every level of our work.**

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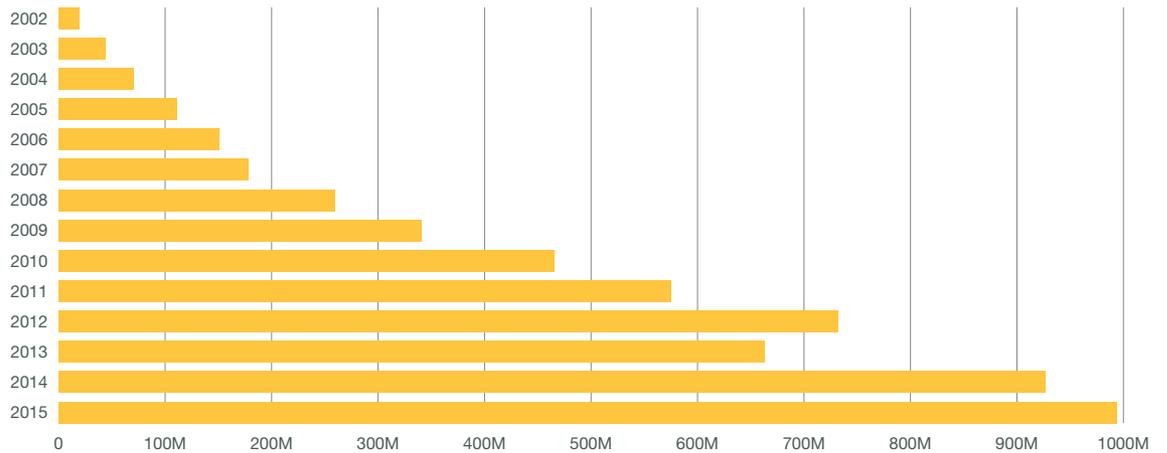
## Registered DOIs (July 2015)

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## DOI Resolutions (July 2015)

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# Letter from the Chair



With my term as Chair coming to a close, I can say that over these three years Crossref has achieved a great deal and diversified significantly beyond its original mission of providing scholarly publishing's foundational citation linking service. CrossCheck, CrossMark, the Open Funder Registry, and the Crossref API are all initiatives that have borne fruit during this time, embedding the organization more deeply than ever before into scholarly workflows and systems. The success of these services affirms the expansionist view of Crossref's role that is shared by board and staff alike.

I would like to recognize the consistently excellent work done by Executive Director, Ed Pentz, and his team. The addition of Director roles in Member and Community Outreach and in Product Management has brought new strength and depth to the senior management tier, ensuring Crossref's ability to deliver across its growing portfolio of services and to support an ever-widening membership base. Where outreach once focused on publishers, today it also encompasses, librarians, researchers, funders, the patent industry, and branches of government—a broad spectrum of communities that Crossref serves in vital ways.

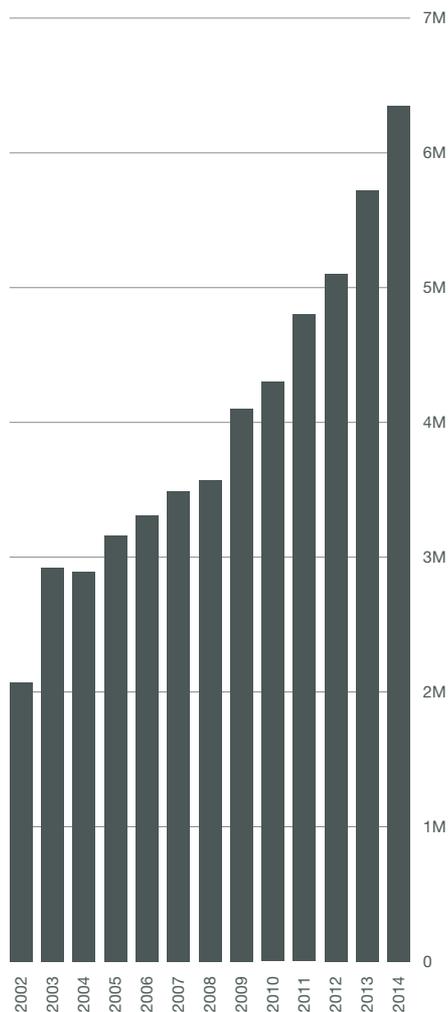
From a strategic perspective, the introduction of a new Crossref brand identity is timely. With the proliferation of our services and our interactions with new constituencies, it has become more difficult to communicate the interconnectedness of Crossref's offerings; a unifying brand will convey a major benefit going forward. At the same time, research has revealed a very high level of trust in the Crossref brand, an ideal foundation to build on and a testament to the success of Ed and his team in positioning the organization within scholarly publishing.

I would like to pay tribute to my fellow board members who, through a time of changing composition (with new members brought in to reflect the diversity of the membership base, and with turnover in ongoing publisher representation), have unfailingly provided guidance to the staff and helped propel the organization forward. It has been a privilege to chair this group over the past three years.

**Ian Bannerman** —  
Chair, Board of Directors

## Revenue Growth by Year

(Millions)



## Statement of Activities

Years Ended December 31, 2014 and 2013

	2014	2013
<b>Unrestricted Net Assets:</b>		
<b>Revenue and support:</b>		
Deposit fees	\$ 3,721,449	\$ 3,454,340
Member fees	2,628,179	2,275,593
Interest income	12,327	13,729
Foreign currency exchange loss, net	(33,699)	(6,525)
<b>Total revenue and other support</b>	<b>6,328,256</b>	<b>5,737,137</b>
<b>Expenses:</b>		
Salaries and benefits	3,052,674	2,769,725
Data center	460,585	512,785
Travel and entertainment	402,638	396,613
Other general and administrative expenses	270,206	218,048
Depreciation	266,597	243,599
Professional fees	261,182	225,019
Registration fees, related party	257,250	200,221
Rent	141,931	136,509
Advertising and marketing	65,080	93,879
Consulting	61,331	47,770
Dues and subscriptions	48,864	47,273
Bad debt expense	37,753	8,963
Program initiatives	29,338	52,492
Insurance	28,948	28,865
<b>Total expenses</b>	<b>5,384,377</b>	<b>4,981,761</b>
<b>Change in total net assets</b>	<b>943,879</b>	<b>755,376</b>
<b>Net assets, beginning of year</b>	<b>4,849,041</b>	<b>4,093,665</b>
<b>Net assets, end of year</b>	<b>\$ 5,792,920</b>	<b>\$ 4,849,041</b>

Crossref completed 2014 in a strong financial position. Revenue of \$6,349,348 came in seven percent over budget, and expenses of \$5,384,877 were approximately two percent under budget, yielding an operating margin of 15 percent, up two percent over prior year. Both revenue and expenses were up over 2013: revenue was up 11 percent and expenses were up eight percent.

The 2014 year-end overall cash position of almost \$4 million is more than sufficient to cover one quarter's operating expenses, in accordance with policy established by the Board of Directors. The year 2014 brought another clean financial audit, with suggestions for a fuller system and security audit in the coming year.

Given Crossref's robust cash balance at the end of 2014, the board is considering an upward revision in the Operating Cash Reserve guidelines (currently set at the minimum standard of three months) and an increase in the Capital Expense Fund, which quickly reached its initial \$1 million target, as well as the allocation of a portion of the fund to a slightly less conservative investment policy.

Crossref's financial health has allowed a further expansion of programs and staff, to support speedier implementation of new services and more effective outreach to members and other stakeholders increasingly diverse in terms of geography, publisher size, and desired functionality. In this context, we anticipate a lower operating margin for Crossref in the year ahead.

The CrossCheck and CrossMark services are now financially self-sustaining. New initiatives such as the Crossref API, the Open Funder Registry and funding data deposits (formerly FundRef) are offered as publisher contributions to scholarly research needs, with no associated fees.

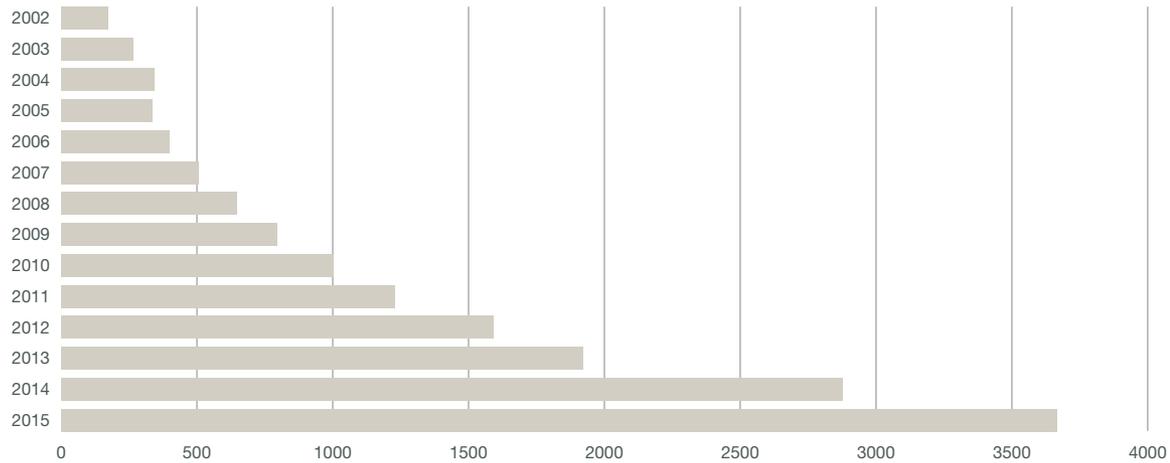
The Crossref staff must be acknowledged for its outstanding fiscal management, which has enabled effective decreases in member fees over the last eight years by holding them steady, with no cost-of-living increases.

**Bernard Rous** —————  
Treasurer



# Letter from the Treasurer

## Voting Members (July 2015)



# Governance

**The Crossref Board of Directors comprises 16 representatives, listed later in this report and at [Crossref.org](http://Crossref.org). At the 2014 Annual Member Meeting, the following individuals were elected to serve three-year terms: Jason Wilde, AIP Publishing Inc.; Gary VandenBos, American Psychological Association; Gerry Grenier, IEEE; Eleonora Dagiene, Vilnius Gediminas Technical University Press; Carsten Buhr, Walter de Gruyter; and Y. H. (Helen) Zhang, Zhejiang University Press.**

A facilitator helped guide the July 2015 meeting of the Crossref Board of Directors, which focused on strategic issues. Under consideration were Crossref's mission statement, how to best leverage the organization's assets in support of the mission, and how the board might improve its own processes. Crossref is moving forward with a number of actions identified

at the meeting, including drafting a set of guiding principles, developing the strategic roadmap for 2016, and formulating board meeting agendas to focus more on strategic issues, less on operations.

As Crossref's voting membership has grown more diverse geographically, the Nominating Committee has endeavored to ensure that the board's constitution reflects that diversity.

## Rally

Getting the scholarly community working together.

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## Tag

Structuring and processing metadata.

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## Run

Operating the infrastructure that makes it possible to find, link, cite, and assess content.

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## Play

Engaging in debate and experimenting with technology to solve problems.

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## Make

Creating tools and services to improve research communications.

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# Member & Community Outreach

A renewed approach to rebranding began in July to research and clarify Crossref's role in and value to the scholarly community. November brought the introduction of a fresh look and feel for Crossref, with a clean, contemporary visual identity, an iconic logo, and down-to-earth language. The new identity reflects Crossref's growing role in bringing the scholarly community together to improve research communications, and its commitment to developing practical solutions to help identify, link, cite, and assess scholarly content.

The COMM Team is extending existing outreach programs and creating new ones. The workshops that Crossref has held from time to time have been developed into the Crossref Seminar Series, with recent

**To engage with Crossref's increasingly diverse membership and to increase their awareness and understanding of Crossref's services, Ginny Hendricks was brought into the organization in May 2015 in the newly-created role of Director of Member & Community Outreach. She reorganized the team, de-emphasizing hierarchical titles and expanding to a group of eight—now called Community Outreach, Membership, and Marketing (COMM) adding positions for Digital Content Marketing and International Outreach.**

events in Shanghai, China; Vilnius, Lithuania; Amsterdam, the Netherlands; and Pretoria, South Africa. In 2016, the team hopes to hold seminars in five more countries, starting with Brazil. In regions where there are newer members with fewer technical resources, the focus is on best-practice publishing; for more established publishers, the program covers technological innovation and emerging trends. Crossref is often approached by individuals—researchers, publishers, librarians, and others—who are interested in spreading the word about the organization within their circles. A formal Ambassador Program will harness that enthusiasm and provide these individuals with dedicated updates, presentation and promotional resources, and early previews of Crossref developments.

Crossref is a well-established presence within the industry, exhibiting and participating across a spectrum of events and conferences. The COMM Team is working to elevate that presence by offering Crossref staff members as speakers at such gatherings, sharing the perspectives gained through their experience at the hub of digital publishing.

The team has deployed a marketing automation system to simplify and improve the process of onboarding and communicating with members, building on existing CRM capabilities to create a level of customization and personalization not previously possible, and adding the ability to design and track metrics on member satisfaction and level of involvement.

# Finance & Operations

Under the leadership of Director Lisa Hart Martin, the Finance and Operations Team has adopted new systems that are streamlining processes and freeing up staff to interact more with members to serve their diverse needs. The Customer Relationship Management system has been integrated with the accounting system, and the Zendesk customer support platform, initially deployed by the Technical team, is now available to members for billing inquiries and general membership questions.

In the UK, the team has succeeded in obtaining value-added tax (VAT) refunds, helping to fund the staff expansion.

With the move of Rosa Clark and Anne Hotchkiss to the COMM Team, Jay Minaya and Shauna Lee have been brought in as Accounts Payable Specialist and Administrative Assistant.

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# Strategic Initiatives

**With the proliferation of DOI usage outside traditional scholarly literature (Wikipedia is estimated to be the world's eighth-largest referrer of DOI links), Crossref is well on the way to providing a tool that will enable interested parties to track activity – not only DOI resolutions, but also blog and social media posts, and DOI usage by services like Mendeley and CiteULike. Piloting since March 2014, the DOI Event Tracker has been approved as a project by the Board of Directors, and its release as a production service is anticipated by mid-2016.**

For the pilot's initial phase, Crossref collaborated with Wikipedia to build a tool that displays a live stream of DOI citation activity from every Wikipedia site around the world. In a related effort, the Crossref Labs DOI Chronograph has provided a mechanism for graphing a particular DOI's referral from any given domain. This service will bring these and other capabilities together, giving publishers and third parties a flow of information on all DOI-based activity that they can analyze and process to meet the needs of their stakeholders.

On January 20, 2015, the DOI system experienced a disruption that affected up to 50 percent of global DOI resolution traffic for a 48-hour period. Although the cause proved to be human error—staff at the Corporation for National Research Initiatives (CNRI), which manages the doi.org domain on behalf of the International DOI Foundation (IDF), had neglected to renew the domain name—the outage precipitated an examination of Crossref's dependency on other organizations, and an investigation of ways to minimize the likelihood of a recurrence of the failure. Solutions under consideration include deploying a parallel infrastructure to provide a backup DOI-resolution system, and reducing vulnerability by resolving different registration agencies' DOIs through different domains. The impact of the disruption to scholarly research was significant, and Crossref's transparency in addressing it was demonstrably appreciated by the community.

Within the world of medical research, there is growing concern about the underreporting of clinical trials. Although all trials are supposed to be registered, that practice is not always followed, and negative outcomes are not always reported, compromising the integrity of the research literature.

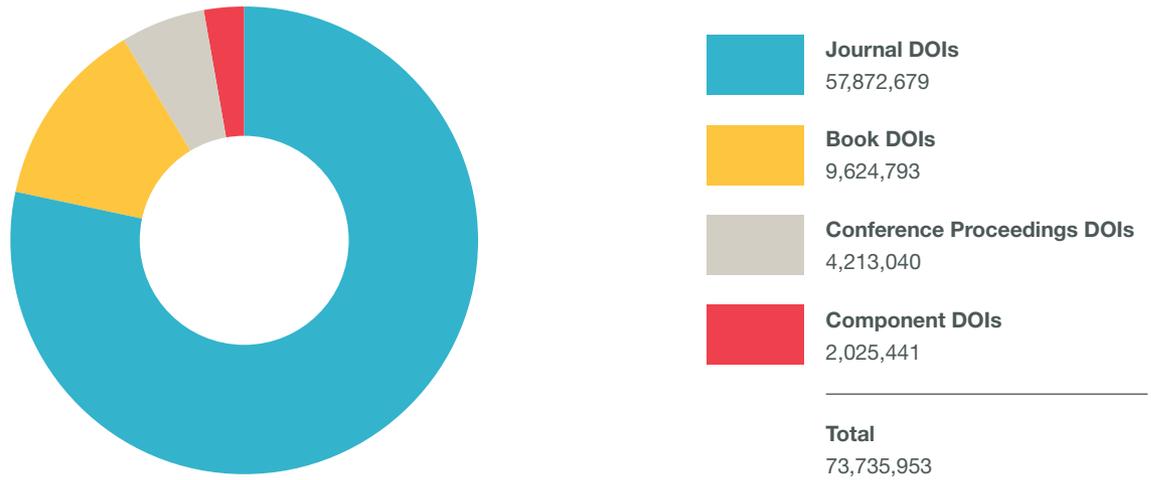
Crossref has launched the Linked Clinical Trials pilot, a major initiative to make the registration of trials transparent and to make it possible to track the connections between trials and the papers that draw on their results, displayed through the CrossMark service.

The application programming interfaces (APIs) that Crossref has created to tap its metadata have become a vital part of scholarly research. Increasingly, organizations like CHORUS and SHARE are relying on our APIs to ensure compliance with government mandates around research funding.

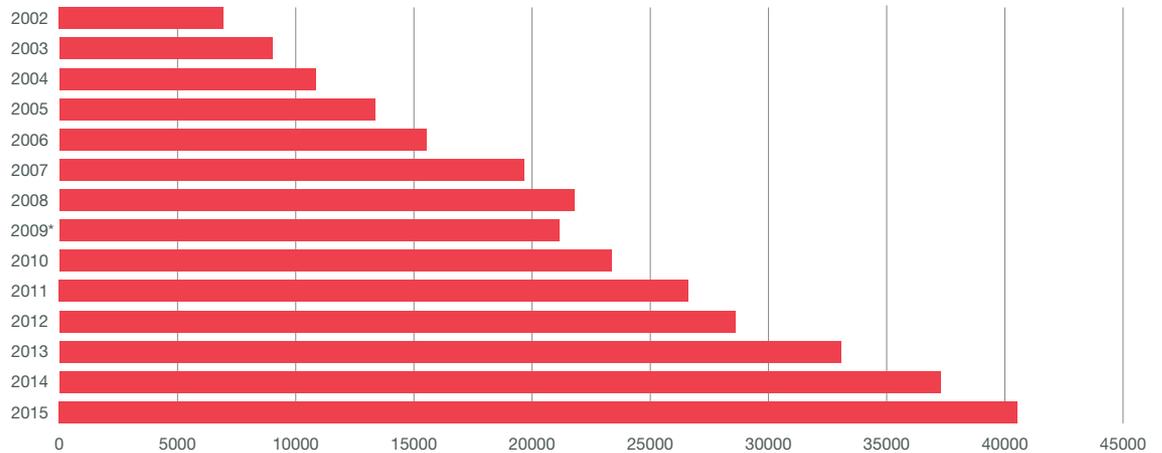
There is a continued drive to build tools to help smaller publishers participate, for example, the recent collaboration with PKP to make the Crossref system directly accessible through the OJS platform. These tools bring the added benefit of ensuring that the metadata deposited is of the highest quality.

The recent addition of Jennifer Lin as Director of Product Management will bring new structure and efficiency to the process of developing and launching Crossref offerings.

## Content Types (July 2015)



## Journals (July 2015)



**To accommodate the steady increase in the use of the system and in the quantity of data it contains, Crossref's query processing function has been upgraded through a major initiative begun in 2014 and completed in early 2015; delivering improved scalability and performance.**

Efforts are ongoing to improve the accuracy and quality of data provided by the deposit system, which is the cornerstone of Crossref's technical operations. Funding data and the Open Funder Registry is now a significant source of Crossref activity, and the deposit system has recently been enhanced with the ability to automatically look up and insert an identifier into a publisher deposit for which only a funder name has been provided, a fairly common occurrence. This feature, which involves a multistep process to minimize mismatches, is the first instance of Crossref's direct involvement in modifying deposit metadata to augment its usability.

Working with ORCID, Crossref has developed a feature known as Auto-Update that will automatically update authors' ORCID records with information about their works. Offered on an opt-in basis, the service was launched in October 2015 and is seeing a very positive response from publishers and authors.

Crossref has also created the capacity for publishers to deposit metadata that enables linking from one DOI to another based on their specific type of relationship. Although Crossref has always provided ways to associate DOIs for specific purposes, such as CrossMark updates, the new tool will allow publishers to display many types of connections—between a review article and the references, between a research article and its cited datasets, and so forth. The tool will launch in spring 2016 with a campaign to raise member awareness and promote uptake.

Following a series of discussions with standards publishers, Crossref completed work on a new deposit schema for this content type. Standards differ structurally from journal articles and books. Whereas an article or a book is a distinct entity;

a standard is a set of documents that grows over time and, in some cases, from country to country. Future work will address the requirements for deposits of further content types, such as online training materials and learning modules.

In the same way that an online journal is usually accessible via multiple paths, an online book may be hosted or distributed by multiple organizations. Crossref has deployed Co-Access functionality for books, now in the pilot phase; essentially extending to books the Multiple Resolution service that allows researchers to select the particular instance of a journal to which they have subscription rights.

The Crossref organization is going through a period of unprecedented growth, expanding to ensure its responsiveness to a diverse constituency and its effectiveness in launching and supporting services of growing complexity. At the same time, it is worth noting that these services all depend on the proper registration, handling, and distribution of metadata: the foundation of all things Crossref.

# Crossref Staff

<b>Amy Bosworth</b>	Accounts Receivable Administrator
<b>Andrew Gilmartin</b>	Senior Software Developer
<b>Anna Tolwinka</b>	Marketing Manager
<b>Anne Hotchkiss</b>	Membership Coordinator
<b>April Ondis</b>	Digital Content Marketing Manager
<b>Christopher Cocci</b>	Staff Accountant
<b>Chuck Koscher</b>	Director of Technology
<b>Ed Pentz</b>	Executive Director
<b>Geoffrey Bilder</b>	Director of Strategic Initiatives
<b>Ginny Hendricks</b>	Director of Member & Community Outreach
<b>Jairo Minaya</b>	Accounts Payable Specialist
<b>Jennifer Lin</b>	Director of Product Management
<b>Joe Wass</b>	R&D Programmer
<b>Jon Stark</b>	Software Developer
<b>Karl Ward</b>	Principal R&D Engineer
<b>Kirsty Meddings</b>	Product Manager
<b>Lindsay Russell</b>	Payroll & Benefits Coordinator
<b>Lisa Hart Martin</b>	Director of Finance & Operations
<b>Mike Yalter</b>	Software Developer
<b>Patricia Feeney</b>	Product Support Manager
<b>Paula R. Graham-Dwyer</b>	Controller
<b>Rachael Lammey</b>	Product Manager
<b>Rosa Clark</b>	Marketing Coordinator
<b>Shauna Lee</b>	Administrative Assistant
<b>Susan Collins</b>	Associate Membership Manager
<b>Tim Pickard</b>	Systems Administrator & Analyst

# Board Members

## Chair

### Ian Bannerman

Alternate: Genny Early  
Informa UK  
Term: 2012–2015

## Treasurer

### Bernard Rous

Alternate: Scott Delman  
Association for Computing Machinery  
Term: 2012–2015

## Secretary

### Lisa Hart Martin

Crossref

## Executive Director/ Assistant Secretary

### Ed Pentz

Crossref

## Board Members

### Jason Wilde

Alternate: John Haynes  
AIP Publishing LLC  
Term: 2014–2017

### Gary VandenBos

Alternate: Jasper Simons  
American Psychological Association (APA)  
Term: 2014–2017

### Chris Shillum

Alternate: Philippe Terheggen  
Elsevier  
Term: 2013–2016

### Paul Peters

Alternate: Mohamed Hamdy  
Hindawi  
Term: 2012–2015

### Gerry Grenier

Alternate: Renny Guida  
The Institute of Electrical and  
Electronics Engineers, Inc. (IEEE)  
Term: 2014–2017

### James Walker

Alternate: Graham McCann  
IOP Publishing  
Term: 2013–2016

### Kathleen Keane

Alternate: Bill Breichner  
Johns Hopkins University Press  
Term: 2013–2016

### Helen Atkins

PLOS  
Term: 2013–2016

### John Shaw

Alternate: Richard Fideczuk  
SAGE Publications  
Term: 2012–2015

### Wim van der Stelt

Alternate: Volker Boeing  
Springer Science + Business Media  
Term: 2013–2016

### Eleonora Dagiene

Alternate: Irma Cizauskaite  
Vilnius Gediminas Technical  
University (VGTU) Press  
Term: 2014–2017

### Carsten Buhr

Alternate: Christian Kohl  
Walter de Gruyter  
Term: 2014–2017

### Peter Marney

Alternate: Duncan Campbell  
John Wiley & Sons, Inc.  
Term: 2012–2015

### Y. H. (Helen) Zhang

Alternate: Dongming Lu  
Zhejiang University Press  
Term: 2014–2017

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# The Art of Persistence

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